SANSKAR SARJAN EDUCATION SOCIETY

D.T.S.S. COLLEGE OF LAW

(Recognized by Government of Maharashtra – Dept. of Higher & Technical Education, Affiliated to University of Mumbai and Approved by the Bar Council of India)

SANSKAR JUS GENTIUM

[An Annual Research Journal]

[A.Y. 2025-26]



FOUNDER PRESIDENT

LATE SHRI DHIRAJLAL TALAKCHAND SANKALCHAND SHAH



The Sanskar Sarjan Education Society (1964) has its origin in the tireless efforts of its founder, Late Shri Dhirajlal Talakchand Shah, who worked for social and philanthropic causes through the charitable trust along with a few like-minded friends. His vision was to create an environment where education transcends boundaries and empowers individuals to shape a better tomorrow. The aim was not only to impart knowledge, but also to nurture values, ethics and a sense of responsibility among the students. He firmly believed that education is not just acquiring information, it is about fostering holistic development. It is about equipping our young minds with the tools they need to excel academically, socially and morally. The mission of the members of the society was to provide quality education, to the underprivileged children of the society, an economically backward area in Malad (East), suburb of Mumbai - 400097.

THE MANAGING COMMITTEE

Shri. Prafulbhai Shah
President,
Sanskar Sarjan Education Society

Shri. Devendrabhai Shah
Vice-President,
Sanskar Sarjan Education Society

Shri. Dinendraprasad Joshi
Hon. Secretary,
Sanskar Sarjan Education Society

Shri. Satishbahi Shah
Hon. Secretary,
Sanskar Sarjan Education Society

Shri Parinbhai Shah
Hon. Secretary,
Sanskar Sarjan Education Society

Shri Amitbhai Kothari
Treasurer,
Sanskar Sarjan Education Society

Ms. Krupali Shah
Member
Sanskar Sarjan Education Society

Mrs. Geetaben Malkan
Member
Sanskar Sarjan Education Society

Shri Dilipbhai Shah
Member
Sanskar Sarjan Education Society

EDITORIAL TEAM

EDITOR-IN-CHIEF

Dr. M. S. Kurhade,
Campus Director

Editor

Dr. Rita Pawan Bansal
In-Charge Principal

Co - Editor

Adv. (Dr.) Tahira Siddique Deulkar,
Professor of Practice

Student Editors

1. Ms. Prisha Kothari, F.Y. LL.B.
2. Mr. Mohammed Abhul Hamid Shelia, F.Y. LL.B.
3. Mr. Vishal Pagare, S.Y. LL.B.
4. Mr. Nadim Khan, S.Y. LL.B.
5. Ms. Divya Makwana, S.Y. LL.B.
6. Ms. Jaya Varshney, S.Y. LL.M.
7. Mr. Kishan Jaiswal, S.Y. LL.M.

Published by:
D.T.S.S. College of Law
Kurar Village,
Malad (East),
MUMBAI – 400 097.

All enquiries regarding the journal should be addressed to:
Email: submissions@sanskarsarjan.org

Disclaimer

The views, opinions, interpretations, arguments, findings, legal opinions, and conclusions expressed in the articles, essays, case comments, case analyses, research papers, and all other contributions published in *"Sanskar Jus Gentium"*, an Annual Research Journal of D.T.S.S. College of Law, are solely those of the respective authors and contributors. Such views do not necessarily reflect the opinions, policies, or positions of the publishing institution, Editorial Board, Editors, Co-Editors, Advisory Board, faculty members, or management of D.T.S.S. College of Law.

The Editorial Board and the publishing institution do not assume any responsibility or liability for the accuracy, completeness, originality, authenticity, reliability, or correctness of the content submitted and published in the journal. The entire responsibility relating to facts, references, citations, data, interpretations, legal opinions, and scholarly assertions rests exclusively with the individual authors.

Publication of any contribution in the journal shall not be construed as endorsement, approval, or acceptance by D.T.S.S. College of Law, its Editorial Board, Editors, Co-Editors, or Advisory Board of any ideas, opinions, legal interpretations, arguments, recommendations, or conclusions expressed therein.

The contributors are solely responsible for ensuring compliance with academic integrity standards, citation norms, copyright requirements, and avoidance of plagiarism or any infringement of intellectual property rights.

Although *"Sanskar Jus Gentium"* is published as an Annual E-Journal, the institution publishes Special Editions from time to time whenever D.T.S.S. College of Law organizes Countrywide (National) or Global (International) Conferences, Workshops, Seminars or Special Calls for Papers. The e-Journal is purely for academic, educational, and research purposes and is not intended for any commercial use. The primary objective of publishing this e-journal is to promote legal awareness, academic discourse, research culture, critical legal analysis, and scholarly engagement among students, researchers, academicians, legal professionals, and stakeholders in the field of law and allied disciplines.

The publication aims to provide a platform for intellectual exchange and dissemination of legal knowledge while encouraging research-oriented thinking and awareness on contemporary legal and socio-legal issues.

Dr. Rita Pawan Bansal
Editor
&
I/c Principal
D.T.S.S. College of Law

ABOUT D.T.S.S. COLLEGE OF LAW

The *Sanskar Sarjan Education Society*, established in 1964, started *D.T.S.S. College of Law* in 2018 under the auspice of Founder President Late Shri Dhirajlal Talakchand Sankalchand Shah, who worked for social and philanthropic causes through the charitable trust along with a few like-minded friends. His vision was to create an environment where education transcends boundaries and empowers individuals to shape a better tomorrow. The aim was not only to impart knowledge, but also to nurture values, ethics and a sense of responsibility among the students. He firmly believed that education is not just acquiring information, it is about fostering holistic development and also equipping our young minds with the tools they need to excel academically, socially and morally. This mission of the members of the society is to provide quality education, to the underprivileged children of the society, an economically backward area in Malad (East), Mumbai.

The D.T.S.S. College of Law is the newest addition to the Sanskar Sarjan Group of Institutions. Since the inception, the institutions have metamorphosed from a modest building to a sprawling impressive structure complete will all modern equipment and amenities which make them truly self-sufficient.

The college caters to the educational needs of the neglected and underprivileged students of Kurar village. Once an underdeveloped, backward area, Kurar village is now a "Centre of Learning" solely due to the institutions. A dedicated management and staff have brought about an immense change in the attitude and outlook of its student population. Students are trained in academics as well as co-curricular activities. Ethics, morals and values are steadily inculcated in them through the teaching-learning process.

The institution is housed in a well-developed seven-storey building designed to facilitate academic excellence, professional development, and co-curricular engagement.

The college has a Wi-Fi enabled campus to support digital learning and research activities. Demonstrating its commitment towards environmental sustainability, the institution has also installed solar panels as part of its efforts to encourage responsible and sustainable practices.

The campus is equipped with smart classrooms that promote interactive teaching and learning experiences. A modern Moot Court Room provides law students with practical exposure

to advocacy skills and courtroom procedures, helping bridge the gap between legal theory and practice.

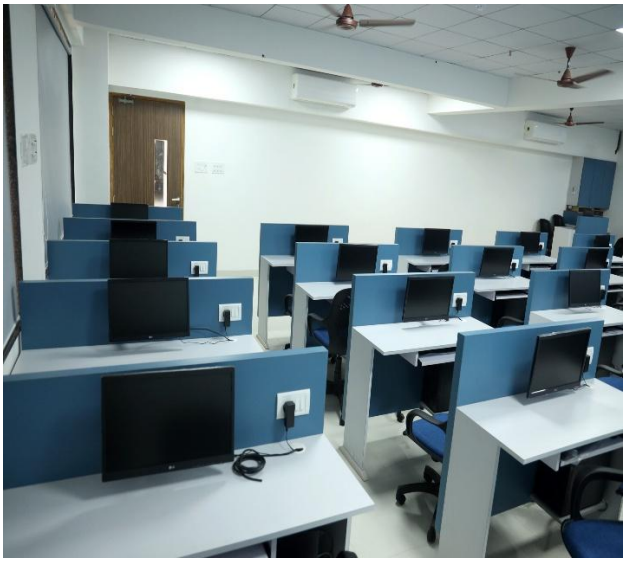


The institution has a well-equipped library with access to digital databases and legal research resources, enabling students and faculty members to undertake academic and research activities effectively. The college infrastructure further includes a conference hall**,** auditorium**,** computer laboratories**,** Gymkhana, and a canteen, ensuring that students receive adequate facilities for academic, professional, and extracurricular development.

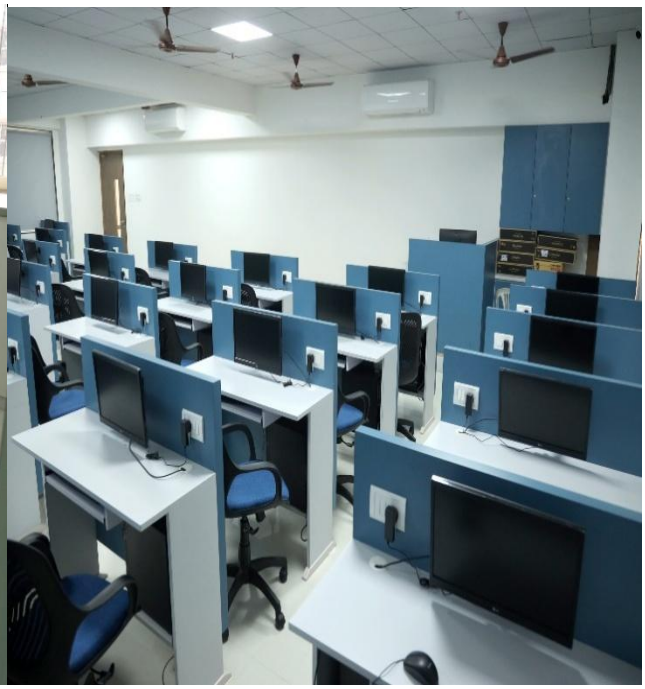
D.T.S.S. College of Law is also committed to inclusivity and accessibility. The campus is Divyangjan-friendly, with facilities designed to ensure accessibility and convenience for persons with disabilities, thereby fostering an equitable and inclusive educational environment.

The college aims to be universally respected institution making quality the defining element of knowledge of education, sculpting principles & inspiring students to become good human being spreading prosperity, peace, harmony & happiness around.

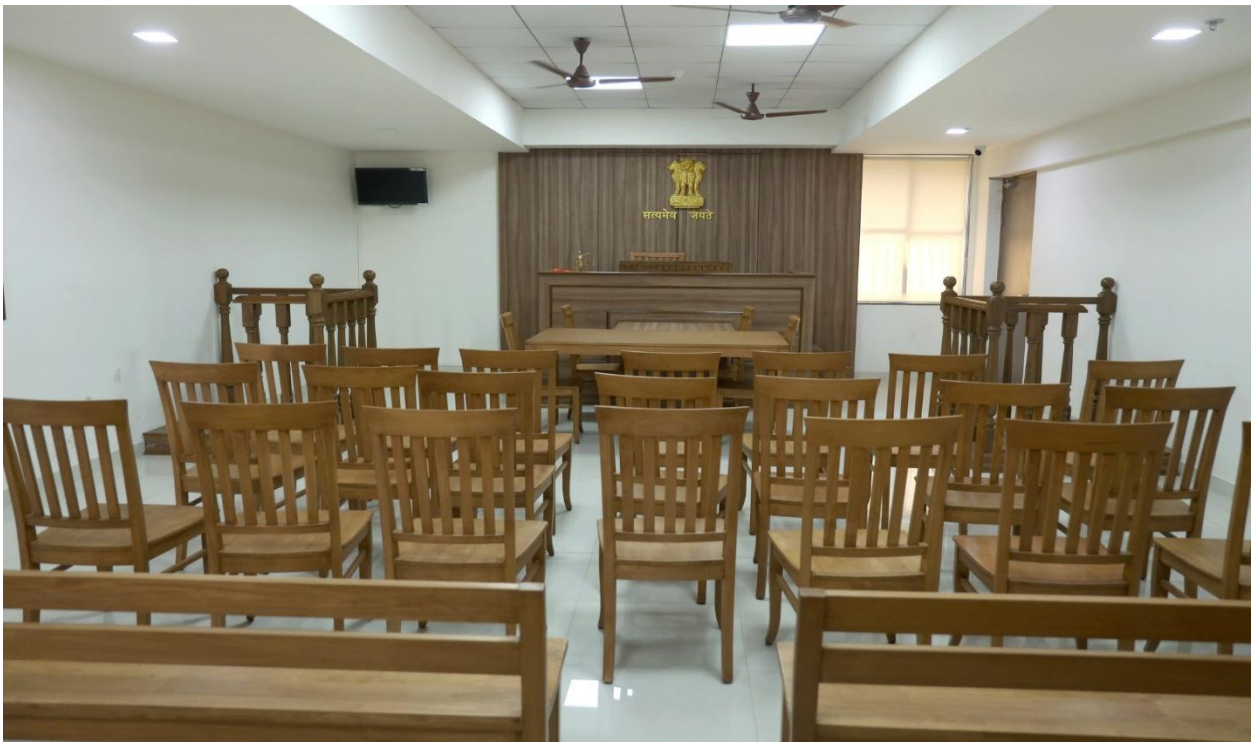






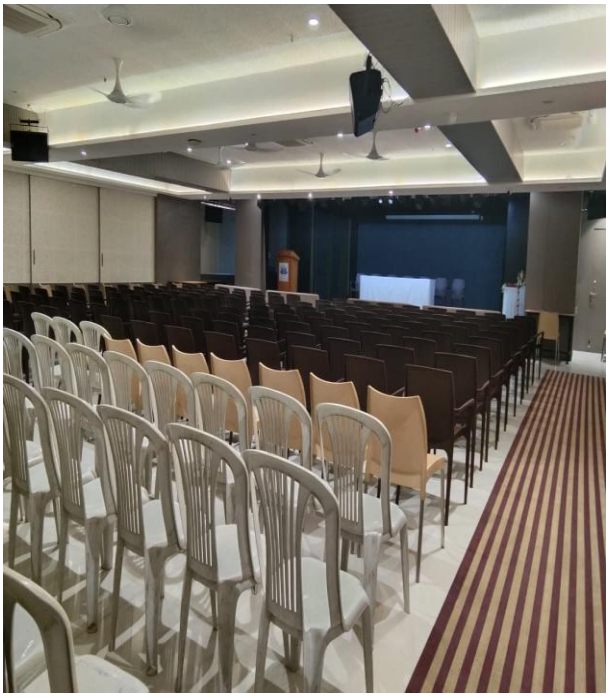



सत्यमेव जयते













Foreword by the President, Sanskar Sarjan Education Society

Dear Readers,

It is with great pleasure and immense pride that I extend my warmest greetings to the readers of the Special Edition of the D.T.S.S. College of Law E-Journal *"Sanskar Jus Gentium"*.

As we venture into the digital realm with this publication, we embrace a new era of scholarly discourse and legal exploration. The field of law is dynamic and ever-evolving, and it is crucial for academic institutions to foster an environment that promotes dialogue, critical thinking, and the dissemination of knowledge. The establishment of *"Sanskar Jus Gentium"* is a testament to our commitment to providing a platform for the exchange of ideas among our vibrant academic community.

In the pages that follow, you will find a collection of articles, research papers, and commentaries contributed by our esteemed faculties, dedicated students, and distinguished legal professionals. The topics covered reflect the diverse and multifaceted nature of the legal landscape, encompassing both traditional and contemporary issues. It is our hope that these writings will inspire thought, encourage debate, and contribute to the intellectual enrichment of our readers.

I would like to express my gratitude to the editorial team and all those who have worked tirelessly to bring this e-journal to fruition. Their dedication and enthusiasm are commendable, and I am confident that this publication will become a cornerstone of our academic legacy.

As we embark on this exciting journey, let us embrace the opportunities that technology affords us in advancing legal scholarship. May *"Sanskar Jus Gentium"* serve as a medium through which ideas are shared, perspectives are broadened, and the pursuit of knowledge is nurtured. I extend my best wishes to the contributors, editors, and the students.

Warm regards,
Prafulbhai Shah

Foreword by the Vice-President, Sanskar Sarjan Education Society

Dear Readers,

It is with immense pleasure and a sense of accomplishment that I extend my heartfelt greetings for the Special Edition of our e-journal "Sanskar Jus Gentium". I am delighted to witness the fruition of our collective efforts in launching this platform for scholarly discourse and intellectual engagement.

In the dynamic and ever-evolving field of law, staying abreast of the latest developments, groundbreaking research, and insightful analyses is paramount. With this understanding, we have envisioned "Sanskar Jus Gentium" as a repository of knowledge, a forum for exchanging ideas, and a catalyst for fostering academic excellence. The diverse and thought-provoking articles featured in this first issue cover a spectrum of legal disciplines, reflecting the depth and breadth of our academic community. From constitutional law to commercial law, from human rights to environmental law, each contribution showcases the rigorous scholarship and innovative thinking that defines our institution.

I would like to express my gratitude to the dedicated editorial team, faculty members, and student contributors who have worked assiduously to bring "Sanskar Jus Gentium" to fruition. Their commitment to intellectual inquiry and the pursuit of excellence is evident in the quality of the articles presented. As we embark on this journey of knowledge dissemination, I encourage all stakeholders-students, faculty, legal practitioners, and researchers-to actively engage with the content, contribute their insights, and participate in the vibrant academic dialogue that this e-journal seeks to foster.

May this publication serve as a beacon of inspiration, sparking intellectual curiosity and promoting a culture of academic excellence within our legal community.

Wishing you an enlightening and enriching reading experience.

Sincerely,
Devendrabhai Shah

Foreword by the Hon. Secretary, Sanskar Sarjan Education Society

Dear Readers

It is with immense pleasure and pride that I extend my warm greetings to all the contributors, readers, and well-wishers on the occasion of the Special Edition of the D.T.S.S. College of Law E-Journal *"Sanskar Jus Gentium"*.

As we step into the digital realm with *"Sanskar Jus Gentium"*, we embark on a journey of academic exploration, intellectual discourse, and the dissemination of knowledge. The field of law is dynamic, ever-evolving, and deeply intertwined with the societal changes we witness. The *"Sanskar Jus Gentium"* serves as a platform for our scholarly community to engage in thoughtful discussions, share insights, and contribute to the legal discourse that shapes our understanding of justice and governance.

D.T.S.S. College of Law has always been committed to providing a conducive environment for legal education and research. *"Sanskar Jus Gentium"* is an extension of that commitment, offering an avenue for students, faculty, and legal practitioners to showcase their research, analyses, and perspectives on a diverse range of legal issues.

In this first issue, you will find a collection of articles and research papers that reflect the depth and breadth of legal scholarship. The topics covered span across various branches of law, demonstrating the interdisciplinary nature of legal studies. I would like to express my gratitude to the editorial team, authors, and reviewers for their dedicated efforts in bringing *"Sanskar Jus Gentium"* to fruition. Their hard work and commitment have been instrumental in shaping this platform into a valuable resource for legal scholarship.

As we launch the additional *"Sanskar Jus Gentium"*, we look forward to continuous growth and evolution. We invite all members of the legal community to actively participate in this academic endeavor by submitting their research, insights, and critiques for future issues. I hope you find this additional issue of the D.T.S.S. College of Law E-Journal *"Sanskar Jus Gentium"* both enlightening and inspiring.

Warm regards,
Satishbhai Shah

Foreword by the Hon. Secretary, Sanskar Sarjan Education Society

Dear Readers,

It is with great pleasure and a sense of accomplishment that I extend my warm greetings to all the readers and contributors of the Special Edition of *"Sanskar Jus Gentium"* an e-journal of D.T.S.S. College of Law. As we navigate through the realms of legal education, our commitment to fostering intellectual discourse and scholarly engagement has always been paramount. This e-journal stands as a testament to our dedication to providing a platform for the exchange of ideas and the dissemination of legal knowledge.

In the dynamic and ever-evolving field of law, staying abreast of current legal trends and issues is imperative. This e-journal serves as a conduit for the expression of diverse perspectives, scholarly research, and innovative ideas within the legal community. It is a collaborative effort that brings together the insightful contributions of legal scholars, practitioners, and students alike.

The articles featured in this issue span a wide spectrum of legal disciplines, reflecting the interdisciplinary nature of contemporary legal studies. Each piece is a testament to the intellectual curiosity and rigorous research undertaken by our contributors. We hope that the content within these virtual pages sparks intellectual curiosity, encourages critical thinking, and contributes to the broader legal discourse.

I would like to express my heartfelt gratitude to the editorial team for their tireless efforts in curating and presenting this collection. Their commitment to maintaining the highest standards of academic excellence is evident in the diverse and thought-provoking content showcased in this e-journal. To the contributors, I extend my sincere appreciation for your dedication to advancing legal scholarship.

As we embark on this journey with our additional issue, I am confident that this e-journal will evolve into a respected platform for legal scholarship, creating a space where ideas are nurtured, and knowledge is shared.

Thank you for your support, and I look forward to witnessing the continued growth and success of the D.T.S.S. College of Law e-journal.

Sincerely,
Parinbhai Shah

Foreword by the Hon. Secretary, Sanskar Sarjan Education Society

Dear Readers,

It is with immense pleasure and a sense of accomplishment that I extend my heartfelt greetings to the esteemed readers, contributors, and supporters on the auspicious occasion of the launch of our Special Edition – the Law e-Journal, a testament to our unwavering commitment to fostering legal scholarship and intellectual discourse. In an era characterized by rapid technological advancements and dynamic societal transformations, the need for accessible and insightful legal resources is more critical than ever. This electronic journal aspires to be a dynamic repository of knowledge, facilitating a cross-pollination of ideas that transcends geographical boundaries and encourages a global dialogue on legal issues.

I would like to express my sincere gratitude to the editorial team, contributors, and everyone involved in bringing this vision to life. Their dedication and intellectual prowess have played a pivotal role in shaping the e-Journal into a robust forum for legal scholarship. I am confident that the journal will serve as a beacon of intellectual enlightenment for legal enthusiasts, practitioners, and scholars alike.

As we embark on this exciting journey, I invite you all to engage wholeheartedly with the e-Journal. May it be a source of inspiration, knowledge, and dialogue, fostering a deeper understanding of the intricacies of law and its profound impact on society.

Wishing the e-Journal a resounding success and looking forward to the rich contributions it will undoubtedly elicit from the legal fraternity.

Sincerely,
Dinendraprasad Joshi

Foreword by the Treasurer, Sanskar Sarjan Education Society

Dear Readers,

It is with great pleasure and enthusiasm that I extend my warm greetings to you on the release of the Special Edition of the e-journal *"Sanskar Jus Gentium"* of D.T.S.S. College of Law. I am honored to witness the realization of our commitment to fostering intellectual discourse and scholarly engagement within the legal community. In the dynamic landscape of legal education, the significance of staying abreast of emerging trends, critical analyses, and innovative perspectives cannot be overstated. *"Sanskar Jus Gentium"* stands as a testament to our dedication to providing a platform for the exchange of ideas, promoting research excellence, and contributing to the intellectual growth of our students, faculty, and the legal fraternity at large.

The diverse and insightful articles featured in this inaugural issue reflect the dedication and intellectual prowess of our contributors. The range of topics covered, from jurisprudential analyses to contemporary legal issues, showcases the depth and breadth of legal scholarship within our academic community. Our commitment to excellence in legal education goes hand in hand with our mission to contribute meaningfully to the legal discourse shaping our society. This e-journal, with its blend of theoretical insights and practical applications, embodies our pursuit of knowledge that transcends traditional boundaries.

I extend my heartfelt congratulations to the editorial team, authors, and everyone involved in bringing *"Sanskar Jus Gentium"* to fruition. I am confident that this platform will evolve into a dynamic space for legal scholarship, providing a voice to the diverse perspectives that enrich our understanding of law and its impact on society.

As we embark on this journey of intellectual exploration, I encourage readers to engage actively with the content, share their thoughts, and contribute to the ongoing dialogue. Together, let us build a community that thrives on the exchange of ideas, fostering a culture of learning and inquiry.

Thank you for your support, and I look forward to witnessing the continued growth and success of the D.T.S.S. College of Law e-journal.

Warm regards,
Amitbhai Kothari

Foreword by the Member, Sanskar Sarjan Education Society

Dear Readers,

It is with immense pleasure and pride that I extend a warm welcome to all the contributors, readers, and well-wishers of DTSS College of Law on the occasion of the launch of our Special Edition e-journal *"Sanskar Jus Gentium"*.

D.T.S.S. College of Law has always stood as a beacon of legal education, committed to nurturing young minds and fostering a culture of academic excellence. In our relentless pursuit of knowledge and innovation, the idea of an e-journal emerged as a platform to showcase the scholarly pursuits and intellectual acumen of our students, faculty, and the wider legal community.

This maiden issue of the e-journal is a testament to the dedication and hard work put in by our contributors. It is a reflection of the diverse perspectives, insightful analyses, and rigorous research that define the academic ethos of our institution. As we navigate the dynamic landscape of law and its myriad facets, *"Sanskar Jus Gentium"* serves as a testament to our commitment to staying at the forefront of legal discourse.

Our institution has always embraced change and innovation, and the launch of this e- journal is a stride towards a digital future where knowledge knows no boundaries. Through this platform, we aim to bridge the gap between academia and practice, encouraging a dialogue that transcends classrooms and courtrooms.

I express my gratitude to the editorial team, faculty advisors, and the contributors who have played a pivotal role in bringing this vision to fruition. Their dedication and enthusiasm have truly made this e-journal a repository of the ongoing conversation. Let *"Sanskar Jus Gentium"* be a catalyst for intellectual growth, fostering a community of learners who are not just well-versed in the law but are valuable insights and perspectives.

I wish the e-journal team and all contributors continued success in their academic and professional pursuits.

Warm regards,
Geetaben Malkan

Foreword by the Member, Sanskar Sarjan Education Society

Dear Readers,

It gives me immense pleasure to welcome you to the Special Edition of the e-journal *"Sanskar Jus Gentium"* of D.T.S.S. College of Law. As a proud member of the management team, I am delighted to witness this significant milestone in our academic journey.

In the rapidly evolving landscape of legal education and practice, it is imperative for educational institutions to embrace technological advancements and innovative platforms. The launch of our e-journal reflects our commitment to providing a dynamic and accessible forum for scholarly discourse, a space where ideas can flourish and contribute to the legal discourse of our times. *"Sanskar Jus Gentium"* is a testament to the intellectual vibrancy of our academic community. It is a culmination of the dedicated efforts of our students, faculty, and researchers who have passionately contributed their insights, analyses, and research findings. The diversity of topics covered in this issue underscores the broad spectrum of legal disciplines that our college is committed to nurturing.

At D.T.S.S. College of Law, we believe that knowledge creation and dissemination are integral to the educational process. The e-journal serves as a bridge between the academic realm and the practical world, providing a platform for the exchange of ideas that are both timely and relevant. As we embark on this journey, we encourage our readers to engage with the content, challenge perspectives, and contribute to the ongoing dialogue in the legal community.

I extend my sincere appreciation to the editorial team, whose dedication and hard work have brought this e-journal to fruition. Their commitment to maintaining academic excellence and integrity is evident in the quality of the articles presented in this issue.

As we launch this additional e-journal, we look forward to fostering a culture of continuous learning, critical thinking, and scholarly excellence. I am confident that this platform will serve as a catalyst for intellectual growth and contribute significantly to the legal scholarship emanating from our esteemed institution.

Thank you for your support, and I hope you find the contents of *"Sanskar Jus Gentium"* both informative and also thought-provoking.

Best regards,
Krupali Praful Shah

Foreword by the Member, Sanskar Sarjan Education Society

Dear Readers,

It is with immense pleasure and pride that I extend a warm welcome to the readers of Special Edition of the e-journal *"Sanskar Jus Gentium"* of D.T.S.S. College of Law. As we venture into the realm of digital scholarship, this electronic platform provides us with a unique opportunity to disseminate knowledge, foster academic discourse, and showcase the intellectual prowess of our esteemed institution.

D.T.S.S. College of Law has always been at the forefront of legal education, emphasizing not only the mastery of legal principles but also the application of these principles in the dynamic and ever-evolving legal landscape. In our pursuit of excellence, the launch of this e-journal is a significant milestone, amplifying our commitment to scholarly research and the dissemination of cutting-edge legal perspectives.

"Sanskar Jus Gentium" will serve as a forum for our faculty, students, and legal scholars to contribute to the discourse on various legal issues. In these pages, you will find a diverse array of articles, research papers, and case commentaries spanning across different branches of law. The intention is to create a space where ideas can be exchanged, perspectives can be challenged, and knowledge can be advanced. In the fast-paced world of today, where information knows no boundaries, *"Sanskar Jus Gentium"* is a testament to our adaptability and our embrace of technology to enhance the educational experience.

I would like to express my gratitude to the editorial team for their meticulous efforts in curating and refining the content of this journal. Their commitment to maintaining high academic standards and promoting rigorous scholarship is evident in the pages that follow.

As we embark on this journey into the digital realm of legal scholarship, I encourage all stakeholders - students, faculty, and the wider legal community - to actively engage with the content, contribute their insights, and make *"Sanskar Jus Gentium"* a vibrant platform for intellectual exchange. I hope *"Sanskar Jus Gentium"* sparks intellectual curiosity, stimulates thoughtful discussions, and becomes a source of inspiration for all those who seek to explore the diverse and intricate facets of the law.

Best Wishes,
Dilipbhai Shah

Foreword by the Editor-in-Chief



Dear Students and Faculty Members,

It gives me immense pleasure and a deep sense of honour to write this Foreword for the Special Edition of *"Sanskar Jus Gentium"*, the e-journal of D.T.S.S. College of Law. This publication marks a significant milestone in the academic journey of our institution and reflects the successful realization of a collective vision that has been transformed into reality through the dedicated efforts, commitment, and intellectual contributions of our students and faculty members. The publication of this Special Edition signifies not only our institution's commitment to academic excellence but also highlights the collaborative spirit and scholarly culture that continue to strengthen our academic community. It serves as a platform for encouraging research, critical thinking, and meaningful discourse on contemporary legal and interdisciplinary issues.

I extend my heartfelt appreciation to our diligent and enthusiastic students who have devoted their time, intellect, and hard work towards the preparation of this e-journal. Whether through research papers, scholarly articles, case analyses, essays, editorial contributions, or other academic writings, your work reflects a sincere commitment to learning, research, and advancement of legal knowledge. This publication stands as a testimony to your dedication, perseverance, and scholarly abilities.

I also express my sincere gratitude to our esteemed faculty members for their constant guidance, encouragement, and mentorship. Their unwavering support in nurturing academic curiosity and research aptitude among students has played a vital role in shaping the quality and intellectual depth reflected in this publication. Their efforts in guiding the editorial process and providing valuable academic insights have significantly contributed towards maintaining the scholarly standards of this journal. The publication of this e-journal is not merely the culmination of collective efforts but also the beginning of a new chapter in our academic journey. It represents a forum where ideas, legal perspectives, research findings, and

scholarly discussions can flourish freely, thereby contributing to intellectual discourse within the institution and beyond. It further reflects the dynamic vision of D.T.S.S. College of Law and our commitment to embracing innovation and research-oriented legal education.

As we move forward, I encourage all members of our academic community to view this e-journal as a source of inspiration and a catalyst for deeper academic inquiry and exploration. May it continue to motivate meaningful research, encourage scholarly engagement, and strengthen the culture of academic excellence within our institution. I look forward to witnessing the continued growth, impact, and academic contribution of *"Sanskar Jus Gentium"* in the years ahead. It is my sincere hope that this publication will continue to serve not only as a repository of knowledge but also as a reflection of the intellectual vibrancy, collaborative spirit, and academic excellence that define D.T.S.S. College of Law.

I extend my sincere gratitude to the Management for its visionary leadership, encouragement, and unwavering support. Their continued co-operation has enabled the institution to take meaningful strides towards strengthening legal education and fostering a robust research culture.

I also convey my heartfelt appreciation to everyone who has contributed to the success of this endeavour. Your dedication and collective efforts have demonstrated what can be achieved when individuals work together with commitment, purpose, and a shared vision. I take immense pride in what we have accomplished together and eagerly look forward to the many scholarly achievements and meaningful contributions that lie ahead.

With warm regards,
Dr. M.S. Kurhade
Editor-in-Chief
&
Campus Director

Foreword by the Editor



Dear Readers,

It is with great pleasure and enthusiasm that I welcome you to the Special Edition of "*Sanskar jus gentium*", an e-journal of D.T.S.S. College of Law. As the editor, I am honoured to introduce you to this diverse and thought-provoking collection of articles, essays and research papers that showcase the intellectual prowess and commitment to excellence of our students, faculty and contributors.

Our e-journal serves as a platform for the exchange of legal knowledge, critical analysis and scholarly exploration. It is a testament to our institution's dedication to fostering a culture of academic inquiry and engagement within the field of Law. This e-journal is a valuable resource for not only our college community but also for legal enthusiasts and practitioners. We aim to provide a platform for the dissemination of knowledge that promotes a deeper understanding of the Law and its implications on society.

I extend my heartfelt gratitude to our students who have dedicated their time and expertise to make this journal possible. Their hard work and dedication are truly commendable and it is through their contributions that we are able to offer you this insightful collection. I also extend my heartfelt gratitude and appreciation to the Management and Dr. M.S. Kurhade, Campus Director, for their unwavering support and Co-operation in the inception of the e-journal.

We hope that you find this publication informative, thought-provoking, and inspiring and we look forward to your continued involvement in our academic community.

Thanks & regards,
Dr. Rita Bansal
Editor
&
I/c Principal

Foreword by the Co – Editor



Dear Readers,

It gives us immense pleasure and a deep sense of gratitude to welcome readers to the Special Edition of *"Sanskar Jus Gentium"*, the e-journal of D.T.S.S. College of Law. This significant occasion marks an important milestone in the academic journey of our institution and reflects the collective efforts, commitment, and unwavering support of our students, faculty members, and the visionary leadership of the college management.

The publication of this e-journal has been a collective academic endeavour driven by a shared commitment to legal scholarship, intellectual inquiry, and the pursuit of excellence. As Co-Editors, we have had the privilege of witnessing the dedication, enthusiasm, and scholarly spirit that continue to strengthen and define the academic culture of our institution.

First and foremost, we extend our heartfelt appreciation to our students whose sincere efforts in research, critical analysis, legal writing, and scholarly engagement are reflected in the diverse and intellectually stimulating contributions featured in this publication. Your dedication towards academic excellence and your willingness to contribute meaningfully to legal discourse have enriched this e-journal and established a strong foundation for future editions. We take immense pride in your accomplishments and your commitment towards scholarly pursuits.

We also convey our sincere gratitude to our esteemed faculty members and especially to Dr. Rita Bansal, Editor of *"Sanskar Jus Gentium"*, for their continuous guidance, encouragement, and mentorship. Their commitment towards nurturing academic excellence, research aptitude, and intellectual curiosity among students has significantly contributed to maintaining the academic rigour and quality reflected in this publication.

We further express our heartfelt appreciation to the Management and Dr. M. S. Kurhade, Campus Director, for their constant encouragement, visionary support, and institutional leadership, which have paved the way for establishing this e-journal as a meaningful platform for the exchange of legal

knowledge, research, and academic ideas. We remain profoundly grateful for the support, resources, and infrastructure extended towards making this endeavour a reality.

"Sanskar Jus Gentium" is not merely a publication; it represents the institution's commitment to promoting critical thinking, legal reasoning, research culture, and scholarly exploration within the academic community and beyond. It seeks to create opportunities for meaningful academic dialogue and contribute towards the advancement of legal education and interdisciplinary research.

As we move forward, we look ahead with optimism and enthusiasm towards witnessing the continued growth, scholarly contribution, and academic impact of *"Sanskar Jus Gentium"* in the years to come. We remain confident that this publication will continue to inspire research, encourage intellectual engagement, and strengthen the culture of academic excellence that defines D.T.S.S. College of Law.

Thanking you,
Dr. Tahira Siddique Deulkar
Co-Editor,
&
Professor of Practice

Foreword by Student Editors

We are thrilled to present to you the Special Edition of the e-Journal of the D.T.S.S. College of Law. This endeavour would not have been possible without the unwavering support and encouragement from our esteemed management, Dr. M. S. Kurhade, Campus Director and Dr. Rita Bansal, I/c Principal. Their vision and commitment to innovation have inspired us to venture into the digital realm and create this platform for scholarly discourse. We hope that this e-Journal serves as a valuable resource for our students, faculty, and the wider legal community, fostering intellectual exchange and promoting academic excellence. Thank you for your continued support, and we look forward to your engagement with our publication.

We hope that this platform will serve as a forum for intellectual exchange, creativity, and collaboration within our college community. From thought-provoking articles to insightful research, we aspire to showcase the diverse talents and perspectives of our fellow students. Thank you for joining us on this exciting venture, and we look forward to your continued support as we embark on this new chapter together.

Sincerely,
[Students' Committee]

INTERNATIONAL CONFERENCE

(ONLINE MODE)

On the Theme

Artificial Intelligence and Law: Navigating Ethics, Regulation, and Justice

Date: 11th April 2026 (Saturday)

Time: 10:00 a.m. – 05:00 p.m.

Mode: Online

MESSAGE FROM THE I/C PRINCIPAL

D.T.S.S. College of Law
E-Journal Publication Note
Online International Conference on "Artificial Intelligence and Law: Navigating Ethics, Regulation, and Justice"
11th April 2026 | 10:00 a.m. to 05:00 p.m.

……

It gives me immense pleasure and academic pride to present this special e-journal edition compiling the valuable research articles contributed by scholars, academicians, professionals, and legal researchers who participated in the Online International Conference on the theme *"Artificial Intelligence and Law: Navigating Ethics, Regulation, and Justice,"* organized by D.T.S.S. College of Law on 11th April 2026.

This conference marked a significant academic milestone for our institution, creating an international platform for critical discourse on one of the most transformative intersections of contemporary times, namely, the relationship between Artificial Intelligence and the legal system. As AI continues to reshape governance, justice delivery, ethics, privacy, regulatory mechanisms, and human rights, this conference sought to examine both the opportunities and challenges that arise in ensuring that technological advancement remains aligned with justice, accountability, and constitutional values.

The conference commenced with the inspiring Inaugural Address of *Shri Amitbhai Kothari, Treasurer, Sanskar Sarjan Education Society*, whose visionary words encouraged participants to embrace innovation while preserving ethical responsibility. *Dr. M.S. Kurhade, Campus Director*, offered an enriching institutional overview and motivated participants to pursue research that contributes meaningfully to society and justice.

We were deeply honoured by the presence of our distinguished Keynote Speaker, Dr. Arifa Zahra, Assistant Professor, Amity University Dubai, whose insightful address enriched participants with a global perspective on AI governance, ethical regulation, and emerging legal paradigms.

The conference was further strengthened by the scholarly contributions of our esteemed Plenary Speakers: Mr. Mohammad Anas Khan, Researcher and Project Manager, University of

Manitoba, Canada; Sr. Advocate Pradeep Rai, Supreme Court of India and Vice President, Supreme Court Bar Association; Professor (Dr.) M.K. Bhandari, Founder Director, Global Academy of Law-Tech Education and Research, J.N.V. University, Hyderabad, Telangana; Advocate Joseph Rony Jose, Central Government Counsel, High Court of Kerala; and Professor Subodh K. Singh, Head of Department, Harish Chandra PG College, Varanasi, whose association with the conference was highly valued despite his inability to join due to unavoidable professional commitments.

We were equally privileged to have eminent academicians and experts preside over the technical sessions, including Dr. Devinder Singh Anand, Associate Professor, UILS Chandigarh University; Dr. Akshaya Desai, Assistant Professor, NMIMS Mumbai; Dr. Kiran Kumar, Assistant Professor, School of Law, Mody University Rajasthan; and Dr. Rishi Dev, HOD, Tax Department, School of Law, KIIT, Bhubaneshwar, Odisha. Their intellectual engagement and scholarly moderation greatly enhanced the academic quality of the conference deliberations.

The special edition of this e-journal is a reflection of the rigorous academic discussions, innovative perspectives, and dedicated research efforts showcased during the conference. The articles compiled herein represent diverse viewpoints on AI ethics, cyber regulation, legal accountability, justice systems, policy frameworks, and futuristic legal challenges. I sincerely believe that this publication will serve as a valuable resource for academicians, legal practitioners, policymakers, and students exploring the evolving dimensions of Artificial Intelligence and Law.

I extend my heartfelt gratitude to all speakers, session chairs, participants, organizing committee members, faculty, student volunteers, and research scholars whose dedication made this international conference a grand success. I also congratulate all contributors whose scholarly works have enriched this publication.

May this e-journal inspire continued research, critical reflection, and progressive legal thought in navigating the future of law and technology.

Dr. Rita Bansal
I/c Principal
D.T.S.S. College of Law

KEYNOTE & PLENARY SPEAKERS



Dr. Arifa Zahra,
Keynote Speaker
Assistant Professor,
Amity University Dubai.



Mr. Mohammad Anas Khan
Researcher & Project Manager
University of Manitoba in
Winnipeg, Canada.



Sr. Advocate Pradeep Rai,
Supreme Court of India,
Vice President, Supreme
Court Bar Association.



Professor (Dr.) M. K. Bhandari,
Founder Director Global
Academy of Law – Tech
Education and Research, J.N.V.
University, Hyderabad,
Telangana.



Advocate Joseph Rony Jose,
Central Government Counsel
at High Court of Kerala.



Prof. Subodh K. Singh,
Head of Department,
Harish Chandra PG College,
Varanasi.

Eminent Experts Presiding Over Technical Sessions



Dr. Devinder Singh Anand
Associate Professor
UILS, Chandigarh University



Dr. Akshaya Desai
Assistant Professor
NMIMS, Mumbai



Dr. Rishi Dev
HOD Tax Department, School of Law,
Kalinga Institute of Industrial Technology (KIIT),
Bhubaneshwar, Odisha.



Dr. Kiran Kumari
Assistant Professor,
School of Law, Mody University,
Rajasthan.

Conveners



Dr. M.S. Kurhade
Campus Director



Dr. Rita Bansal
I/c Principal

BRIEF PROFILE OF EMINENT SPEAKERS/EXPERTS

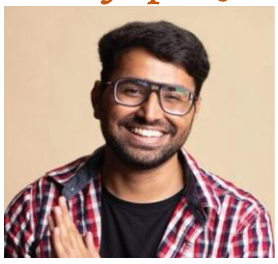
Keynote Speaker



Dr. Arifa Zahra
Assistant Professor
Amity University Dubai
UNITED ARAB EMIRATES.

Dr. Arifa Zahra is a distinguished legal academic and Assistant Professor of Law at Amity University Dubai, recognized for her dynamic contributions to teaching, research, and comparative legal scholarship. She earned her Ph.D. in Law from Aligarh Muslim University and her LL.M. in Corporate and Business Laws from Gujarat National Law University, institutions renowned for academic excellence and rigorous legal training. An FRG-24 Research Grant awardee, she leads an impactful funded project titled "*Comparative Study on the Effectiveness of Rehabilitation Methods in Criminal Law: India and UAE*," reflecting her commitment to reform-oriented and policy-driven research. Her expansive research portfolio spans International Investment Arbitration, Artificial Intelligence and Law, Rehabilitative Theories of Punishment, Higher Education Law, and Banking Law, positioning her at the intersection of emerging global legal challenges and transformative jurisprudential discourse.

Plenary Speaker 1



Mr. Mohammad Anas Khan
Researcher & Project Manager
University of Manitoba, Winnipeg
CANADA.

Mr. Mohammad Anas Shoebullah Khan is a Researcher and Project Manager at the University of Manitoba in Winnipeg, Canada whose work sits at the intersection of justice, regulatory governance and research ethics. He works on global food systems with a focus on small-scale

fisheries and informal value chains across South and Southeast Asia, examining how regulatory frameworks, data systems and market-based instruments shape access, equity and accountability. His engagement with AI ethics emerges from this broader work on governance and justice, particularly in understanding how data-driven systems can reproduce existing inequalities when applied to informal and underrepresented sectors. He is interested in questions of ethical design, data governance and regulatory accountability.

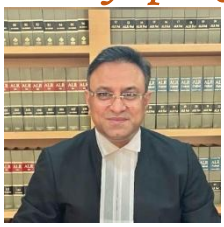
Plenary Speaker 2



Prof. (Dr.) M. K. Bhandari
Founder Director Global
Academy of Law – Tech
Education and Research, J.N.V.
University, Hyderabad, Telangana.

Prof. (Dr.) M. K. Bhandari brings over 45 years of distinguished experience in teaching, research, mentoring, and academic administration in institutions of higher education. He has played a pivotal role in the establishment and development of several institutions, contributing significantly to the advancement of higher and legal education in India. A visionary academician, Prof. Bhandari has founded India's pioneering educational start-up, *Infinity Law-Tech Educational Services (ILTES)*, which focuses on the interface between law and transformative technologies such as Blockchain, Artificial Intelligence, FinTech, and the Internet of Things, with particular emphasis on regulatory compliance. He has further established the *ILTES Global Online Academy (IOGA)*, a world-class platform dedicated to studies, research, training, and consultancy in the evolving domain of Technology and Law. Through this initiative, he actively invites law-tech scholars to collaborate and contribute to this growing academic ecosystem. Prof. Bhandari is deeply committed to creating awareness among university and college teachers and students across India regarding the emerging field of Law and Technology. A renowned motivational speaker, he has delivered more than 1500 extension and extramural lectures across nearly 100 universities in India and abroad. His areas of expertise include Higher and Legal Education, Constitutional Law, Human Rights, Intellectual Property Rights, and emerging technological developments in the legal domain. Over the years, he has also built a vast global network of experts from diverse disciplines, fostering interdisciplinary dialogue and collaboration.

Plenary Speaker 3



Sr. Advocate Pradeep Rai
Supreme Court of India
Vice President
Supreme Court Bar Association
NEW DELHI.

With over 27 years of experience as a Senior Advocate at the Supreme Court of India, sir has devoted his professional journey to the pursuit of justice, the advancement of legal reforms, and the strengthening of the rule of law. He presently serves as the Vice President of the Indian Society of International Law, and as Chairman of both the India Legal Aid Centre and the India Legal Research Foundation, where his work focuses on improving access to justice, fostering legal awareness, and promoting research-driven policy development. He has had the privilege of serving two terms as Vice President and one term as Senior Executive Member of the Supreme Court Bar Association (SCBA). During this time, he actively contributed to initiatives that had a tangible impact on the legal community, including securing land allotment for lawyers, facilitating the establishment of a Railway Reservation Counter within the Supreme Court premises, and introducing welfare-oriented discounted schemes for advocates. In addition, he founded and led several key SCBA committees, namely the Health, Grievance, Cultural, and Training and Professional Excellence Committees, with the aim of enhancing the professional environment and support systems available to members of the Bar. He firmly believes that a just society is built upon a legal system that is accessible, transparent, and responsive to human needs. Guided by this principle, he remains committed to contributing meaningfully to the legal profession and to the broader cause of justice.

Plenary Speaker 4



Advocate Joseph Rony Jose

Central Government Counsel at High Court of Kerala
KERALA.

Advocate Joseph Rony Jose is presently serving as Central Government Counsel before the High Court of Kerala and is also a Notary Public appointed by the Government of India. He has previously held the position of Executive Committee Member of the Kerala High Court Advocates' Association. He has an extensive litigation practice, with more than 40 judgments in cases he has appeared in being reported in reputed law journals such as KLT, KHC, AIR, ILR, and KLJ. He is also empanelled as a Panel Advocate under the Nyaya Bandhu Pro Bono Legal Services Programme of the Government of India. Notably, he appeared, argued, and successfully contributed to the establishment of the Ernakulam and Kozhikode Benches of the Tribunal for Local Self Government Institutions in W.P.(C) No. 17152 of 2014.

Plenary Speaker 5



Prof. Subodh K. Singh

Head of Department
Harish Chandra P.G. College
VARANASI.

Professor (Dr.) Subodh K. Singh is a distinguished academic and an eminent authority in the field of Criminal Law. He completed his entire higher education at Banaras Hindu University, one of India's premier institutions of legal education. With a remarkable academic career spanning over three decades, he retired as Professor, Dean, and Head of the Department at the Faculty of Law, Harish Chandra P.G. College, Varanasi, after rendering more than 33 years of dedicated service. He brings with him over 27 years of rich teaching experience in Criminology and Criminal Law, earning recognition for his clarity, depth, and commitment to legal education. Complementing his academic pursuits, Professor Singh also served as a Public Prosecutor (Gazetted Officer) for the Government of Uttar Pradesh for a period of seven years. During this tenure, he actively conducted prosecutions before the courts at Chandauli Court, thereby gaining valuable practical exposure and

strengthening his applied understanding of criminal justice administration. Professor Singh has made substantial scholarly contributions to the discipline. He has authored more than 38 research papers published in reputed national and international journals. His academic mentorship is reflected in the successful award of Ph.D. degrees to five research scholars under his guidance. He has also actively participated in the academic community, presenting papers at over 65 national and international conferences. At present, he continues to contribute to legal education as a Visiting Faculty at Rani Durgawati University, Jabalpur. He is frequently invited to deliver lectures and conduct academic sessions at various prestigious institutions and UGC Academic Staff Colleges across India, including those in Meerut, Bareilly, Lucknow, and Jabalpur. In addition to his academic and professional engagements, Professor Singh has been associated with several Public Service Commissions, where he has undertaken a number of confidential and prestigious assignments, reflecting the trust reposed in his expertise and integrity.

Technical Session Expert



Dr. Devinder Singh Anand

Associate Professor
UILS, Chandigarh University
CHANDIGARH.

Dr. Devinder Singh Anand is currently serving as an Associate Professor and Academic and Administrative Coordinator at University Institute of Legal Studies, Chandigarh University. He has made significant academic contributions with the publication of 12 research papers in Scopus-indexed and peer-reviewed journals. He is also associated with STM Journals as a reviewer. Dr. Anand is a General Member of the Global Alliance for Justice Education and is affiliated with the United Nations ECOSOC (User ID: 71694596). He holds memberships in reputed professional bodies such as the International Association of Academic Plus Corporate and the International Teachers Association. He has also contributed academically as a Member of the Board of Studies (BOS), actively participating in the creation and review of syllabi. In addition to his academic engagements, he has extensive teaching experience, having worked as a Senior Educator in CLAT, NDA, and K–12 verticals.

Technical Session Expert



Dr. Akshaya Desai
Assistant Professor
Kirit P. Mehta School of Law
NMIMS
MUMBAI.

Dr. Akshaya Desai is the Head of the Department of Postgraduate Legal Studies (LL.M.) at Kirit P. Mehta School of Law, NMIMS, Mumbai. She is a distinguished legal academic with over a decade of teaching and research experience in Health Law, Human Rights, Jurisprudence, and Constitutional Law. She has made significant academic contributions with the publication of 12 research papers in Scopus-indexed and peer-reviewed journals. She was honoured with the Best Faculty Award (NMIMS, 2024) in recognition of her academic excellence and contributions to legal education. As Head of Postgraduate Legal Studies, she has been instrumental in effectively leading and strengthening the LL.M. programme across four specializations. Dr. Desai is actively involved in institutional development and quality enhancement. She serves as the NAAC Single Point of Contact (SPOC) for Criterion 3, focusing on Research, Innovation, and Extension, and also acts as the Affiliation Liaison with the Bar Council of India. Her academic profile is further enriched by her experience in international collaborations, curriculum design, and academic leadership. She is currently supervising two doctoral scholars, contributing to advanced legal research and scholarship.

Technical Session Expert



Dr. Rishi Dev
HOD Tax Department, School of Law
Kalinga Institute of Industrial Technology (KIIT)
Bhubaneshwar
Odisha.

Dr. Rishi Dev is the Head of the Tax Department at the School of Law, Kalinga Institute of Industrial Technology (KIIT-DU), Bhubaneswar, Odisha. He has made notable academic contributions through the publication of 12 research papers in Scopus-indexed and peer-reviewed journals, along with 12 book chapters to his credit. His research acumen is further reflected in the

grant of three patents. Dr. Dev is also an active member of the Centre for Tax and Public Finance at the School of Law, KIIT-DU, and serves as the SAP Coordinator, contributing significantly to academic and institutional development.

Technical Session Expert



Dr. Kiran Kumari
Assistant Professor
School of Law
Mody University
Rajasthan.

Dr. Kiran Kumari is Assistant Professor at Mody University of Science & Technology, Lakshmangarh, Sikar, Rajasthan, with dual specializations in Human Resource Management and Marketing Management. She has made notable academic contributions through the publication of 21 research papers in Scopus-indexed and peer-reviewed journals. Her scholarly achievements also include four patents and five edited books, reflecting her active engagement in research, innovation, and academic development.

****

Table of Contents

MESSAGE FROM THE I/C PRINCIPAL 29
KEYNOTE & PLENARY SPEAKERS 31
Eminent Experts Presiding Over Technical Sessions 32
BRIEF PROFILE OF EMINENT SPEAKERS/EXPERTS 33
Robo-Judges and Black Boxes: Can We Trust AI with the Scales of Justice? 45
Advocate Joseph Rony Jose 45
Technology, Artificial Intelligence and Psychological Well-being: Challenges and Opportunities 50
By Bhawna Mittal 50
AI-Generated Works and the Copyright Challenge of Ownership 69
By Sanjay Achhra 69
By Dr. Kiran Sharma 69
Rethinking Copyright Ownership and Originality in the Age of Generative AI: Legal Challenges and Future Directions 81
By Mahesh Bapurao Suryawanshi 81
By Dr. Pankaj Balajirao Palekar 81
Artificial Intelligence and Psychiatric Disorders 89
By Ranjana S. Kurhade 89
By Dr. Rajendra B. Patil 89
Algorithmic Bias and the Erosion of Substantive Equality in India 98
By Charmi 98
By Vasundhara 98
कृत्रिम बुद्धिमत्ता: आधुनिक समाजव्यवस्थेवरील परिणाम आणि आव्हाने 111
By Dr. Supriya Gaikwad 111
Impact of Contempt of Court as a Ground to Restrict Freedom of Speech and Expression – A Critique 116
By Adv. Swargajit Puran Wasnik 116
Regulation of Artificial Intelligence in India: A Comparative Analysis with Global Frameworks 125
By Adv. Harjot Kaur 125
Accountability for AI-Driven Decisions: Frameworks, Failuers and the Path to Global Standards 136
By Yamini Choudhary 136
By Ananya Acharya 136
Artificial Intelligence in Judiciary Challenges, Opportunities and Constitutional Implications 151

By Jaya Shyamsunder Varshney 151
Artificial Intelligence and Law 168
By Sufiya Sultana Nisar Ahmad 168
Artificial Intelligence in Judiciary and Access to Justice 171
By Ashok Kumar Yadav 171
Bridging the Gap: Evaluating International Human Rights Frameworks in the Age of Artificial Intelligence 179
By Jaspreet Kaur 179
By Dr. Rashmi Gupta 179
AI in Judiciary and Access to Justice 200
By Asmita Antani 200
Artificial Intelligence in Corporate Governance and Compliance 204
By Mohini Khushal Paliwal 204
Artificial Intelligence and Cyber Law: Analyzing Information Technology Act, 2000 206
By Nishant Vishnu Parulekar 206
Artificial Intelligence and Right to Privacy 211
By Parikshit Pandey, S.Y. LL.B. SEM. IV 211
Artificial Intelligence and Right to Privacy 215
By Mamta R. Shukla 215
AI in Corporate Governance and Compliance 224
By Amol Avinash Parulekar 224
AI in Corporate Governance and Compliance 227
By Ketan Anil Patil 227
Artificial Intelligence and Law: Navigating Ethics, Regulation, and Justice 230
By Pranali Khengle 230
Transforming the Impact of Artificial Intelligence on Education System 234
By Shreya Ganesh Surve 234
Artificial Intelligence and Law: Navigating Ethics, Regulations and Justice 245
By Pankaj U. Soni 245
Artificial Intelligence and the Right to Privacy: A Legal Analysis 257
By Sanjeevani Deepak Shahasane 257
Artificial Intelligence and the Right to Privacy 266
By Anjali Suryakant Gaikwad 266

By Pinki Sunderlal Joshi 266
Artificial Intelligence in Judiciary and Access to Justice 277
By Mamta R. Shukla 277
Artificial Intelligence in Judiciary and Access to Justice 284
By Ashok Kumar Yadav 284
Artificial Intelligence in Corporate Governance and Compliance 292
By Mohini Khushal Paliwal 292
Artificial Intelligence and Information Technology Act, 2000 294
By Nishant Vishnu Parulekar 294
Artificial Intelligence in Judiciary and Access to Justice 299
By Shivani Shantaram Tiware 299
Ownership of Artificial Intelligence Generated Works 307
By Neha Waghmare 307
Artificial Intelligence in Judiciary and Access to Justice 317
By Ragini Birbal Yadav 317
Ethical Artificial Intelligence and Human Rights 332
By Swati Kowe 332
Artificial Intelligence in Judiciary and Access to Justice 343
By Asmita Antani 343
Artificial Intelligence in Criminal Investigation and Evidence 347
By Prerana Sangle 347
Freedom of Speech Versus Artificial Intelligence Generated Content: Navigating Rights, Responsibility and Regulation 355
By Shivam Kumar 355
Cybercrimes against Women in India: Emerging Digital Threats and Legal Remedies 369
By Manya Mishra 369
By Rida Moledina 369
Social Media and Women's Rights Advocacy Remedies 378
By Pradip R. Dhotre 378
Artificial Intelligence in Criminal Investigation and Evidence 383
By Virendra R. Sharma 383
A Comparative Study of Global Bankruptcy Frameworks and the Indian Insolvency and Bankruptcy Code (IBC), 2016 387

By Bhumi Manjara 387
Artificial Intelligence in Criminal Investigations and Evidence: Opportunities, Challenges and the Road Ahead 393
By Sneha Kadam 393
Intellectual Property Rights in Artificial Intelligence Generated Works 403
By Abhishek Ramanlal Purohit 403
Artificial Intelligence and the Right to Privacy 415
By Gaurav Mahendra Kadam 415
A Study on Challenges in Regulating Emerging AI Technologies 425
By Reekita Fernandes 425
Algorithmic Bias and Discrimination: Examining the Implications of Artificial Intelligence on Gender Equality and Legal Rights in India 430
By Soumili Das 430
भारतीय न्यायव्यवस्थेतील कृत्रिम बुद्धिमत्ता (AI) आणि न्यायप्राप्तीचा अधिकार: संधी, आव्हाने आणि संवैधानिक गरज 442
By Praniti Pradip Dhotre 442
Smart Contract and Artificial Intelligence in Commercial Law 450
By Anuradha M. Vishwakarma 450
Artificial Intelligence and its Impact on Legal Progression 463
By Sejal Sunil Bavisha 463
Intellectual Property Rights in AI-Generated Works: A Contemporary Legal Analysis 465
By Chetan Ravikant Gawade 465
Artificial Intelligence in Criminal Investigation and Evidence 472
By Vikas Vilas Mestry 472
Artificial Intelligence and the Right to Privacy 478
By Pravin Ratansingh Thakur 478
Artificial Intelligence in Criminal Investigation and Evidence 486
By Krishna Kumar Dhruv Singh 486
Artificial Intelligence and Right to Privacy 492
By Vidhi Chetankumar Shah 492
By Aashish Devang Mehta 492
Artificial Intelligence in Law Navigation: Regulation and Justice 497
By Pinki Babu Gavade 497

Freedom of Speech V/s AI-Generated Content 502
By Roshan Ramchandra Dhotre 502
Artificial Intelligence and Law 505
By Daulat Dayma 505
By Monu Gupta 505
Artificial Intelligence and Infringement Challenges 509
By Vijiyeta Chavan 509
Data Protection and Privacy in the Age of Artificial Intelligence: A Critical Analysis of India's Legal Framework and Global Regulatory Approaches 514
By Chittranjan Kiran Wagh 514
Artificial Intelligence and the Right to Privacy: Examining the legal, Ethical and Constitutional Dimensions of AI-Driven Data Practices under the Emerging Framework of Privacy as a Fundamental Right 522
By Durgaprasad B. Bhadouria 522
Cyber Crimes against Women in India: Emerging Digital Threats and Legal Remedies 530
By Manya Mishra and Rida Moledina 530
Artificial Intelligence in the Judiciary and Access to Justice 539
By Vishwas Vinod Tiwari 539
Artificial Intelligence Surveliance Technologies and Fundamental Rights 543
By Tanu Tiwari 543
Artificial Intelligence and Law: Balancing Innovation with Justice 549
By Mohammed Abdul Habib Shelia 549
Artificial Intelligence: Transforming the Future of Humanity 555
By Pankaj Gupte 555
Artificial Intelligence and the Judiciary: Transforming Justice Delivery in the Digital Age 564
By Adv. (Dr.) Tahira Siddique 564
Artificial Intelligence and the Right to Privacy 575
By Ameya Vinayak Varde 575
Data Protection, Privacy and Surveillance 581
By Anish H. Singh 581
Artificial Intelligence in Judiciary and Access to Justice 584
By Nandini Ramesh Prajnale 584

Robo-Judges and Black Boxes: Can We Trust AI with the Scales of Justice?

Advocate Joseph Rony Jose
Central Government Counsel, High Court of Kerala & Notary, Government of India.
Email: josephronyjose4u@gmail.com.

Introduction

AI is no longer a futuristic concept; it is an active participant in the legal ecosystem. AI serves as a powerful assistant for predictive analytics (forecasting case outcomes), automated document review, and enhancing access to justice via chatbots and online dispute resolution. While AI promises efficiency, it challenges the core tenets of 'human' justice—empathy, discretion, and the 'right to be heard' by a human mind.

Ethical Challenges: The "Black Box" Problem

The primary ethical concern in legal AI:

1. The Explainability Gap (The "How" and "Why")

Traditional legal decisions are built on Ratio Decidendi (the reason for the decision). In a court of law, a judge must explain their logic so the parties can understand it and, if necessary, appeal it.

i. ***Neural Complexity:*** Modern Deep Learning models use millions of parameters. Even the developers often cannot explain exactly why the AI chose "Variable A" over "Variable B" in a specific instance.

ii. ***The Legal Conflict****:* If a defendant is denied bail by an algorithm, but the "reasoning" is hidden in complex math, the defendant's right to a reasoned order is effectively nullified.

2. Algorithmic Bias & the Feedback Loop

AI does not have a moral compass; it has data. If the "training data" contains human prejudice, the AI treats that prejudice as a mathematical rule. In the U.S., the COMPAS algorithm was famously scrutinized for giving higher recidivism (risk of re-offending) scores to Black defendants compared to White defendants, even when their criminal records were similar. ProPublica's 2016 analysis found Black defendants were nearly twice as likely (44.9% vs. 23.5%) to be misclassified as higher risk.

3. Violation of Principles of Natural Justice

In Administrative and Constitutional Law, the Principles of Natural Justice (specifically Audi Alteram Partem—hear the other side) require that a person knows the evidence against them.

i. ***Right to Confront Evidence***: If the "evidence" is an algorithmic score, how can a lawyer cross-examine a mathematical formula?

ii. ***Arbitrariness:*** A decision that cannot be explained is, by definition, arbitrary. Under Article 14 of the Indian Constitution, "arbitrariness is the antithesis of equality." A black-box AI decision risks being struck down as unconstitutional because it lacks a rational nexus between the data and the outcome.

4. The Transparency Gap vs. Proprietary Secrets

A major hurdle in solving the black box problem is Intellectual Property (IP).

Companies that develop legal AI often refuse to disclose their source code or training data, claiming it is a "trade secret." This creates a clash between a company's right to profit and a citizen's right to a fair trial. Legal scholars argue that when AI is used for "public functions" (like policing or judging), due process must override trade secrets.

III. The Regulatory Landscape: From Theory to Statute

1. The EU AI Act: The Risk-Based Hierarchy

The European Union's approach is the world's first comprehensive horizontal AI law. It categorizes AI systems based on the level of risk they pose to society. Systems that are a clear threat to safety or rights. This includes Social Scoring by governments (similar to credit scores but for behavior) and real-time biometric identification in public spaces.

High Risk (Strictly Regulated) this includes AI used in justice and democratic processes. For example, if a court uses AI to summarize case files or predict recidivism, that AI must undergo rigorous testing, maintain detailed logs, and ensure human oversight. Limited/Minimal Risk includes chatbots or AI-generated entertainment, which primarily require transparency (users must know they are interacting with an AI).

2. India's 2026 Framework: A Response to Digital Harms

India has moved aggressively to address the immediate societal threats posed by AI, specifically targeting Synthetically Generated Information (SGI)—commonly known as deepfakes.

The IT (Amendment) Rules, 2026 effective as of February 20, 2026, these rules represent a significant shift in intermediary liability.

i. ***The 3-Hour Takedown Rule***: Previously, social media platforms had 36 hours to remove flagged content. The 2026 rules slashed this to 3 hours for harmful AI-generated content (such as non-consensual deepfake pornography or misinformation that could incite violence). This acknowledges that AI content can go "viral" and cause irreparable damage in minutes.

ii. ***Traceability and Watermarking***: The law now mandates that any AI-generated content must contain embedded metadata. If a deepfake is circulated, authorities must be able to trace it back to the "first originator" or the tool used to create it.

iii. ***Due Diligence for Platforms***: Tech companies are no longer just passive hosts. They are now legally required to deploy "proactive detection tools" to identify and label SGI before it is even reported by users.

IV. Justice and the Bench: AI in the Courtroom

1. Judicial Ethics: The Non-Delegable Duty

A judge's primary duty is the "application of an independent mind."

i. ***The Risk of "Automation Bias":*** Research shows that humans tend to trust automated suggestions even when they contradict their own observations. If a judge relies on an AI-generated summary of 5,000 pages of evidence, they may overlook subtle nuances that the AI deemed "irrelevant."

ii. ***Impartiality:*** If the underlying algorithm of a judicial tool is biased, the judge's final order—no matter how well-written—becomes an "infected" product. Ethically, a judge cannot blame the software for a biased ruling; the legal responsibility remains with the human on the bench.

2. The Confidentiality Crisis: Public vs. Private AI

The "open" nature of many AI models creates a massive security loophole for the judiciary.

i. ***Data Leakage***: When a lawyer or judge prompts a public AI with specific facts of a case, that data often becomes part of the AI's training set. This can lead to a breach of Attorney-Client Privilege or In-Camera proceedings.

ii. ***Case Study (The "ChatGPT Lawyer"):*** In *Mata v. Avianca (2023),* lawyers used AI to draft a brief that included completely hallucinated (fake) case citations. In a courtroom setting, this is not just an error; it is a threat to the integrity of the record.

3. Due Process: The "Right to a Human Judge"

The most profound constitutional question is whether a citizen can be deprived of life, liberty, or property by a machine. *Does Audi Alteram Partem (hear the other side) means being heard by a human?* A human judge can perceive demeanour, witness hesitation, and social context—things AI currently cannot "feel." In law, the power to judge is a sovereign function delegated to human officials. If an AI "drafts" an order and a judge merely sign it without review, it is an unlawful delegation of power. Using AI to find precedents or proofread a draft. Letting AI determine the "guilt" or "liability" of a party.

V. Conclusion

The legal profession must resist the "Black Box" by enforcing a Meaningful Human Control (MHC) standard. AI should act as a "Co-pilot," providing data synthesis and draftsmanship, but the "Commander" must be a human legal professional. Legal decisions require more than statistical probability; they require moral agency. A machine cannot feel the weight of a sentence or the nuance of a settlement; it can only calculate it.

The most critical question for 2026 is who pays for the AI's mistake? We are moving toward a Three-Fold Liability Model:

i. The Developer (Product Liability): If the AI has a "design defect"—such as a coded bias or a hallucination flaw that the developer knew about but did not fix—the tech company is liable.

ii. The Institution (Vicarious Liability): Just as a hospital is liable for a doctor's negligence, a law firm or court system is liable if they deploy an unvetted, high-risk AI tool that causes harm.

iii. The User (Professional Negligence): Under the standards of Professional Negligence, a lawyer or judge who signs off on an AI output without verifying its accuracy is personally responsible. In law, "The AI told me so" is not a valid defense. Regulations like the 2026 India IT Rules and the EU AI Act are vital, but they are only the "hardware" of safety. The "software" must be our

commitment to judicial ethics. As we navigate this new era, our goal is not to create "Artificial Justice" but to use "Artificial Intelligence" to achieve a more efficient, accessible, and truly human justice system.

****

Technology, Artificial Intelligence and Psychological Well-being: Challenges and Opportunities

By Bhawna Mittal

Ayurveda Consultant and Yoga Educator with formal medical training in Ayurveda
Indiana, United States of America

Abstract:

The rapid integration of technology and Artificial Intelligence (AI) into everyday life has transformed human interaction, education, healthcare, employment, and governance. While technological advancements have improved accessibility, productivity, and decision-making, concerns regarding psychological well-being have simultaneously emerged. Increased screen dependency, algorithmic influence, digital fatigue, information overload, cyberbullying, privacy concerns, and AI-driven workplace changes have created significant psychological challenges. At the same time, AI-based mental health interventions, telemedicine, digital counselling, predictive healthcare systems, and personalized well-being applications have opened new opportunities for enhancing mental health outcomes. This article examines the intersection between technology, Artificial Intelligence, and psychological well-being, highlighting challenges, opportunities, legal considerations, and policy recommendations from an interdisciplinary perspective.

Keywords: *artificial intelligence, technology, mental health, digital well-being, psychological health, digital ethics, legal regulation, mental health governance*

Introduction

The twenty-first century has witnessed unprecedented technological advancement. Artificial Intelligence has emerged as one of the most transformative innovations affecting multiple sectors including education, healthcare, legal systems, finance, and public administration. Technology has reshaped human behaviour and social interaction patterns. Smartphones, social media platforms, AI chatbots, wearable technologies, virtual reality systems, and machine learning applications influence psychological experiences daily. The expansion of digital ecosystems has generated both opportunities and concerns relating to psychological well-being.

Psychological well-being refers to an individual's emotional, social, and mental functioning, including life satisfaction, resilience, stress management, and emotional stability. The increasing dependence on digital technologies raises questions regarding how AI and technology contribute to mental wellness or psychological distress.

This article explores technological influence on psychological well-being through legal, social, ethical, and interdisciplinary dimensions.

2. Understanding Technology, Artificial Intelligence, and Psychological Well-being

Technology has become an integral component of contemporary human life and significantly influences behavioural patterns, psychological functioning, social interaction, and emotional well-being. The rapid development of digital infrastructure, Artificial Intelligence systems, internet-based communication, and smart technologies has transformed how individuals learn, work, communicate, and manage daily activities. While technology offers unprecedented convenience and efficiency, its influence on human behaviour is multifaceted and produces both positive and negative psychological outcomes. Technological interaction shapes cognitive processes such as attention, memory, emotional regulation, interpersonal communication, and decision-making abilities.

Digital communication platforms have fundamentally transformed human interaction by enabling instant connectivity across geographical boundaries. Email systems, instant messaging applications, video conferencing tools, and collaborative digital platforms facilitate communication in personal, academic, and professional settings. Individuals can exchange information rapidly, maintain relationships over long distances, and participate in virtual communities.

From a psychological perspective, digital communication offers benefits such as social connectedness, emotional support, and increased accessibility to information. During emergencies, pandemics, or situations involving physical isolation, technology-mediated communication serves as an important mechanism for preserving interpersonal relationships.

However, excessive dependence on digital communication may alter traditional interpersonal dynamics. Face-to-face interactions contribute significantly to emotional intelligence, empathy development, and non-verbal communication skills. Continuous reliance upon text-based or virtual communication can reduce opportunities for direct human engagement. Individuals may also experience communication fatigue, digital stress, and anxiety arising from constant online availability expectations. For example, students engaged extensively in virtual communication platforms may experience reduced interpersonal engagement in physical classroom settings, potentially affecting social confidence and emotional expression.

Social media platforms have emerged as dominant technological environments influencing human behaviour and psychological functioning. Platforms facilitating content sharing, networking, and online interaction affect self-perception, emotional well-being, social comparison mechanisms, and identity formation.

Social media creates opportunities for knowledge dissemination, professional networking, public awareness campaigns, and social participation. Educational institutions, legal professionals, healthcare organizations, and governmental agencies increasingly use social media for information dissemination and public engagement.

Despite these benefits, extensive social media exposure may generate psychological concerns. Individuals frequently compare their achievements, appearance, or lifestyles with curated online representations presented by others. Such comparisons may contribute to anxiety, reduced self-esteem, dissatisfaction, and emotional distress.

Another emerging concern involves the phenomenon commonly referred to as "Fear of Missing Out" (FOMO), wherein individuals experience anxiety regarding social activities or experiences perceived to be occurring without their participation. Continuous exposure to algorithm-driven content may also contribute to compulsive usage patterns and digital dependency. For instance, law students facing demanding academic schedules may experience increased stress when balancing academic obligations with continuous social media engagement.

Technological advancements have substantially transformed educational systems through remote learning environments, online classrooms, virtual learning management systems, and Artificial Intelligence-enabled educational tools. Remote learning technologies enhance educational accessibility by enabling students to participate in academic programmes irrespective of geographical barriers.

Digital educational platforms provide flexibility, personalized learning opportunities, recorded lectures, collaborative learning environments, and increased accessibility for students with diverse educational needs. Artificial Intelligence-based educational technologies further support adaptive learning experiences by tailoring content according to individual learning patterns.

However, prolonged engagement with remote learning systems may create psychological challenges. Extended screen exposure contributes to digital fatigue, reduced concentration, eye

strain, and cognitive exhaustion. Students participating exclusively in virtual academic environments may experience social isolation and diminished opportunities for collaborative interpersonal learning.

Research increasingly indicates that sustained online educational engagement may influence attention spans and increase mental exhaustion, particularly among students managing demanding academic disciplines such as law, medicine, or engineering. For example, law students participating in extensive online lectures, legal research databases, and digital assignments may encounter elevated stress levels due to prolonged cognitive engagement with technological systems.

Technological transformation has significantly reshaped workplace structures through remote employment models, hybrid work arrangements, cloud-based collaboration systems, and Artificial Intelligence-enabled professional tools. Online work environments offer flexibility, efficiency, and improved organizational communication.

Employees can access professional resources remotely, collaborate across jurisdictions, and maintain productivity through virtual platforms. Technological integration has particularly enhanced sectors such as legal services, financial services, education, healthcare administration, and information technology.

Nevertheless, online work environments also generate psychological implications. Continuous virtual engagement may blur boundaries between professional responsibilities and personal life, contributing to work-related stress and emotional exhaustion. The expectation of constant availability through digital communication channels may further intensify workplace pressure.

Additionally, virtual work arrangements may reduce opportunities for social interaction and peer support, which are essential components of workplace psychological well-being.

For example, legal professionals increasingly using digital legal research platforms, virtual hearings, and technology-driven case management systems may benefit from efficiency gains while simultaneously facing concerns relating to digital workload intensity and occupational stress.

Entertainment technologies constitute another major dimension influencing human behaviour. Streaming platforms, online gaming environments, virtual reality systems, Artificial

Intelligence-generated content, and interactive digital media increasingly shape leisure activities and emotional experiences.

Entertainment technologies offer important psychological benefits including relaxation, stress reduction, recreational engagement, and social connection. Digital entertainment platforms also facilitate cultural exchange and educational enrichment through documentaries, educational content, and interactive learning experiences.

However, excessive engagement with entertainment technologies may contribute to problematic behavioural outcomes. Prolonged gaming exposure, binge consumption of digital media, and continuous entertainment engagement may interfere with sleep quality, productivity, attention regulation, and physical activity patterns.

Emerging psychological concerns include behavioural dependency, compulsive digital engagement, and reduced capacity for sustained concentration on cognitively demanding tasks. For instance, prolonged engagement with gaming or streaming platforms among students may adversely affect study routines, time management, and academic performance.

Technological innovation has significantly expanded health monitoring capabilities through wearable technologies, fitness applications, Artificial Intelligence-based wellness platforms, and digital health ecosystems. Health monitoring applications enable individuals to track physical activity, sleep cycles, heart rate variability, dietary habits, and psychological wellness indicators.

Artificial Intelligence-enabled health technologies increasingly support early identification of behavioural trends associated with stress, anxiety, fatigue, and other health concerns. Such applications promote preventive healthcare approaches and empower individuals to adopt informed lifestyle decisions.

Digital health monitoring systems may also enhance patient engagement, improve healthcare accessibility, and facilitate personalized health interventions.

However, excessive dependence upon health monitoring technologies may create psychological concerns in certain contexts. Constant self-monitoring may increase anxiety among individuals who become excessively focused upon health metrics. Continuous exposure to health-related notifications or wellness indicators may occasionally contribute to heightened stress responses. For example, individuals continuously monitoring physiological indicators through

wearable devices may experience anxiety when technological measurements deviate from expected patterns despite the absence of actual health concerns.

Digital technologies undoubtedly enhance efficiency, accessibility, and convenience across multiple dimensions of life. However, technology simultaneously influences attention span, stress regulation, emotional functioning, interpersonal relationships, behavioural habits, and psychological resilience.

The growing integration of Artificial Intelligence and digital technologies necessitates balanced technology usage patterns that prioritize psychological well-being while preserving the benefits of technological advancement. Educational institutions, workplaces, policymakers, and mental health professionals increasingly recognize the importance of promoting responsible digital engagement to ensure that technological innovation contributes positively to human development and psychological health.

Artificial Intelligence (AI) refers to computational systems and machine-based technologies designed to perform tasks that traditionally require human intelligence. These systems simulate cognitive functions such as learning, reasoning, problem-solving, decision-making, language processing, pattern recognition, and predictive analysis. AI operates through technologies such as machine learning, natural language processing, deep learning algorithms, and data analytics, enabling computer systems to analyze large volumes of information, identify patterns, and generate responses or recommendations with increasing accuracy.

The growing integration of Artificial Intelligence into healthcare, education, workplace management, and digital communication has significantly influenced psychological well-being. Psychological well-being generally encompasses emotional stability, stress management, mental resilience, cognitive functioning, and overall emotional health. AI technologies increasingly support mental health services by improving accessibility, facilitating early intervention, and enabling personalized psychological support. However, these developments also raise concerns regarding privacy, ethical governance, algorithmic accountability, and excessive dependence on technology.

One important AI application influencing psychological well-being is the development of *mental health chatbots*. Mental health chatbots are AI-driven conversational systems designed to interact with individuals experiencing emotional distress, stress, anxiety, or other mental health

concerns. These systems utilize natural language processing technologies to simulate supportive conversations and provide coping strategies, emotional guidance, and behavioural recommendations.

Mental health chatbots can offer immediate support during periods when access to mental health professionals may be limited. They provide round-the-clock availability, reduce barriers associated with stigma, and increase accessibility to preliminary psychological assistance. Students experiencing academic stress, working professionals facing burnout, or individuals experiencing emotional difficulties may utilize AI-based mental health platforms for initial emotional support. For example, an individual experiencing workplace anxiety may engage with an AI chatbots that provides stress management exercises, breathing techniques, or guidance on seeking professional mental healthcare when necessary.

Another important technological development involves *predictive behavioural analytics*. Predictive behavioural analytics refers to AI systems capable of identifying behavioural patterns and forecasting potential psychological concerns by analyzing large datasets. These systems evaluate behavioural indicators such as digital communication habits, social media engagement patterns, sleep behaviour, physical activity levels, and cognitive performance indicators.

Artificial Intelligence models can detect subtle behavioural changes that may indicate emerging mental health concerns before symptoms become severe. Early identification enables timely intervention and preventive healthcare measures. For instance, prolonged social withdrawal reflected through reduced online interaction combined with disrupted sleep patterns and reduced daily activity levels may indicate heightened psychological distress. Predictive analytics systems may identify such patterns and generate alerts encouraging supportive interventions.

A further development within Artificial Intelligence involves emotion recognition software. Emotion recognition technologies use facial recognition systems, speech analysis algorithms, physiological indicators, and behavioural data to identify emotional states such as stress, sadness, happiness, anxiety, or frustration.

These systems are increasingly applied within healthcare settings, educational institutions, and workplace wellness programmes. Emotion recognition software assists professionals in understanding emotional responses and designing interventions that support mental well-being.

For example, educational institutions using AI-supported learning environments may identify students demonstrating signs of prolonged stress or disengagement and provide academic or counselling support before academic performance deteriorates significantly.

However, emotion recognition technologies also generate ethical and legal concerns regarding privacy protection, informed consent, and potential algorithmic inaccuracies. Psychological assessment remains highly sensitive and requires careful regulatory oversight.

Artificial Intelligence also supports psychological wellness through personalized therapeutic interventions. Traditional mental healthcare approaches often follow standardized treatment methods, whereas AI technologies enable customized interventions tailored to individual behavioural patterns and psychological needs.

AI systems analyze user preferences, emotional responses, stress indicators, and engagement history to provide individualized recommendations for stress reduction, behavioural therapy exercises, mindfulness techniques, and wellness strategies. For instance, a law student experiencing examination stress may receive AI-generated recommendations involving time management techniques, relaxation exercises, personalized study scheduling support, and behavioural coping mechanisms based upon observed stress patterns.

Personalized interventions enhance treatment precision and increase the effectiveness of mental health support by recognizing that psychological experiences differ across individuals.

Another emerging development involves AI-enabled counselling support systems. Artificial Intelligence increasingly complements professional mental healthcare services by assisting counsellors, psychologists, and therapists in analyzing patient information and identifying intervention strategies.

AI-assisted counselling technologies may facilitate appointment scheduling, symptom tracking, progress monitoring, and preliminary behavioural assessment. These systems do not replace mental health professionals but rather function as supportive tools that enhance healthcare delivery efficiency. For example, counsellors managing large numbers of student mental health cases may utilize AI-based support systems to identify individuals requiring immediate intervention based upon behavioural trends and symptom progression patterns.

Educational institutions increasingly recognize AI-assisted counselling technologies as valuable resources for strengthening student wellness programmes and improving accessibility to mental health support services.

Technological advancements have also contributed to the development of wearable mental health monitoring devices. Wearable technologies such as smartwatches, biometric sensors, and fitness tracking devices increasingly integrate Artificial Intelligence capabilities to monitor psychological wellness indicators.

These technologies analyse physiological and behavioural markers including sleep quality, heart rate variability, stress levels, activity patterns, and emotional responses. Artificial Intelligence processes collected information to identify behavioural trends associated with mental well-being. For example, AI-enabled wearable devices may detect prolonged sleep disruption combined with elevated stress indicators and recommend behavioural interventions or professional healthcare consultation.

Wearable technologies support preventive mental healthcare by encouraging early detection and proactive wellness management. Such systems contribute to improved self-awareness and promote informed decision-making regarding psychological health. A practical illustration of Artificial Intelligence applications in psychological well-being involves depression detection technologies. AI mental health applications can identify behavioural indicators associated with depression by analyzing speech patterns, sleep cycles, communication behaviour, physical activity levels, and digital interaction trends.

Speech analysis technologies may detect changes in vocal tone, speech speed, or linguistic patterns associated with emotional distress. Sleep monitoring systems identify disruptions commonly linked with depression and anxiety disorders. Digital behavioural indicators such as social withdrawal, reduced engagement patterns, or altered daily routines further contribute to predictive assessment models. For example, an AI-based wellness platform may observe prolonged sleep irregularities, declining physical activity, and reduced social interaction patterns over several weeks. Such observations may generate recommendations encouraging psychological assessment or professional support.

Although Artificial Intelligence offers significant opportunities for strengthening psychological healthcare systems, ethical considerations remain essential. Data privacy protection,

informed consent mechanisms, algorithmic transparency, and responsible technological governance are necessary to ensure that AI technologies contribute positively to mental health outcomes without compromising human dignity and autonomy.

Artificial Intelligence represents a transformative force in mental healthcare and psychological well-being. When implemented responsibly, AI technologies have the potential to improve accessibility, personalize interventions, strengthen preventive healthcare approaches, and support mental wellness across diverse populations. However, maintaining an appropriate balance between technological innovation and ethical responsibility remains essential for ensuring sustainable and human-centred mental healthcare systems in the digital era.

3. Challenges Associated with Technology and Psychological Well-being

Excessive digital engagement has emerged as a significant concern in contemporary society due to the increasing dependence on smartphones, social media platforms, online entertainment systems, virtual communication tools, and digital learning environments. Technological advancements have undoubtedly enhanced accessibility, convenience, and connectivity. However, prolonged and uncontrolled digital exposure can adversely influence cognitive functioning, emotional stability, physical health, and social behaviour. Individuals, particularly adolescents and young adults, are increasingly vulnerable to the negative consequences of excessive technology use because of continuous interaction with digital platforms for education, communication, entertainment, and social networking.

One of the major consequences of excessive digital engagement is *reduced concentration and diminished attention span*. Continuous exposure to notifications, social media updates, emails, and digital content encourages multitasking behaviour, which affects an individual's ability to maintain sustained focus on a single activity. Human cognitive functioning requires uninterrupted attention for effective learning, problem-solving, and information retention. Excessive switching between applications and digital tasks often creates cognitive overload.

The modern digital environment is designed to capture and retain user attention through algorithm-based recommendations, instant notifications, and endless content streams. This constant stimulation can *weaken deep concentration abilities and increase distractibility*. Students frequently experience difficulty focusing on academic tasks due to habitual checking of smartphones or social media applications. For instance, university students preparing for

examinations may interrupt their studies repeatedly to respond to messages or browse social networking platforms, thereby reducing productivity and impairing information retention.

Excessive digital engagement significantly contributes to *sleep disturbances and sleep-related disorders.* Prolonged screen exposure, particularly before bedtime, affects normal sleep cycles by interfering with melatonin production, a hormone responsible for regulating sleep patterns. Blue light emitted from smartphones, tablets, and computer screens delays the body's natural sleep mechanisms.

Additionally, emotional stimulation arising from digital interactions, online gaming, or social media engagement may *increase mental alertness at times when the body requires rest*. Individuals who remain digitally connected late into the night often experience delayed sleep onset, reduced sleep quality, interrupted sleep patterns, and daytime fatigue.

Sleep deprivation can further influence emotional regulation, cognitive functioning, academic performance, and physical health. Chronic sleep disturbances may increase susceptibility to anxiety, stress-related conditions, and reduced psychological resilience. For example, university students engaged in prolonged social media usage or online streaming activities late at night frequently report daytime exhaustion, difficulty concentrating during lectures, and reduced academic efficiency.

Excessive dependence on digital technology may contribute to *anxiety-related symptoms*. Constant online engagement creates continuous exposure to information, social comparison, performance expectations, and social validation mechanisms. Individuals often develop concerns relating to online image management, responsiveness to digital communication, and fear of missing important updates or events.

A commonly observed phenomenon associated with digital overuse is *"Fear of Missing Out" (FOMO)*, wherein individuals experience psychological discomfort arising from concerns that others may be participating in rewarding experiences without them. Social media environments frequently reinforce comparison behaviours that influence self-esteem and emotional stability.

Continuous digital exposure may also create *cognitive overload through excessive information consumption*. Exposure to distressing news, social conflicts, cyberbullying, and negative online interactions further contributes to psychological stress. For instance, university

students spending prolonged hours on social media frequently report increased stress levels, feelings of inadequacy arising from social comparison, and heightened anxiety associated with academic and social expectations.

Excessive digital engagement may also contribute to *social withdrawal and reduced participation in face-to-face interactions*. Although technology facilitates communication, overdependence upon virtual interactions can weaken interpersonal relationship skills and reduce opportunities for meaningful social engagement.

Individuals heavily engaged in digital environments may gradually *substitute physical social interaction with online communication*. This behavioural shift can diminish emotional connectedness, empathy development, and interpersonal communication abilities.

Young individuals who spend extensive time engaged with digital devices may demonstrate *reluctance toward social participation, family interaction, and community engagement activities*. Over time, social isolation may increase vulnerability to loneliness and emotional distress. For example, adolescents who spend prolonged periods engaged in gaming platforms or social media environments may increasingly prefer virtual interaction over participation in family discussions, social gatherings, or extracurricular activities.

Excessive digital engagement may contribute significantly to *emotional exhaustion, commonly referred to as digital fatigue or technological burnout*. Continuous exposure to digital information, academic responsibilities, workplace communication, and social networking creates sustained cognitive and emotional demands.

Digital environments often *generate pressure to remain constantly accessible and responsive*. Academic obligations, professional expectations, social interactions, and continuous information flow may collectively overwhelm emotional coping mechanisms.

Emotional exhaustion manifests through symptoms such as *mental fatigue, irritability, reduced motivation, emotional detachment, and difficulty managing stress*. Individuals experiencing digital burnout frequently report feeling mentally overwhelmed despite reduced physical exertion. For instance, university students balancing online academic learning, social networking activities, digital assignments, and virtual communication requirements often experience cognitive fatigue and emotional strain, particularly during examination periods.

Digital addiction represents an emerging behavioural concern *affecting adolescents and young adults disproportionately*. Younger populations frequently demonstrate compulsive technology usage behaviours due to developmental factors, peer influence, educational requirements, and entertainment preferences. Digital addiction is characterized by excessive and uncontrolled use of technological devices despite adverse psychological, social, academic, or behavioural consequences. Individuals experiencing digital dependency may demonstrate *reduced control over technology usage patterns, increased irritability when unable to access devices, and difficulty disengaging from digital activities*.

University students and adolescents remain particularly vulnerable because educational systems increasingly rely upon technology while social interactions simultaneously occur within digital environments. The integration of education, entertainment, and communication within technological platforms may increase compulsive usage tendencies. For example, university students spending prolonged hours on social media frequently report increased stress levels, reduced academic productivity, impaired concentration, and difficulty maintaining healthy lifestyle routines. Excessive digital engagement may gradually influence overall psychological well-being and academic performance.

While technology provides significant educational, professional, and social benefits, excessive digital engagement creates substantial psychological concerns affecting concentration, sleep quality, emotional health, and social functioning. Responsible technology usage, digital literacy education, time management strategies, and awareness regarding healthy digital habits have become increasingly essential for maintaining psychological well-being in the digital era. Educational institutions, families, healthcare professionals, and policymakers must collectively promote balanced digital practices to ensure that technological advancement supports rather than undermines human psychological health.

Technology has significantly transformed access to information by enabling individuals to receive and process large volumes of data in real time. Smartphones, emails, social media platforms, digital news portals, online work systems, messaging applications, and Artificial Intelligence-powered technologies continuously deliver information throughout the day. While technological advancement has improved communication, productivity, and knowledge accessibility, constant exposure to information has also created substantial psychological and

cognitive challenges. The modern digital environment often demands continuous attention, rapid responses, and simultaneous engagement with multiple sources of information, thereby affecting human cognitive functioning and psychological well-being.

One major consequence of continuous information exposure is *reduced cognitive efficiency*. Human cognitive capacity has natural limitations regarding the amount of information that can be effectively processed at a given time. Excessive exposure to digital information may overwhelm mental processing systems, making it difficult for individuals to retain information, think critically, and perform complex analytical tasks. Cognitive overload can impair learning outcomes, reduce problem-solving ability, and diminish productivity. For students and professionals, continuous digital engagement may result in mental exhaustion, thereby affecting academic performance and workplace effectiveness. For example, a law student conducting legal research may simultaneously engage with online case law databases, academic journals, emails from faculty members, educational portals, and instant messaging applications. Such simultaneous information processing may reduce concentration and increase mental fatigue, ultimately affecting comprehension and analytical reasoning abilities.

Another significant challenge emerging from continuous technological exposure is *decision fatigue*. Decision fatigue refers to the gradual deterioration in decision-making quality resulting from prolonged cognitive effort associated with making multiple decisions over time. Digital technologies frequently require individuals to make repeated choices regarding communication responses, information prioritization, content engagement, task management, and digital interactions.

Technology-driven environments also contribute to *attention fragmentation*, which refers to the disruption of sustained concentration caused by frequent interruptions and competing digital stimuli. Modern technological systems are intentionally designed to capture and retain user attention through notifications, alerts, messages, advertisements, and algorithmically personalized content. For example, an academic researcher preparing a research paper may experience interruptions from email notifications, social media alerts, online meetings, and mobile application reminders. Each interruption requires cognitive adjustment, reducing overall efficiency and increasing mental exhaustion.

Another emerging concern associated with information overload is *increased psychological pressure*. The expectation of constant connectivity and immediate responsiveness has altered behavioural norms within educational institutions and workplaces. Individuals frequently experience pressure to remain continuously available and responsive across multiple digital platforms.

The phenomenon commonly referred to as *"digital fatigue"* has become increasingly relevant in contemporary educational and occupational environments. Digital fatigue describes physical, cognitive, and emotional exhaustion resulting from prolonged interaction with technological systems. Extended screen exposure, continuous virtual meetings, prolonged online educational sessions, and sustained digital engagement contribute to symptoms such as mental tiredness, irritability, reduced motivation, eye strain, and diminished concentration. For example, law students attending online lectures, participating in virtual discussions, accessing legal databases, and preparing assignments through digital platforms may experience cognitive exhaustion resulting from prolonged engagement with technology-intensive learning environments. Thus, technology remains an essential component of modern society; however, ensuring that technological advancement aligns with human psychological capacities is critical for sustaining cognitive health, productivity, and overall well-being in increasingly digital environments.

Artificial Intelligence systems function largely through the collection, processing, and analysis of extensive personal data, enabling algorithms to identify patterns, predict behaviour, personalize services, and improve technological efficiency. AI-powered platforms used in social media, e-commerce, healthcare, finance, education, and digital communication frequently rely upon user information such as browsing history, location data, purchasing preferences, online interactions, biometric information, and behavioural patterns. While such data-driven systems enhance convenience and user experience, they simultaneously raise significant concerns relating to data surveillance, unauthorized profiling, privacy breaches, and loss of individual autonomy. Continuous digital monitoring may create perceptions of constant observation, while algorithmic profiling can generate concerns regarding unfair categorization, discrimination, or misuse of personal information without informed consent. Privacy breaches resulting from inadequate data protection mechanisms further increase psychological insecurity and distrust toward technological

systems. Additionally, individuals may experience a loss of autonomy when automated systems influence choices through predictive analytics and personalized recommendations. For example, users frequently express discomfort and anxiety when digital platforms display targeted advertisements immediately after online searches or when behavioural prediction systems anticipate preferences with high accuracy. Such experiences often create psychological unease because individuals perceive diminished control over their personal information and decision-making processes. Consequently, ensuring transparency, informed consent, accountability, and robust data protection mechanisms has become essential for balancing technological advancement with privacy rights and psychological well-being in the digital era.

Artificial Intelligence-driven automation has transformed workplace structures by improving operational efficiency, reducing repetitive manual tasks, and increasing productivity across industries. However, alongside these benefits, AI integration has also created concerns relating to employment uncertainty and psychological well-being among employees. The increasing use of intelligent automation systems in sectors such as administration, customer service, banking, manufacturing, legal services, and data processing has generated apprehension regarding potential job displacement and changing workforce requirements. One major psychological consequence is *job insecurity*, where employees experience fear regarding the continuity of their employment due to technological advancements. Individuals may also experience *stress relating to technological displacement*, particularly when tasks traditionally performed by humans become automated through AI systems. Another challenge involves *skill adaptation pressure*, as employees are increasingly required to upgrade technical competencies and adapt to evolving digital environments to remain professionally relevant. Furthermore, employees may develop *workplace performance anxiety*, driven by concerns regarding productivity expectations, technological competence, and competition within AI-enabled workplaces. For example, employees in administrative sectors increasingly express concerns regarding Artificial Intelligence replacing repetitive activities such as document processing, scheduling, data management, and routine communication functions. Although AI may create new employment opportunities and enhance organizational efficiency, balancing technological innovation with workforce preparedness, reskilling initiatives, and psychological support mechanisms remains essential for ensuring sustainable workplace well-being.

4. Opportunities Created by Artificial Intelligence for Psychological Well-being

Artificial Intelligence has significantly improved accessibility to mental healthcare by enabling timely, affordable, and technology-driven psychological support systems. AI-powered mental health chatbots and conversational platforms assist individuals by providing emotional support, stress management techniques, and cognitive behavioural interventions that help users identify and manage negative thought patterns. These systems are particularly beneficial for individuals who may hesitate to seek traditional counselling services or face barriers relating to accessibility, affordability, or availability of mental health professionals. For example, AI-assisted mental health platforms can provide immediate psychological assistance during early stages of emotional distress, helping individuals' access preliminary support and guidance before professional intervention becomes necessary.

Artificial Intelligence has increasingly emerged as a valuable tool in identifying behavioural patterns associated with mental health risks by analyzing large volumes of health-related and behavioural data. AI systems can assist in *suicide risk prediction, depression detection, anxiety monitoring,* and *behavioural trend identification* by examining indicators such as speech patterns, social interaction patterns, sleep cycles, physical activity levels, and digital behaviour. These technologies enable early identification of potential mental health concerns and facilitate timely intervention. For example, wearable devices integrated with Artificial Intelligence systems can monitor physiological indicators such as sleep disturbances, heart rate variability, and stress-related patterns, thereby supporting preventive healthcare measures and improving mental health management outcomes.

Technology has significantly expanded access to mental healthcare by making psychological support services more accessible, convenient, and inclusive. Digital platforms offering tele-counselling, virtual therapy sessions, mental health applications, and online support systems have reduced geographical and infrastructural barriers that previously limited access to professional mental healthcare. Technology has also increased affordability by minimizing travel costs and enabling broader service availability while simultaneously promoting mental health awareness through digital education and information dissemination. These advancements are particularly beneficial for individuals residing in geographically remote areas, where access to qualified mental health professionals may be limited. For example, students living in distant

locations can obtain professional counselling and psychological support through online platforms, thereby improving accessibility to timely mental healthcare services.

Educational institutions are increasingly integrating Artificial Intelligence systems to enhance learning experiences and improve student well-being. AI technologies provide *academic assistance* through intelligent tutoring systems, automated feedback, and research support tools. They facilitate *personalized learning* by adapting educational content according to individual learning pace and performance levels. AI systems can also contribute to the *early identification of academic stress* by monitoring learning patterns and identifying indicators of student difficulties. Additionally, AI-powered tools assist in *time management support* by helping students organize schedules, prioritize academic tasks, and manage deadlines effectively. For example, AI academic support applications can help students plan study routines and reduce workload-related anxiety, thereby contributing to improved academic performance and psychological well-being.

6. Technology and Psychological Well-being among Law Students

Law students increasingly function within technology-intensive academic environments where digital tools, online learning platforms, legal databases, and Artificial Intelligence applications have become integral to legal education. While technology enhances accessibility and learning efficiency, law students often face challenges such as digital academic pressure, information overload, continuous online learning requirements, and highly competitive performance expectations. Simultaneously, Artificial Intelligence offers valuable opportunities through AI-assisted legal research, improved academic productivity, personalized learning support, and stress management tools. For instance, AI-enabled legal research platforms help reduce repetitive research tasks and improve academic efficiency. However, excessive dependence on technology may also reduce interpersonal interaction, increase screen-related exhaustion, and contribute to emotional fatigue, making balanced technology use essential for maintaining psychological well-being.

7. Recommendations

The following measures may strengthen psychological well-being within technology-driven societies:

1. Development of ethical AI governance frameworks.
2. Digital literacy programmes emphasizing healthy technology usage.

3. Institutional mental health support systems.
4. Privacy-centric AI design principles.
5. Transparent algorithmic accountability standards.
6. Technology wellness education in academic institutions.
7. Interdisciplinary collaboration between psychologists, legal scholars, educators, and technology experts.

8. Conclusion

Technology and Artificial Intelligence simultaneously create opportunities and challenges relating to psychological well-being. Digital transformation has improved accessibility, efficiency, healthcare delivery, and educational support. However, excessive technology dependence, privacy concerns, digital fatigue, and algorithmic influence require careful attention.

A balanced approach integrating technological innovation, ethical governance, legal regulation, and mental health awareness is essential for promoting sustainable psychological well-being in the digital era. Future policy frameworks must prioritize human dignity, autonomy, and responsible technological development to ensure that technological advancement remains aligned with psychological welfare and social well-being.

REFERENCES

1. World Health Organization, *Mental Health and Digital Technologies Reports*.
2. UNESCO, *Artificial Intelligence and Education Policy Guidance*.
3. OECD, *Artificial Intelligence Principles and Responsible Innovation Framework*.
4. Academic literature on Digital Psychology and Artificial Intelligence Governance.
5. Mental Healthcare Act, 2017 (India).
6. Digital Personal Data Protection Act, 2023 (India).

****

AI-Generated Works and the Copyright Challenge of Ownership

By Sanjay Achhra

Research Scholar, K.C. Law College, Mumbai.
Email: sanjayachhra19@gmail.com

By Dr. Kiran Sharma

Vice-Principal, K.C. Law College, Mumbai.
Email: kiranarun9323@gmail.com

Abstract

The expansion of generative artificial intelligence has unsettled one of the copyright law's most basic assumptions: that a protected work originates in human creative activity. Systems capable of producing text, images, music, code and audio-visual content now generate outputs that often resemble human authorship, yet the legal framework governing copyright was not designed for machine-produced expression. This paper examines the ownership problem posed by AI-generated works through the lenses of authorship, originality and first ownership. It pleads that the real difficulty is not simply identifying who should own AI outputs but determining whether such outputs qualify for copyright protection at all. After distinguishing AI-assisted works from fully AI-generated works, the paper analyses the approaches taken in the United States, the United Kingdom, the European Union vis-à-vis India. It contends that copyright should remain grounded in meaningful human creative contribution. Where a human exercises genuine control over the expressive elements of the final work, copyright should protect that human contribution. Where the output is generated autonomously and no meaningful human authorship can be identified, copyright should not subsist. In such cases, commercial certainty may be achieved through contract, licensing, trade secrecy and if legislatures deem it necessary, a narrowly tailored *sui-generis* regime rather than an expansion of copyright doctrine beyond its conceptual limits.

Keywords*: artificial intelligence, copyright, authorship, ownership, originality, generative AI, intellectual property*

Introduction

Generative artificial intelligence has altered the landscape of creative production with remarkable speed. A user can now prompt a system to compose a poem, generate a painting, draft an essay, produce software code or imitate a musical style within seconds. This technological shift has obvious economic and cultural significance but it also raises a question at the heart of copyright law: *who owns AI-generated works?*

The issue cannot be resolved merely by asking which party seems most commercially deserving. Copyright law does not exist simply to reward investment; it protects original expression attributable to an author. That structure becomes difficult to apply when a work is produced through probabilistic computational processes rather than direct human expression. Traditional copyright doctrine assumes a human creator, a human exercise of judgment and a human claim to authorship.[1] Generative AI challenges each of those assumptions.

The ownership problem is therefore best understood as a problem of *authorship* and *subsistence* before it becomes a problem of *allocation*. If copyright does not arise in a particular AI output, there may be no copyright owner at all. If, however, sufficient human authorship is present, the question becomes whether the author is the user, the developer, the employer or another party under established rules of first ownership and transfer. Recent administrative and judicial developments, especially in the United States, demonstrate that this is no longer a theoretical puzzle but an urgent legal issue with consequences for creators, technology companies, publishers and consumers.[2]

This paper argues that copyright law should remain fundamentally human-centered. It first outlines the core principles of authorship, originality and ownership. It then distinguishes between AI-assisted and AI-generated works, a distinction crucial to coherent legal analysis. It next evaluates the approaches adopted in the European Union, the United Kingdom, the United States vis-à-vis India. Finally, it proposes a principled framework: copyright should protect only those aspects of a work that reflect meaningful human creative control, while purely autonomous AI outputs should remain outside copyright unless legislatures create a separate, limited form of protection.

Copyright Foundations: Authorship, Originality and Ownership

Copyright law protects expression, not ideas and it does so on the premise that a work originates in intellectual creation. International copyright instruments such as the Berne Convention and the TRIPS Agreement establish broad protection for literary and artistic works, but they do not offer a developed solution to the modern problem of machine-generated

[1] *Berne Convention for the Protection of Literary and Artistic Works (adopted 9 September 1886, as revised at Paris on 24 July 1971 and amended on 28 September 1979) 828 UNTS 221; Agreement on Trade-Related Aspects of Intellectual Property Rights (adopted 15 April 1994, entered into force 1 January 1995) 1869 UNTS 299, art 9(1)*

[2] *U.S. Copyright Office, Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence (2023) 88 Fed Reg 16190; Thaler v Perlmutter 687 F Supp 3d 140 (D.D.C. 2023)*

expression.[3] As a result, domestic legal systems must determine whether AI outputs can fit within existing concepts of authorship and originality.

Human Authorship

The modern copyright tradition is deeply anthropocentric. In the United States, the classic judicial understanding of an author is an "originator" or "maker," language framed in unmistakably human terms.[4] The U.S. Copyright Office has consistently maintained that copyright protects the fruits of human creativity and not material produced without human authorship.[5] Even where statutes do not expressly say "human author," copyright doctrine, registration practice and case law have long operated on that assumption.

This human-centered structure is not accidental. Copyright has historically been justified in at least three ways: as a reward for intellectual labour, as an incentive to future creation and as recognition of the personal connection between author and work. AI fits poorly within all three rationales. A machine does not possess legal personality, moral agency or the need for economic incentive in the way a human creator does. Consequently, treating AI as an author would not simply extend copyright doctrine; it would alter its basic conceptual foundation.

Ownership

Ordinarily, the author is the first owner of copyright unless the work falls within an exception such as employment, work made for hire or contractual assignment. The ownership dilemma in AI cases therefore depends on the prior question of authorship. If the work has no legally recognizable author, there may be no initial copyright owner. Conversely, if a human contribution is sufficient, ownership can be analyzed through familiar rules of first ownership and transfer.

For that reason, the true legal challenge posed by AI-generated works is not simply *who* owns them, but *whether they are ownable through copyright at all*.

Originality

Originality is the second pillar of copyright protection. In the United States, originality requires independent creation plus at least a minimal degree of creativity.[6] In the European Union,

[3] *Berne Convention (n 1) art 2(1); TRIPS Agreement (n 1) art 9(1)*
[4] *Burrow-Giles Lithographic Co v Sarony 111 US 53, 58 (1884).*
[5] *U.S. Copyright Office, Compendium of U.S. Copyright Office Practices (3rd edn, 2021) para 306*
[6] *Feist Publications, Inc v Rural Telephone Service Co 499 US 340, 345 (1991).*

protection depends on whether the work is the author's "own intellectual creation," a standard emphasizing the exercise of free and creative choices.[7] Indian copyright law, after moving away from a pure "sweat of the brow" approach, also requires a modicum of creativity for copyright to subsist.[8]

AI-generated works complicate originality because originality is conventionally traced to human expressive choice. A prompt may initiate a process, but if the expressive details are determined predominantly by the model, the legal basis for claiming originality becomes uncertain. The more the system controls the final form of expression, the harder it is to identify the human creativity that copyright law is meant to protect.

AI-Assisted Works and AI-Generated Works

A coherent legal response requires a distinction between AI-assisted works and AI-generated works.

AI-Assisted Works

AI-assisted works are those in which a human uses AI as a tool within a broader creative process and retains meaningful control over the final expression. A novelist may use AI to brainstorm plot variations; a designer may generate multiple images and then substantially alter, combine, crop, recolor and arrange them; a musician may use AI to generate sound fragments that are later integrated into a human-composed work. In such circumstances, the AI resembles a highly sophisticated instrument rather than an autonomous creator.

Under this model, copyright protection need not be denied merely because AI was used. What matters is whether the final protected expression reflects human selection, arrangement, editing, transformation or judgment. The U.S. Copyright Office has expressly recognized that a work containing AI-generated material may still be registrable to the extent that the human-authored elements are sufficiently original.[9]

AI-Generated Works

AI-generated works, by contrast, are outputs produced largely or entirely by the system with minimal human contribution to the actual expressive content. A user who enters a simple

[7] *Infopaq International A/S v Danske Dagblades Forening (C-5/08) EU:C:2009:465, para 37*
[8] *Eastern Book Company v D.B. Modak (2008) 1 SCC 1*
[9] *U.S. Copyright Office, Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence (n 2) 16191-16194*

prompt such as "write a sonnet about loneliness" or "create a surreal cityscape at dusk" may have initiated the process, but initiation alone does not necessarily amount to authorship. If the system determines the wording, composition, structure, tone and aesthetic details, the human role may be too remote to satisfy copyright doctrine.

This distinction matters because most existing copyright systems can accommodate AI as a tool, but struggle when AI functions as an apparent source of expression. In that latter scenario, the law confronts the possibility that the output may not fit within copyright's traditional domain at all.

Comparative Legal Approaches

United States

The United States currently offers the clearest statement of the human-authorship position. The Copyright Office's registration guidance on works containing AI-generated material states that copyright protects only the material which is originated from a human creativity; where an AI determines expressive elements of output, those elements are not protected by copyright.[10] Human-authored selection, arrangement or modification may still qualify, but the machine-generated portions do not.

This position was reinforced in *Thaler v Perlmutter*, where a federal district court upheld the refusal to register an artwork claimed to have been generated autonomously by an AI system. The court, in that case, observed that human authorship remains a foundational necessity of the U.S. copyright law.[11] The said decision is significant not merely because it denies protection to one claimant, but because it reaffirms that copyright in the United States remains anchored to human creation.

The U.S. approach has doctrinal clarity. It avoids fictional attribution and preserves the integrity of copyright's human-centered design. Yet it also produces a practical consequence: a purely autonomous AI output may attract no copyright protection at all. That result may trouble

[10] *U.S. Copyright Office, Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence (n 2) 16191-16194*

[11] *Thaler v Perlmutter (n 2) 146-150*

firms seeking exclusivity, but it does not necessarily prevent commercialization, since exclusivity may still be obtained through contract, secrecy, technological control and brand power.

United Kingdom

The United Kingdom occupies a distinct position because the *Copyright, Designs and Patents Act 1988* expressly address "computer-generated" works. Further, Section 9(3) of the said Act provides that, in case of a literary, musical, dramatic or artistic work provided by computer "*in circumstances such that there is no human author*," the author shall be taken to be "*the person by whom the arrangements necessary for the creation of the work are undertaken*."[12] The Act further defines "*computer-generated*" in section 178 and provides a specific term of protection for such works.[13]

At first glance, this seems to solve the ownership issue by designating a legal author even where no human directly created the work. However, the provision raises interpretive problems. Who made the "arrangements necessary" for creation: the programmer, the user, the platform operator or the enterprise that trained and deployed the system? The statute predates contemporary generative AI and its language sits uneasily with modern machine-learning systems in which outputs emerge from layered technical processes and vast training datasets.

The Appeal Court's decision in the case of *Nova Productions Limited vs. Mazooma Games Limited* is often discussed in this context. There, the court rejected the argument that a player who merely caused on-screen images to appear was the author of the artistic works, emphasizing instead the role of those who created the underlying expressive framework.[14] Although the case did not involve generative AI, it suggests that merely operating a system is not always enough to establish authorship.

European Union

The European Union has not created a general copyright category for autonomous AI outputs. Its copyright jurisprudence remains anchored to the standard of the author's "own

[12] *Copyright, Designs and Patents Act 1988 (UK), s 9(3)*
[13] *Copyright, Designs and Patents Act 1988 (UK), ss 12(7), 178*
[14] *Nova Productions Ltd v Mazooma Games Ltd [2007] EWCA Civ 219, [2007] RPC 25*

intellectual creation", which points strongly toward human creative agency.[15] Decisions such as *Infopaq* and *Painer* emphasize that copyrightable expression reflects the author's free and creative choices and the imprint of personality.[16] These concepts are difficult to apply to fully machine-generated outputs lacking identifiable human expressive judgment.

As a result, the EU approach appears broadly compatible with a human-authorship model: AI-assisted works may be protected where human originality is present, but purely autonomous outputs remain doctrinally doubtful. This preserves coherence, though at the cost of leaving some commercially valuable AI outputs outside the copyright system.

India

India presents an especially interesting case because the Copyright Act 1957 includes a provision on computer-generated works. Section 2(d)(vi) of the Copyright Act, 1957 provides that in relation to a literary, musical, dramatic or artistic work which is generated by a computer, the "*author*" is the person who causes any such work to be created.[17] On its face, this provision appears to offer a route to legal authorship even where the immediate expression is generated by a machine. However, the provision does not eliminate conceptual difficulty. The phrase "person who causes the work to be created" is open to multiple interpretations. It may refer to the user who prompts the system, the developer who designed the software or the entity that controls the technological environment. Moreover, Indian copyright law still requires originality and after *Eastern Book Company v D.B. Modak*, originality in India involves more than mere labour; it requires at least some creativity.[18] Thus, while section 2(d)(vi) provides a statutory hook, Indian law will still need to determine how that provision interacts with the requirement of creative authorship in the age of generative AI.

The Competing Ownership Claims

Once one accepts that AI outputs do not automatically fit within copyright, the competing claims to ownership become easier to assess.

[15] *Infopaq (n 7) para 37; Painer v Standard VerlagsGmbH (C-145/10) EU:C:2011:798, para 89*
[16] *Painer (n 15) para 89*
[17] *Copyright Act 1957 (India), s 2(d)(vi)*
[18] *Eastern Book Company (n 8)*

The User

The strongest case for ownership arises where the user contributes substantial creative input. If the user iteratively refines prompts, makes stylistic choices, selects among numerous outputs and materially edits or combines them, the user may be the author of the resulting protected expression, at least in part. This is particularly true where the final work reflects the user's judgment rather than the AI model's default output.

However, not every prompt amounts to authorship. A generic instruction may guide subject matter without determining expression. Present U.S. guidance suggests that prompts alone, especially when the system controls the expressive realization, may be insufficient to establish copyright in the generated output.[19] The legal strength of the user's claim therefore depends on the depth of creative control.

The Developer or Platform Provider

Another argument is that the developer or platform provider should own AI outputs because the system reflects their technical skill, infrastructure and investment. This claim is attractive from an economic perspective, but weak from a copyright perspective. Copyright does not generally grant authorship over every output produced by a tool merely because one created the tool. A camera manufacturer does not own every photograph taken with its cameras. By analogy, the developer of a generative model is not automatically the author of each output generated through it.

This does not mean developers lack legal protection. Their interests may be secured through software copyright, patents where available, trade secrets, database rights in some jurisdictions, licensing terms and technological access controls. But those protections are distinct from copyright in the downstream expressive output.

No Copyright Owner

A third possibility is that some AI outputs have no copyright owner because they do not qualify for copyright protection at all. This may initially seem unsatisfactory, but it is doctrinally coherent. If a work lacks human authorship, denying copyright simply preserves the logic of the system. The absence of copyright does not imply a legal vacuum; market actors may still rely on

[19] *U.S. Copyright Office, Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence (n 2) 16192-16193*

contract, confidentiality, speed to market and platform control. Official policy discussions, including those led by the World Intellectual Property Organization, have recognized that AI challenges conventional assumptions about both authorship and ownership and that existing law may not always generate exclusive rights in AI outputs.[20]

In many respects, the "no owner" outcome is preferable to constructing a fictional author where no genuine creative authorship exists.

Toward a Principled Legal Framework

The law should resist two opposite temptations. The first is to deny protection to any work involving AI, which would undervalue genuine human creativity expressed through new tools. The second is to grant copyright too readily to machine outputs, which would sever copyright from its normative foundation. A better approach is to focus on meaningful human creative control.

Meaningful Human Creative Control

A work should qualify for copyright only to the extent that a human being made creative choices that shaped the final expressive form. The following factors may help determine whether that threshold is met:

1. **Prompt Specificity and Originality**
   Whether the user's instructions embody creative expression rather than mere subject-matter requests.
2. **Iterative Direction**
   Whether the human engaged in a sustained process of revision, refinement and selection rather than a single, generic command.
3. **Selection and Arrangement**
   Whether the human selected from multiple outputs and arranged them in an original way.
4. **Post-Generation Editing or Transformation**
   Whether the human substantially modified the raw output through editing, rewriting, compositing or other creative intervention.

[20] *World Intellectual Property Organization, WIPO Conversation on Intellectual Property and Artificial Intelligence: Revised Issue Paper on Intellectual Property Policy and Artificial Intelligence (May 2020)*

5. **Control over Expressive Elements**

   Whether the final expressive details are attributable in a meaningful way to human judgment rather than the model's autonomous generation.

This framework is preferable to bright-line rules based solely on who clicked "generate" or who owns the software. It aligns copyright with creative responsibility and allows AI to function as a tool without transforming autonomous machine production into human authorship by legal fiction.

The Role of Contract and Alternative Protection

Where copyright does not subsist, commercial actors are not left defenceless. Licensing terms may regulate use between platforms and users. Employers may allocate rights in AI-assisted outputs created in the course of employment. Trade secret law may protect valuable prompts, workflows or model configurations. Trademark law may protect branding and source-identifying uses. If legislators conclude that a narrow incentive gap remains for fully AI-generated outputs, a short-term ***sui generis*** right could be considered. Such a right would be more transparent and conceptually honest than redefining copyright itself to include non-human authorship.

Conclusion

AI-generated works present one of the most important contemporary challenges to copyright law because they force a reconsideration of copyright's underlying assumptions. The central issue is not simply who should own the output of an AI system; it is whether a work generated without meaningful human authorship belongs within copyright at all. Comparative legal analysis reveals divergent approaches. The United States has firmly reaffirmed human authorship. The United Kingdom and India possess statutory provisions that allocate authorship in computer-generated works, but those provisions become difficult to apply in the context of modern generative AI. The European Union remains committed to a human-centered originality standard.

The most convincing solution is neither to reject AI-related creativity wholesale nor to stretch copyright until it covers autonomous machine production. Copyright should continue to protect human creativity, including creativity expressed through sophisticated AI tools. But where a work is generated autonomously and no meaningful human contribution can be identified in its expressive elements, copyright should not subsist. In those circumstances, exclusivity should be sought, if at all, through contract, technological control or carefully designed sui generis protection rather than through a distortion of copyright doctrine.

Ultimately, the challenge of AI-generated works is a challenge of legal principle. Copyright must adapt to technological change, but it should do so without abandoning the idea that authorship is rooted in human creative agency. If that principle is lost, the law risks protecting not creativity, but mere output.

REFERENCES

1. Berne Convention for the Protection of Literary and Artistic Works (adopted 9 September 1886, as revised at Paris on 24 July 1971 and amended on 28 September 1979) 828 UNTS 221.
2. Agreement on Trade-Related Aspects of Intellectual Property Rights (adopted 15 April 1994, entered into force 1 January 1995) 1869 UNTS 299.
3. Copyright Act 1957 (India).
4. Copyright, Designs and Patents Act 1988 (UK).
5. *Burrow-Giles Lithographic Co v Sarony* 111 US 53 (1884).
6. *Eastern Book Company v D.B. Modak* (2008) 1 SCC 1.
7. *Feist Publications, Inc v Rural Telephone Service Co* 499 US 340 (1991).
8. *Infopaq International A/S v Danske Dagblades Forening* (C-5/08) EU:C:2009:465.
9. *Nova Productions Ltd v Mazooma Games Ltd* [2007] EWCA Civ 219, [2007] RPC 25.
10. *Painer v Standard VerlagsGmbH* (C-145/10) EU:C:2011:798.
11. *Thaler v Perlmutter* 687 F Supp 3d 140 (D.D.C. 2023).
12. U.S. Copyright Office, *Compendium of U.S. Copyright Office Practices* (3rd edn, 2021).

13. U.S. Copyright Office, *Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence* (2023) 88 Fed Reg 16190.
14. World Intellectual Property Organization, *WIPO Conversation on Intellectual Property and Artificial Intelligence: Revised Issue Paper on Intellectual

****

Rethinking Copyright Ownership and Originality in the Age of Generative AI: Legal Challenges and Future Directions

By Mahesh Bapurao Suryawanshi

T.Y. LL.B., SNJB'S Shriman Sampatlalji Pemrajji Surana Law College, Chandwad, Nashik.
Email: maheshrs575751@gmail.com
&
By Dr. Pankaj Balajirao Palekar

I/c Principal, SNJB'S Shriman Sampatlalji Pemrajji Surana Law College, Chandwad, Nashik.
Email: palekarpankaj@gmail.com / pbpsnjb.sspslaw@gmail.com

Abstract

The rapid advancement of generative Artificial Intelligence (AI) technologies has disrupted traditional copyright law by challenging fundamental doctrines such as authorship, originality, and ownership. This research paper critically examines the legal implications of AI-generated content using secondary data from academic literature, case law, and policy frameworks. It explores how generative AI complicates the concept of originality, raises attribution dilemmas, and introduces new forms of copyright infringement risks. The paper also evaluates emerging judicial trends and policy responses across jurisdictions, highlighting the urgent need for reform. It proposes a hybrid legal framework that recognizes human-AI collaboration, introduces compensation mechanisms for training data, and enhances transparency obligations. The study concludes that while copyright law is adaptable, significant doctrinal evolution is required to ensure a balance between technological innovation and the protection of human creativity.

Keywords*: Generative AI, Copyright Ownership, Originality, Authorship, Intellectual Property Law, AI Regulation.*

Introduction

The integration of Artificial Intelligence into creative processes marks one of the most transformative shifts in modern intellectual property law. Generative AI systems—capable of producing text, images, music, software code, and even films—have redefined the meaning of creativity and authorship. Unlike traditional tools, these systems can autonomously generate outputs that closely resemble human-created works, often with minimal human intervention.

Historically, copyright law has been built upon the assumption that creativity is a uniquely human endeavor. Legal frameworks across jurisdictions have emphasized human authorship as a

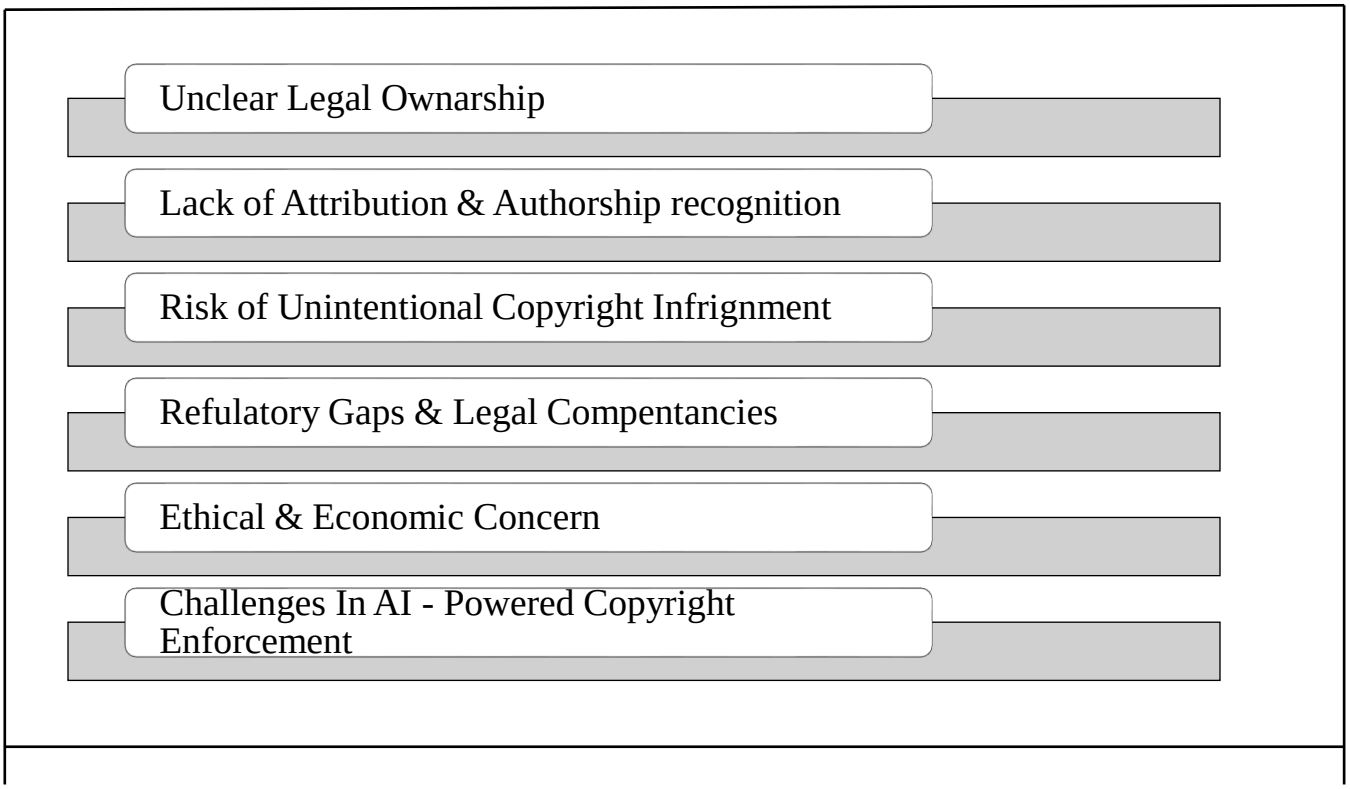
prerequisite for copyright protection. However, generative AI challenges this assumption by introducing non-human agents into the creative process.

This development raises several critical questions:

- *Can AI-generated works be considered "original"?*
- *Who owns the copyright in such works?*
- *Does the use of copyrighted material in AI training constitute infringement?*
- *How should legal systems adapt to this evolving landscape?*

This paper addresses these questions through a doctrinal and analytical examination of secondary sources, aiming to provide a comprehensive understanding of the challenges and future directions in AI and copyright law.

Key copyright challenges arising from AI generated content-



2. Research Methodology

This study is based entirely on secondary data analysis, drawing from:

- Academic journals and legal scholarship
- Court decisions and case law

- Government reports and policy papers
- Industry analyses and expert commentary

The methodology follows a qualitative doctrinal approach, focusing on interpreting legal principles and evaluating their application in the context of generative AI. Comparative insights from jurisdictions such as the United States, the European Union, and India are also incorporated to highlight global trends.

3. Understanding Generative AI and Creative Processes-

Generative AI refers to systems that can produce new content based on patterns learned from large datasets. These systems rely on machine learning models, particularly deep learning architectures, to generate outputs that mimic human creativity.

3.1 Characteristics of Generative AI

- **Autonomy:** Ability to produce content without direct human control
- **Scalability:** Capability to generate large volumes of content rapidly
- **Adaptability:** Ability to respond to user prompts and refine outputs

3.2 Human-AI Interaction

Most generative AI systems operate through a collaborative process:

- A user provides input (prompt)
- The AI generates content
- The user may refine or edit the output

This interaction complicates the distinction between human and machine contributions, which is central to copyright law.

4. The Concept of Originality in Copyright Law-

Originality is a fundamental requirement for copyright protection. While definitions vary across jurisdictions, two key elements are generally required:

- Independent creation
- A minimal degree of creativity

4.1 Traditional Understanding

Courts have historically adopted a low threshold for originality. Even modest creative effort can qualify for protection, provided the work is not copied.

4.2 Challenges Posed by AI

Generative AI disrupts this concept in several ways:

(a) Lack of Human Intent

AI systems do not possess consciousness or intent. Their outputs are generated through algorithmic processes, raising doubts about whether such works can be considered "original" in the legal sense.

(b) Data Dependency

AI-generated works are derived from training data, which often includes existing copyrighted material. This raises questions about whether such outputs are truly independent.

(c) Iterative Generation

AI systems refine outputs through repeated iterations, making it difficult to identify a single point of creation.

The fundamentals of copyrights:



5. Authorship and Ownership in AI-Generated Works

5.1 The Human Authorship Requirement

Most copyright laws require a human author. Courts in several jurisdictions have reaffirmed this principle, rejecting claims of authorship for non-human entities.

5.2 Potential Claimants to Ownership

(a) The User (Prompt Provider)

The user provides input and may guide the creative process. However, the level of control may not always be sufficient to establish authorship.

(b) The Developer

AI developers design the system and training models. However, they do not directly create the output.

(c) The Dataset Contributors

Artists and creators whose works are used in training datasets may have indirect claims.

5.3 The Attribution Gap

The involvement of multiple actors creates an "attribution gap," where no single party clearly qualifies as the author under existing legal frameworks.

6. Copyright Infringement and Generative AI

6.1 Training Data and Fair Use

AI systems are trained on large datasets that often include copyrighted works.

- Some legal interpretations consider this use transformative, potentially qualifying as fair use
- Others argue it constitutes unauthorized reproduction

6.2 Output-Based Infringement

AI-generated outputs may:

- Closely resemble existing works
- Replicate distinctive styles this raises the possibility of infringement, particularly when outputs are substantially similar to protected works.

6.3 Market Impact

AI-generated content can compete with human-created works, potentially reducing economic incentives for creators. Courts increasingly consider market harm when evaluating infringement claims.

7. Comparative Legal Perspectives

7.1 United States

The U.S. adopts a flexible approach through the doctrine of fair use. However, the U.S. Copyright Office has clarified that purely AI-generated works are not eligible for copyright protection.

7.2 European Union

The EU emphasizes author-centric copyright principles and has introduced regulations addressing AI transparency and accountability.

7.3 India

Indian copyright law, under the Copyright Act, 1957, recognizes authorship in computer-generated works but does not explicitly address generative AI. This creates ambiguity in determining ownership.

8. Policy and Regulatory Challenges

8.1 Lack of Clear Definitions

Existing laws do not clearly define:

- AI-generated works
- Levels of human involvement required for protection

8.2 Enforcement Difficulties

Identifying infringement in AI-generated content is complex due to:

- Lack of transparency in training data
- Difficulty in tracing outputs to specific sources

8.3 Ethical Concerns

- Exploitation of artists' works without consent
- Bias and discrimination in AI-generated content

9. Emerging Solutions and Legal Reforms

9.1 Hybrid Authorship Models

Recognizing both human and AI contributions:

- Human input qualifies for protection
- AI-generated elements may remain unprotected

9.2 Licensing Frameworks

- Collective licensing systems for training data
- Royalty mechanisms for creators

9.3 Transparency Requirements

1. Disclosure of training datasets
2. Documentation of AI decision-making processes

9.4 Technological Measures

- Digital watermarking
- Block chain-based rights management

10. Conclusion

Traditional intellectual property law poses a difficult challenge for emerging AI-generated works and raises important questions about authority, ownership and protection. Existing copyright systems, historically based on the concept of human authority, face significant challenges as artificial intelligence systems become increasingly capable of performing creative tasks without direct intervention. While some countries are making progress in creating frameworks for AI-generated content, much more is needed as jurisdictions such as the US, EU and India grapple with the legal implications of this new phenomenon. The need for enforcement is complicated by the lack of clear and consistent laws in many jurisdictions, putting businesses, artists and legal systems in a precarious position.

AI-generated works risk falling into the public domain or receiving unequal protection in the absence of clear legal guidelines, reducing incentives for investment and innovation in the creative industries. Intellectual property rules will need to change as AI technology evolves to address the unique problems that AI-generated content presents. Possible improvements include the creation of new categories of intellectual property, especially AI works, the development of hybrid copyright models, and the development of related rights to protect investors in AI technologies.

In addition, supporting a sustainable environment by addressing the fair and ethical involvement of AI in the creative sector to ensure equal access to opportunities and prevent the displacement of human creators. How AI-generated works are handled and how the ever-evolving

digital age balances innovation, ownership and ethical considerations will be heavily influenced by ongoing legal debates and upcoming reforms.

REFERENCES

1. U.S. Copyright Office (2023–2025). *Copyright Registration Guidance for AI-Generated Works*.
2. European Commission (2024). *Artificial Intelligence Act and Intellectual Property Implications*.
3. WIPO (World Intellectual Property Organization) (2023). *WIPO Conversation on Intellectual Property and AI*.
4. Samuelson, P. (2024). *Generative AI Meets Copyright*. Columbia Journal of Law & the Arts.
5. Lemley, M. A. (2023). *Fair Use and Artificial Intelligence*. Stanford Law Review.
6. Abbott, R. (2020). *The Reasonable Robot: Artificial Intelligence and the Law*. Cambridge University Press.
7. Ginsburg, J. C., & Budiardjo, L. A. (2019). *Authors and Machines*. Berkeley Technology Law Journal.
8. Burk, D. L. (2023). *Owning E-Expressions: AI and Copyright*. Journal of Intellectual Property Law.
9. Guadamuz, A. (2017). *Artificial Intelligence and Copyright*. WIPO Magazine.
10. Sag, M. (2019). *Copyright and Copying in the Age of Machine Learning*. Texas Law Review.
11. Rai, P., et al. (2025). *Royalty Frameworks for AI Training Data*. Springer Nature.
12. Hugenholtz, P. B. (2023). *Copyright and Artificial Creation*. European Intellectual Property Review.
13. UK Intellectual Property Office (2023). *AI and Intellectual Property Policy Paper*.
14. Indian Copyright Act, 1957 (as amended).
15. U.S. Supreme Court (2023). *Andy Warhol Foundation v. Goldsmith* (fair use interpretation relevance).

****

Artificial Intelligence and Psychiatric Disorders

By Ranjana S. Kurhade

Research Scholar, Department of Information Technology, University of Mumbai.
Email: ranjanakurhade27@gmail.com

By Dr. Rajendra B. Patil

Associate Professor, Bunts Sangha Anna Leela College, University of Mumbai.
Email: patilrajendrab@gmail.com

Introduction

Mental health disorders are among the most pressing and pervasive challenges of our time, affecting millions of individuals worldwide and impacting virtually every facet of society. Despite the growing awareness and de-stigmatization of mental health issues, the diagnostic and treatment processes for psychiatric disorders remain fraught with complexities. Unlike physical ailments, psychiatric conditions lack clear-cut biological markers; they are often diagnosed based on subjective assessments, patient self-reports, and observable behaviours, which are prone to interpretation and variability. This reliance on subjective measures can lead to delayed, inconsistent, or even inaccurate diagnoses, ultimately affecting patient outcomes and the quality of care.

The advent of artificial intelligence (AI) and machine learning (ML) brings forth unprecedented opportunities to revolutionize mental health care. By harnessing the power of computational techniques, we can delve into patterns and insights that were previously inaccessible through traditional methods. This research proposes the design of an Intelligent Medical System (IMS) that employs cutting-edge soft computing techniques namely, Fuzzy Logic, Artificial Neural Networks (ANN), and Deep Learning algorithms—to analyze and classify psychiatric symptoms with heightened precision. This approach not only seeks to standardize diagnostic criteria but also aims to capture the nuanced progression of symptoms, facilitating early detection and personalized interventions.

This introductory chapter sets the foundation for a novel journey into the realm of AI-driven psychiatric assessment, highlighting the promise of soft computing as a bridge between subjective symptoms and objective insights. The IMS framework presented here has the potential to transform the landscape of mental health diagnostics, providing clinicians with an intelligent,

adaptable, and accessible tool to meet the growing demands of mental health care with accuracy and empathy.

1.1 Background of Research

Mental health disorders are pervasive, affecting millions of people worldwide and posing substantial challenges to healthcare systems, economies, and societies at large. According to the World Health Organization, one in four people will experience a mental health condition at some point in their lives, making it one of the leading causes of disability and lost productivity globally. Conditions such as depression, anxiety, bipolar disorder, schizophrenia, and post-traumatic stress disorder (PTSD) impact individuals' quality of life and can lead to severe social, occupational, and even physical health consequences. Effective diagnosis and management of psychiatric disorders are thus crucial to improving public health outcomes. However, traditional methods for diagnosing these disorders are fraught with limitations, including a heavy reliance on subjective assessments, a lack of definitive biomarkers, and high rates of misdiagnosis. These issues underscore the urgent need for new approaches that leverage technological advancements to provide more accurate, reliable, and accessible mental health diagnostics.

The diagnosis of psychiatric disorders is fundamentally different from other medical fields. Unlike conditions with clearly identifiable biomarkers or measurable physical symptoms, mental health disorders are primarily diagnosed based on patients' self-reported symptoms and clinicians' observations during interviews. This process is often guided by diagnostic criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders (DSM) or the International Classification of Diseases (ICD). While these frameworks provide standardized criteria, they rely on subjective judgments and interpretations, which can vary significantly between clinicians.

The psychiatric disorders frequently present with overlapping symptoms. For instance, a patient experiencing persistent sadness, fatigue, and difficulty concentrating could be diagnosed with major depressive disorder, but these symptoms could also be indicative of bipolar disorder, PTSD, or even certain anxiety disorders. This symptom overlap complicates differential diagnosis, leading to frequent misdiagnosis or delayed diagnosis, which can have severe consequences for patients. Incorrect diagnoses may lead to inappropriate treatment plans, including the administration of medications that could exacerbate symptoms or result in unnecessary side effects.



Figure 1.1: Psychiatric Disorders

The need for precision in mental health diagnostics is critical, as delays or errors in diagnosis often lead to worsened outcomes, including increased hospitalization rates, suicide risk, and a reduced chance of recovery.

In recent years, the fields of artificial intelligence (AI) and machine learning (ML) have shown significant promise in transforming healthcare, particularly in areas where data complexity and volume exceed human capacity for analysis. Mental health is one such field where AI could bring transformative change. AI algorithms, particularly those rooted in machine learning, can identify complex patterns in high-dimensional data, making them ideal for processing the vast and varied datasets associated with psychiatric disorders. These datasets may include not only clinical notes and patient-reported symptoms but also neuroimaging data, genetic information, physiological signals, and even real-time data from wearable devices.

Machine learning models can be used to build predictive algorithms that analyze these diverse data sources to identify early indicators of psychiatric disorders, assess disease progression, and even predict treatment responses. For example, a model trained on neuroimaging data might detect subtle brain structure changes associated with schizophrenia, while another model might analyze patterns in electronic health records to predict the likelihood of relapse in

patients with bipolar disorder. Importantly, AI-based systems can analyze this data objectively and reproducibly, minimizing the subjectivity inherent in traditional diagnostic processes.

Soft computing techniques, a subset of AI, encompass methodologies like fuzzy logic, artificial neural networks (ANNs), and evolutionary algorithms. These approaches are particularly useful for dealing with the imprecision, uncertainty, and partial truth often found in psychiatric data. Unlike traditional computational models that require strict binary logic and exact data, soft computing techniques are designed to handle the ambiguous and noisy data typical in psychiatry. For instance, a fuzzy logic-based system can interpret vague symptom descriptions (e.g., "frequent sadness" or "occasional anxiety") by assigning degrees of severity, allowing for a more nuanced analysis of mental health states.

The Artificial neural networks (ANNs) and deep learning architectures, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs), have demonstrated impressive results in image and speech recognition and are now being applied to psychiatric diagnostics. These networks are capable of learning complex relationships within large datasets and can be used to recognize patterns that may not be apparent to human observers. For instance, RNNs with long short-term memory (LSTM) units are well-suited for processing time-series data, which can be invaluable in analyzing longitudinal patient data to understand symptom progression and predict future episodes.

1.1.1 Understanding Psychiatric Disorders

Psychiatric disorders, also known as mental health disorders, encompass a wide range of conditions that affect mood, cognition, and behavior. Common examples include depression, anxiety disorders, bipolar disorder, schizophrenia, and obsessive-compulsive disorder (OCD). These conditions can vary significantly in severity, with some individuals experiencing mild symptoms that affect daily life and others suffering from debilitating conditions that require intensive medical and psychological support. Psychiatric disorders can arise from a complex interplay of genetic, biological, environmental, and psychological factors, making diagnosis and treatment challenging.

Psychiatric disorders, also known as mental health disorders, refer to a wide range of conditions that affect an individual's mood, thinking, and behavior. These disorders disrupt a person's ability to function in their daily life, impacting personal, social, and occupational aspects.

Unlike other physical health conditions, psychiatric disorders can often be challenging to diagnose and treat because they lack precise biological markers and are influenced by a complex interplay of genetic, psychological, and environmental factors. This complexity makes psychiatric disorders a significant area of research in the medical and scientific communities.

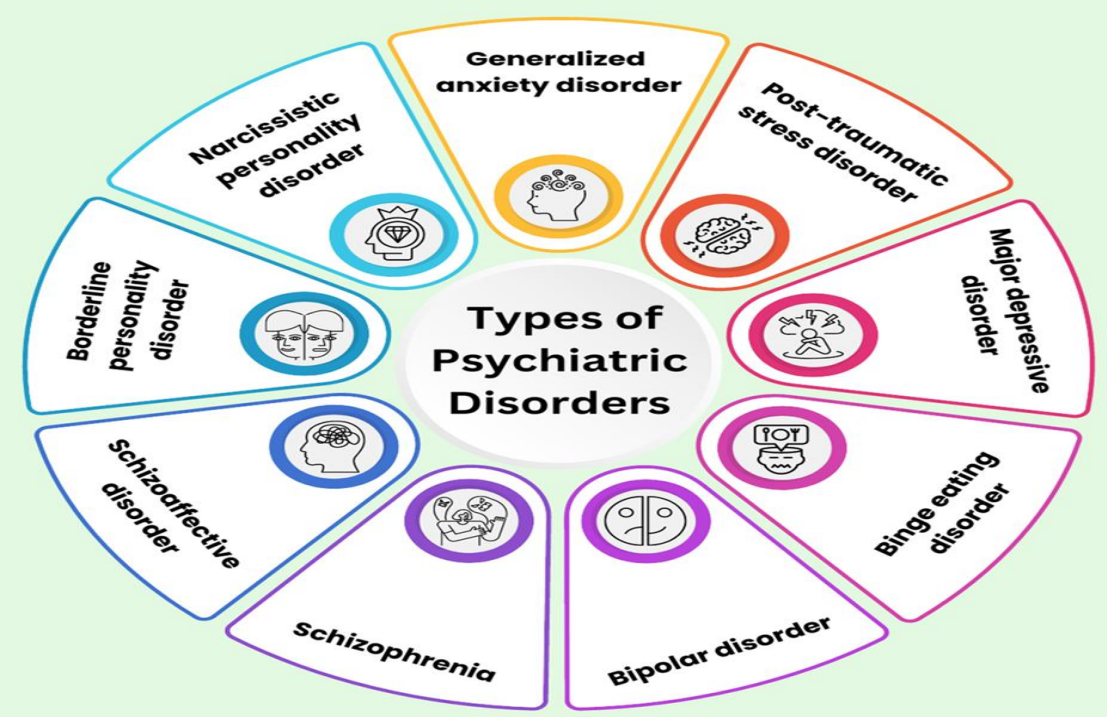


Figure 1.2: Types of Psychiatric Disorders

The prevalence of psychiatric disorders has been rising globally, with the World Health Organization (WHO) estimating that around one in eight people worldwide suffers from a mental health condition. These disorders are a major contributor to global disability and mortality rates and are associated with a substantial economic burden, including lost productivity and increased healthcare costs. Effective diagnosis and treatment are crucial for managing these disorders, which has led to ongoing efforts in improving diagnostic methods, therapeutic interventions, and preventive strategies.

Types of Psychiatric Disorders

Psychiatric disorders encompass a variety of conditions, each characterized by unique symptoms and diagnostic criteria. Some of the most common types include:

1. Mood Disorders: Mood disorders are characterized by disturbances in a person's mood, leading to prolonged periods of intense sadness, excessive happiness, or fluctuations between these extremes.

- **Major Depressive Disorder (MDD):** Commonly known as depression, this disorder involves persistent feelings of sadness, hopelessness, and a lack of interest or pleasure in activities. Physical symptoms, such as changes in sleep, appetite, and energy levels, are also common.
- **Bipolar Disorder:** This disorder involves extreme mood swings, including emotional highs (mania or hypomania) and lows (depression). The mood shifts can affect sleep, energy, activity, and the ability to think clearly.
- **Dysthymia (Persistent Depressive Disorder):** A chronic form of depression with symptoms that are less severe than major depression but last for at least two years.

2. Anxiety Disorders: Anxiety disorders are characterized by excessive fear or worry, often related to specific situations or objects that interferes with daily functioning.

- **Generalized Anxiety Disorder (GAD):** GAD is characterized by chronic, excessive worry about various aspects of life, such as health, work, or relationships, often without a clear cause.
- **Panic Disorder:** This disorder involves sudden, recurrent panic attacks, which are intense periods of fear accompanied by physical symptoms like heart palpitations, sweating, and shortness of breath.
- **Social Anxiety Disorder (SAD):** SAD, or social phobia, is characterized by an intense fear of being judged or embarrassed in social situations.
- **Phobias:** These are specific, irrational fears of particular objects or situations (e.g., heights, animals, or flying).

3. Psychotic Disorders: Psychotic disorders are severe mental health conditions characterized by abnormal thinking and perceptions, leading to a disconnection from reality.

- **Schizophrenia:** Schizophrenia is a chronic disorder marked by symptoms like hallucinations, delusions, disorganized thinking, and impaired functioning. It affects the way a person thinks, feels, and behaves.

- **Schizoaffective Disorder:** This disorder involves a combination of schizophrenia symptoms and mood disorder symptoms, such as depression or mania.

4. Personality Disorders: Personality disorders involve long-term patterns of behavior, thoughts, and emotions that are rigid and unhealthy, significantly affecting relationships and social functioning.

- **Borderline Personality Disorder (BPD):** Characterized by emotional instability, impulsive behavior, and unstable relationships, individuals with BPD may struggle with self-image and a chronic feeling of emptiness.
- **Antisocial Personality Disorder (ASPD):** Individuals with ASPD tend to disregard social norms, violate the rights of others, and exhibit manipulative or aggressive behaviors without remorse.
- **Narcissistic Personality Disorder:** This disorder involves a pervasive pattern of grandiosity, need for admiration, and a lack of empathy for others.

5. Obsessive-Compulsive and Related Disorders: These disorders are marked by repetitive, intrusive thoughts (obsessions) and ritualistic behaviours (compulsions) performed to reduce anxiety.

- **Obsessive-Compulsive Disorder (OCD):** OCD is characterized by intrusive thoughts that lead to repetitive behaviors or mental rituals, such as checking, washing, or counting.
- **Body Dysmorphic Disorder (BDD):** BDD involves a preoccupation with perceived flaws in physical appearance, leading to repetitive behaviors such as mirror checking or excessive grooming.

6. Trauma and Stressor-Related Disorders: These disorders are related to exposure to traumatic or stressful events and include symptoms of distress, avoidance, and hyperarousal.

- **Post-Traumatic Stress Disorder (PTSD):** PTSD occurs after experiencing or witnessing a traumatic event, such as war, assault, or natural disasters. Symptoms include flashbacks, avoidance behaviors, and heightened anxiety.
- **Acute Stress Disorder:** Similar to PTSD, but symptoms occur immediately after the trauma and last from three days to one month.

7. Eating Disorders: Eating disorders involve abnormal attitudes toward food, leading to unhealthy eating behaviours that can affect physical health.

- **Anorexia Nervosa:** Characterized by an intense fear of gaining weight, individuals with anorexia restrict their food intake, leading to dangerously low body weight.
- **Bulimia Nervosa:** This disorder involves episodes of binge eating followed by compensatory behaviors such as vomiting or excessive exercise.
- **Binge-Eating-Disorder:** In this disorder, individuals frequently consume large amounts of food in a short period but do not engage in compensatory behaviors.

8. Neurodevelopmental Disorders: These are a group of conditions that typically begin in early childhood and affect developmental milestones, cognition, and social interaction.

- Autism Spectrum Disorder (ASD): ASD is characterized by difficulties in social interaction, communication, and repetitive behaviours.
- Attention-Deficit/Hyperactivity Disorder (ADHD): ADHD involves symptoms of inattention, hyperactivity, and impulsivity that interfere with daily functioning.

9. Substance-Related and Addictive Disorders These disorders are related to the excessive and compulsive use of substances such as drugs or alcohol, which lead to physical and psychological dependence.

- **Substance Use Disorder (SUD):** SUD involves a pattern of drug or alcohol use that impairs daily functioning and causes significant distress.
- **Gambling Disorder:** Classified as a behavioral addiction, it involves compulsive gambling behavior despite its negative effects on the individual's life.

10. Dissociative Disorders: Dissociative disorders involve a disconnection between thoughts, identity, consciousness, and memory, often resulting from trauma.

- **Dissociative Identity Disorder (DID):** Previously known as multiple personality disorder, DID is characterized by the presence of two or more distinct identities within a person.

REFFERENCE

1. Awad, M. A., Atya, S., Abd Elfatah, M. O., & Kater, S. S. (2024). Psychiatric disorders: Diagnosis and treatment using artificial intelligence techniques. *Biological and Biomedical Journal*, Vol. 2, Issue (2) Pages 56-66, DOI: 10.21608/BBJ.2024.275671.102
2. Ramírez, L. Á. (2023). Artificial Intelligence in Psychological Diagnosis and Intervention. *LatIA*, *1*, 26-26.

3. M. S. Supriya, A. Aniket, R. N. M, A. J and K. Peter, "AI-Powered Mental Health Diagnosis: A Comprehensive Exploration of Machine and Deep Learning Techniques," *2024 International Conference on Distributed Computing and Optimization Techniques (ICDCOT)*, Bengaluru, India, 2024, pp. 1-6, doi: 10.1109/ICDCOT61034.2024.10515610.
4. Ahmad, S., Rehman, A., Haroon, M., & Ilyas, M. (2024). Mental disorder management using explainable artificial intelligence. In *Explainable Artificial Intelligence for Biomedical and Healthcare Applications* (pp. 81-95). CRC Press.
5. Monga, P., Sharma, M., & Sharma, S. K. (2022). Performance analysis of machine learning and soft computing techniques in diagnosis of behavioral disorders. In *Electronic Systems and Intelligent Computing: Proceedings of ESIC 2021* (pp. 85-99). Singapore: Springer Nature Singapore.
6. Verma, S., Sharma, C., Aggarwal, G., & Upadhya, P. (2024, January). Artificial Intelligence-Based Approach for Classification and Prediction of Mental Health. In *2024 14th International Conference on Cloud Computing, Data Science & Engineering (Confluence)* (pp. 708-713). IEEE.
7. Tutun, S., Johnson, M. E., Ahmed, A., Albizri, A., Irgil, S., Yesilkaya, I., ... & Harfouche, A. (2023). An AI-based decision support system for predicting mental health disorders. *Information Systems Frontiers*, *25*(3), 1261-1276.
8. Kusuma, R. P., & Nas, C. (2023). Expert System to Diagnose Mental Health Disorders Using the Dempster Shafer Algorithm. *Journal of Information Systems and Informatics*, *5*(1), 391-406.
9. Mishra, P., & Mohanty, S. N. (2023, May). Development of Healthcare System Using Soft Computing Methods. In *Proceedings of the International Health Informatics Conference: IHIC 2022* (pp. 1-11). Singapore: Springer Nature Singapore.
10. Yan, W. J., Ruan, Q. N., & Jiang, K. (2022). Challenges for artificial intelligence in recognizing mental disorders. *Diagnostics*, *13*(1), 2.

****

Algorithmic Bias and the Erosion of Substantive Equality in India

By Charmi

F.Y. B.B.A. LL.B. (Hons.)
School of Law, Mody University of Science and Technology, Lakshmangarh, Rajasthan.
Email: charmimundra476@gmail.com

By Vasundhara

F.Y. B.B.A. LL.B. (Hons.)
School of Law, Mody University of Science and Technology, Lakshmangarh, Rajasthan.
Email: vasusonukul@gmail.com



Abstract

Artificial intelligence is playing a growing role in decision-making in criminal justice, healthcare, finance, and employment. While these tools can improve efficiency, they can also reproduce existing unfairness and sometimes make it worse. This often happens because of biased training data, design choices, and feedback loops.

This paper explores algorithmic bias, why it matters in law, and how it can clash with equality and non-discrimination. It also explains why bias is hard to spot when systems are opaque and difficult to test. The core claim is that technical correction alone is insufficient. Real solutions need strong data governance, impact reviews before use, clear transparency, independent audits, human oversight, and accessible redress mechanisms.

There is currently no dedicated, comprehensive legislation in India governing "automated decision-making" technologies, unlike the EU's AI Act, which follows a risk-based tiered

approach. While Articles 14, 15, and 21 of the Constitution protect against arbitrary or discriminatory state action, they offer limited proactive safeguards against systemic bias because algorithms are complex and constitutional remedies are mostly reactive. This paper therefore argues for targeted regulatory reform, including dedicated AI legislation, independent auditing bodies, amendments to the DPDP Act, and clearer liability rules for AI developers and deployers. These steps would strengthen substantive equality protections. Without accountability, artificial intelligence could make inequality look acceptable by calling it "innovation". This paper suggests for urgent reform so AI supports, rather than weakens, basic rights and fairness.

***Keywords**: algorithmic bias, automated decision-making, algorithmic discrimination, artificial intelligence regulation, substantive equality, algorithmic accountability, data governance.*

1. INTRODUCTION

Imagine being rejected from a job not by a human decision-maker, but by an automated system that offers no meaningful explanation, no clear accountability, and no effective avenue of appeal. This is no longer a hypothetical concern. In January 2026, a class-action lawsuit was filed against Eightfold AI, alleging that its recruitment platform had scraped data on over a billion workers and systematically discarded applicants based on proxies for protected characteristics, all without the disclosures legally required of employers.[21]

Artificial intelligence (AI) is increasingly being used in areas that directly affect people's lives, including recruitment, policing, credit scoring, and healthcare. While such systems are often justified on grounds of efficiency and objectivity, they can also reproduce and intensify existing social inequalities. This problem is commonly described as algorithmic bias, referring to systematic distortions in automated decision-making that produce unfair outcomes for individuals or groups on the basis of race, gender, caste, religion, or other protected characteristics.

At its core, algorithmic bias arises when AI systems process data in ways that reflect or reinforce unequal social patterns. Because such systems are trained to identify patterns and generate predictions from selected inputs, their outputs are shaped by the quality of the underlying

[21] Lee, A. R., & Loring, J. M. (2026, February 25). *AI hiring under fire: What the Eightfold lawsuit means for every employer using algorithmic screening.* Jones Walker AI Law and Policy Navigator. https://www.joneswalker.com/en/insights/blogs/ai-law-blog/ai-hiring-under-fire-what-the-eightfold-lawsuit-means-for-every-employer-using-a.html

data, the assumptions embedded in their design, and the context in which they are deployed. As a result, AI systems may contribute to discriminatory treatment, exclusionary outcomes, and a broader erosion of public trust. These risks are not merely ethical in nature; they may also expose organizations to significant legal and financial liability. For instance, the European Union's Artificial Intelligence Act provides for substantial penalties in cases involving certain prohibited AI practices and serious non-compliance.

The dangers posed by algorithmic bias are especially serious when AI is used in high-stakes decision-making contexts such as law enforcement, healthcare, and employment. Bias may emerge from several sources, including unrepresentative training datasets, subjective design choices, proxy variables, and the interpretation or implementation of algorithmic outputs. Addressing these harms therefore requires more than technical optimization. It demands robust governance across the entire AI lifecycle, including transparency, explainability, human oversight, and mechanisms for accountability and redress.

This paper argues that algorithmic bias should not be understood merely as a technical malfunction, but as a structural and legal problem. It examines whether existing legal frameworks are capable of addressing discriminatory harms produced by AI systems and argues that current approaches remain inadequate. In response, it proposes a rights-based and accountability-oriented framework for regulating algorithmic decision-making.

"Behind every automated decision lies a chain of human choices that can quietly embed prejudice into code."

2. DECODING BIAS: FROM HISTORICAL PATTERNS TO INTERSECTIONAL HARMS

Algorithmic bias is a broader descriptive concept: it concerns patterns of skewed outcomes. Discrimination is a normative and legal concept which concerns itself with wrongful unequal treatment, especially relating to protected characteristics or unjustified group disadvantage.

Not every statistical disparity is legally "discrimination," but in many real-world contexts: employment, housing, credit, education, public services; disparities can raise serious legal issues when they produce unjustified exclusion, denial of opportunity, or dignitary harm.

Algorithmic bias differs from human prejudice because it originates in data, coding choices, or the way systems are applied. Scholars identify several distinct forms of bias:

2.1. Historical Bias in Data

If the data reflects historical inequalities (for example, over-policing or wage gaps), the algorithm can learn and repeat those patterns. The choices developers make, like what to measure or what counts as "success"; can quietly shape outcomes in biased ways. For instance, a hiring tool that looks for candidates similar to past employees may end up favoring the same kinds of people again and again.

2.2. Model Bias

The design of an algorithm or the selection of features may unintentionally favor one group over another. For instance, a facial recognition system trained predominantly on lighter-skinned faces will perform less accurately on darker-skinned individuals, producing discriminatory outcomes through design rather than intent.

2.3. Feedback loops

Systems that keep learning from their own biased outputs can worsen discrimination over time. Even if a model is "fair" in testing, deployment in the real world can create loops that reinforce disadvantage. For example, if a system disproportionately flags certain neighbourhoods for policing, more police presence generates more recorded crime, which then "justifies" further targeting. That means these systems aren't just technical tools; they reflect human choices about what we think is fair.

Algorithmic bias does not always operate along a single axis of identity. Intersectional bias occurs when an AI system produces discriminatory outcomes against individuals who belong to multiple disadvantaged groups simultaneously, such as a woman from a marginalized caste, or a person with a disability from a religious minority. Because most auditing frameworks examine bias along single demographic dimensions, intersectional harms are frequently invisible in standard fairness assessments, even when the overall system appears statistically neutral. This is particularly significant in India, where caste, religion, gender, and economic status frequently intersect in ways that compound disadvantage, and where algorithmic systems trained on historical data may silently reproduce these overlapping inequalities. Any meaningful framework for algorithmic accountability must therefore require disaggregated impact assessments that test for intersectional harms, not merely single-variable disparities, particularly in socially stratified contexts such as India.

NIST's work on identifying and managing harmful bias notes that bias can become ingrained in automated systems and scale harms quickly.

"Bias in algorithms does not arise in a vacuum; it is the digital reflection of societal structures we have failed to dismantle."

3. LESSONS FROM LANDMARK CASES: WHEN ALGORITHMS FAIL FAIRNESS

Three prominent cases illustrate the real-world consequences of algorithmic bias and have shaped global discourse on AI discrimination.

3.1 COMPAS: Illusion of Neutral Risk Assessment

In U.S. courts, the COMPAS algorithm has been used to predict reoffending risk, influencing sentencing. Marketed as neutral and data-driven, it was challenged by ProPublica in 2016, which found Black defendants were more often misclassified as high risk, while white defendants were misclassified as low risk[22]. In *Loomis v. Wisconsin*, the defendant argued that reliance on a proprietary, opaque tool violated due process[23]. The court allowed COMPAS but acknowledged concerns about transparency and fairness, highlighting accountability issues in algorithmic decision-making.

3.2 Amazon's Hiring Tool: Historical Bias in Design

Amazon's automated hiring system, trained on past recruitment data, learned to favor male candidates in technical roles. It penalized resumes that indicated female identity, even subtly. Though discontinued, the case illustrates how historical inequalities embedded in training data can shape future decisions. Without mandatory oversight, similar biases in hiring tools may persist unnoticed.

[22] Angwin, J., Larson, J., Mattu, S., & Kirchner, L. (2016, May 23). Machine bias. *ProPublica*

[23] *Loomis v. Wisconsin*, 881 N.W.2d 749 (Wis. 2016), *cert. denied*, 137 S. Ct. 2290 (2017).

3.3 Mobley v. Workday: Expanding Accountability

In *Mobley v. Workday* (2024), Derek Mobley alleged that AI-based screening tools excluded him from jobs due to race, age, and disability[24]. A U.S. federal court allowed the case to proceed, recognizing sufficient claims of discriminatory impact. Crucially, the decision suggested liability may extend to AI vendors, not just employers. This marks a shift toward adapting anti-discrimination law to harms caused by automated systems.

4. THE LIMITS OF CURRENT LEGAL SAFEGUARDS

Traditional anti-discrimination law assumes a clear framework: a specific decision-maker acts on the basis of a protected characteristic, and liability follows. This model relies on traceability and intent.

Automated decision-making disrupts this structure. Outcomes emerge from complex systems involving developers, vendors, data providers, and users. Bias stems not from deliberate intent but from statistical patterns and design choices within opaque algorithms. Evidence of discrimination is often hidden behind proprietary protections, making claims difficult to prove.

In India, constitutional provisions provide a foundation for addressing algorithmic bias. Article 14 guarantees equality before the law, Article 15 prohibits discrimination on grounds such as religion, caste, sex, or place of birth, and Article 21 protects life and liberty, including dignity and freedom from arbitrary action[25]. The landmark decision in Justice K.S. Puttaswamy v. Union of India established a constitutional right to privacy that is directly applicable to data-driven systems[26]. Together, these articles can be invoked to challenge discriminatory AI outcomes.

India's existing statutory framework, the Information Technology Act, 2000 and the Digital Personal Data Protection Act, 2023; does not impose specific obligations on AI developers or vendors regarding transparency, bias prevention, fairness audits, or meaningful accountability. The DPDP Act, while a significant step forward in data governance, does not address automated

[24] *Mobley v. Workday, Inc.*, No. 3:23-cv-00770 (N.D. Cal. 2024) (order denying motion to dismiss).

[25] Constitution of India, art. 14, 15 and 21.

[26] *Justice K. S. Puttaswamy (Retd.) v. Union of India*, (2017) 10 SCC 1 (Supreme Court of India).

decision-making or algorithmic profiling in any substantive way. NITI Aayog's Responsible AI framework articulates aspirational principles but carries no legal force. This legislative gap significantly weakens enforcement and undermines the constitutional promise of substantive equality in the age of automated systems.

5. LEARNING FROM GLOBAL MODELS: INSIGHTS FROM THE EU AI ACT

The European Union's Artificial Intelligence Act (2024) represents the most developed attempt to regulate AI through a risk-based tiered framework. It classifies AI systems into four categories: unacceptable risk, high risk, limited risk, and minimal risk, imposing obligations proportionate to the potential harm each system may cause. High-risk systems, including those used in employment, credit scoring, and law enforcement, must undergo conformity assessments, maintain technical documentation, ensure human oversight, and provide transparency to affected individuals. Importantly, the Act grants individuals the right to explanation when subject to decisions made by high-risk AI systems, a safeguard entirely absent from India's current legal framework. India, by contrast, has no equivalent legislation. Constitutional protections under Articles 14, 15, and 21 are reactive and case-specific, while the DPDP Act 2023 does not address automated decision-making or algorithmic profiling in any substantive way. India need not replicate the EU model wholesale, but the risk-based classification approach offers a practical and proportionate template for future AI legislation that balances innovation with rights protection while ensuring that efficiency gains do not come at the cost of substantive equality.

Table 1: Comparative Analysis of AI Governance Models – How They Work in Practice and Key Accountability Limitations

Jurisdiction	How AI governance works (in practice)	Main limitation (accountability angle)
India	Relies on constitutional norms (Arts. 14, 15, 21) and DPDP Act 2023. AI is mainly governed by general laws and judicial policy	No dedicated AI law; lacks mandatory pre-deployment testing, explainability, and independent audits.

	(e.g., Gujarat High Court 2026 bans AI in judicial decisions but allows assistive use with human responsibility).	
EU (EU AI Act, 2024)	Risk-based hard law: bans unacceptable-risk AI; high-risk systems require documentation, oversight, bias testing, and monitoring, backed by heavy fines.	Strong rules on paper, but accountability in complex supply chains remains untested in practice
USA (NIST AI RMF)	Voluntary framework; organisations manage AI risks internally through governance, testing, and monitoring.	Non-binding nature leads to uneven protections and weak remedies for individuals harmed by AI.
China	State-led rules with sector-specific measures; focus on content labelling, safety, and national security compliance.	Accountability directed upward to the state; individual rights to explanation and redress are limited.

6. BRIDGING THE ACCOUNTABILITY GAP

"Who is responsible?"

An algorithmic ecosystem is complex, comprising many players: data providers, model creators, implementers, and providers. It is therefore impossible to clearly define liability in cases where harmful bias emerges. Accountability issues can be understood from a doctrinal, evidentiary, and structural perspective. The current legal framework, drafted for another time, needs a lot of creative interpretation, a process that takes time. Plaintiffs rarely have access to relevant evidence, and AI's decentralized structure makes causality challenging.

In light of the enormous number of automated decisions made every day, a response-oriented system will not suffice. The gap has three dimensions.

The first is doctrinal: the statutes we have were written before automated decision-making existed at any meaningful scale, and they require interpretive stretching; as Mobley shows, this is possible but slow and uncertain.

The second is evidentiary: plaintiffs cannot access the information they need to prove their claims, and defendants are not required to provide it.

The third is structural: the supply chain model of AI development and deployment distributes causation in ways that existing liability doctrines cannot resolve.

The law is, at present, reactive. It responds to cases after harm has occurred, one plaintiff at a time, in proceedings that are expensive and uncertain. Given the scale at which algorithmic systems operate; millions of decisions a day, affecting millions of lives, this is not an adequate response.

7. CHARTING THE PATH FORWARD: RECOMMENDATIONS FOR RESPONSIBLE AI GOVERNANCE IN INDIA

Algorithmic bias cannot be resolved through technical adjustments alone. The following ten recommendations outline a comprehensive, rights-based framework:

First, there is no dedicated legislation regarding AI in India, leading to fragmented regulation. Therefore, there should be a dedicated law regarding AI, which involves a risk-based approach where the higher the risk associated with AI, the more obligations that come with it, especially in critical sectors.

Secondly, there are often no mandatory bias checks before deployment, and the adverse impacts of AI can only be noted post-deployment. Hence, the proposed legislation should include an AI impact assessment before deploying such AI, especially those oriented towards the public and involving high risks, including intersectional discrimination tests.

Third, there is inadequate transparency on why a decision was made through automation, hence creating problems in terms of accountability. For this reason, the right to explanation should be guaranteed, which could be achieved by amending the Digital Personal Data Protection Act, 2023.

Fourth, training sets tend to reflect any biases present in history and representation, therefore being reflected in the results produced by AI. In this regard, governments need to make sure that training sets receive attention and improvement where necessary, especially on the front of diversity and representation, especially for marginalized groups.

Fifth, no independent body exists which will assess the use of such AI technology. Hence, there needs to be an Independent Algorithmic Audit Authority which will undertake such assessments and punish the wrongdoers accordingly.

Sixth, the Data Protection and Digital Platforms Act does not sufficiently cover profiling and automated decision-making. As such, amendments need to be made to this Act so that the matter of profiling and automated decision-making may be addressed accordingly.

Seventh, judges, lawyers, and regulators may not have sufficient expertise when evaluating algorithmic systems and claims of discrimination. It requires developing a structured training program that addresses AI, auditing, and discrimination.

Eighth, because the issues of accountability and responsibility are unclear between the developer, vendor, and end-user, it will be difficult to obtain a solution. It means that there is a need for strict corporate accountability involving liability and compensation in India.

Nineth, the principles of equality guaranteed in the constitution cannot be directly applied to algorithmic discrimination cases. It means that there is a need to interpret Articles 14, 15, and 21 to address algorithmic discrimination.

Lastly, there is an increasing dependence on international mechanisms of AI governance. However, international regulatory frameworks assume India’s commitment to equality in its operations. Therefore, India must participate in international AI governance mechanisms.

Ethical Codes of Conduct

The use of industry codes of conduct for ethical behaviour, along with self-regulation can be a useful tool to assist with AI implementation; however, they are not sufficient. Without enforceable rules to guide the companies who create and deploy AI, there is a sufficient risk that bias will continue to be introduced at the time of the development of AI systems.

8. CONCLUSION: RECLAIMING EQUALITY IN THE AGE OF AUTOMATION

The argument of this paper can be stated simply. Algorithmic systems are making decisions that matter deeply to people's lives. Many of those decisions are biased. The people harmed by that bias currently have very limited means of seeking redress. And the legal frameworks that exist were not designed to address this problem.

None of this is inevitable. Bias in AI systems is not a natural law; it is a consequence of choices; choices about what data to use, what to optimize for, what to disclose, and what to audit. Those choices can be regulated, mandated, and penalized. The legal tools that need to be built are not impossibly complex. They require political will and institutional investment, not scientific breakthroughs.

The deeper issue is one of democratic values. We have decided, as societies, that certain kinds of discrimination are wrong. We have spent decades building institutions to give that decision legal force. The question now is whether we are prepared to extend those values to the systems we have built to replace human judgment or whether we are content to allow discrimination to become invisible, automated, and permanent.

The recommendations proposed in this paper are neither radical nor untested. This paper has proposed ten concrete steps: dedicated AI legislation with risk-based classification, mandatory algorithmic impact assessments, a legally enforceable right to explanation, diverse and audited training datasets, an independent algorithmic audit authority, targeted amendments to the DPDP Act, judicial training on AI evidence, strict corporate liability, broad constitutional interpretation of Articles 14, 15, and 21, and active participation in global AI governance frameworks. These are questions of institutional design, not technological capacity. They require political will,

institutional investment, and a clear commitment that the rights India guarantees on paper will be enforceable in practice, including against automated systems.

When a machine makes a decision that harms you, someone should be responsible. Making that accountability real is not just a legal reform project. It is a question about what kind of society we want to be.

REFERENCES

1. National Institute of Standards and Technology. (2022). *Towards a standard for identifying and managing bias in artificial intelligence* (NIST Special Publication 1270). U.S. Department of Commerce. https://doi.org/10.6028/NIST.SP.1270
2. Angwin, J., Larson, J., Mattu, S., & Kirchner, L. (2016, May 23). Machine bias. *ProPublica.* https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing
3. Chouldechova, A. (2017). Fair prediction with disparate impact: A study of bias in recidivism prediction instruments. *Big Data, 5*(2), 153–163. https://doi.org/10.1089/big.2016.0047
4. Crawford, K. (2021). *Atlas of AI: Power, politics, and the planetary costs of artificial intelligence.* Yale University Press.
5. Eubanks, V. (2018). *Automating inequality: How high-tech tools profile, police, and punish the poor.* St. Martin's Press.
6. European Parliament and Council of the European Union. (2024). Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act). *Official Journal of the European Union.* https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32024R1689
7. Kleinberg, J., Mullainathan, S., & Raghavan, M. (2017). Inherent trade-offs in the fair determination of risk scores. *Proceedings of the 8th Innovations in Theoretical Computer Science Conference (ITCS 2017).* https://doi.org/10.4230/LIPIcs.ITCS.2017.43
8. *Loomis v. Wisconsin*, 881 N.W.2d 749 (Wis. 2016), *cert. denied*, 137 S. Ct. 2290 (2017).
9. *Mobley v. Workday, Inc.*, No. 3:23-cv-00770 (N.D. Cal. 2024) (order denying motion to dismiss).

10. Noble, S. U. (2018). *Algorithms of oppression: How search engines reinforce racism.* New York University Press.
11. O'Neil, C. (2016). *Weapons of math destruction: How big data increases inequality and threatens democracy.* Crown Publishing.
12. Raji, I. D., & Buolamwini, J. (2019). Actionable auditing: Investigating the impact of publicly naming biased performance results of commercial AI products. *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society (AIES '19)*, 429–435. https://doi.org/10.1145/3306618.3314244
13. U.S. Equal Employment Opportunity Commission. (2023). *Technical assistance document: Assessing adverse impact in software, algorithms, and artificial intelligence used in employment selection procedures.* https://www.eeoc.gov/laws/guidance/questions-and-answers-clarify-and-provide-common-interpretation-uniform-guidelines
14. Barocas, S., Hardt, M., & Narayanan, A. (2023). *Fairness and machine learning: Limitations and opportunities.* MIT Press. https://fairmlbook.org
15. Puttaswamy (Retd.), K. S. v. Union of India, (2017) 10 SCC 1 (Supreme Court of India).
16. Information Technology Act, 2000, No. 21, Acts of Parliament, 2000 (India).
17. Ministry of Electronics and Information Technology, Government of India. (2023). *The Digital Personal Data Protection Act, 2023*. https://www.meity.gov.in
18. NITI Aayog. (2021). *Responsible AI for all: Approach document for India*. Government of India. https://www.niti.gov.in
19. Buolamwini, J., & Gebru, T. (2018). Gender shades: Intersectional accuracy disparities in commercial gender classification. *Proceedings of Machine Learning Research, 81*, 1–15
20. Dressel, J., & Farid, H. (2018). The accuracy, fairness, and limits of predicting recidivism. *Science Advances*, *4*(1), eaao5580. https://doi.org/10.1126/sciadv.aao5580

****

कृत्रिम बुद्धिमत्ता: आधुनिक समाजव्यवस्थेवरील परिणाम आणि आव्हाने

By Dr. Supriya Gaikwad

Sr. Librarian,
Amity Law School, Amity University Mumbai.

सारांश

एकविसाव्या शतकात तंत्रज्ञानाच्या क्षेत्रात झालेल्या क्रांतिकारी बदलांमुळे मानवी जीवनशैली, सामाजिक रचना, आर्थिक व्यवहार, शिक्षण प्रणाली, आरोग्य व्यवस्था आणि प्रशासन यामध्ये मोठ्या प्रमाणात परिवर्तन घडून आले आहे. या परिवर्तनाच्या केंद्रस्थानी "कृत्रिम बुद्धिमत्ता" (Artificial Intelligence) हे अत्यंत प्रभावी आणि परिवर्तनशील तंत्रज्ञान उभे आहे. कृत्रिम बुद्धिमत्ता ही संगणक विज्ञानाची अशी शाखा आहे जी यंत्रांना मानवी विचारप्रक्रिया, निर्णयक्षमता, विश्लेषण क्षमता आणि समस्यांचे निराकरण करण्याची क्षमता प्रदान करते. आधुनिक समाजव्यवस्थेत कृत्रिम बुद्धिमत्तेचा वापर झपाट्याने वाढत असून त्याचे सकारात्मक परिणाम आणि काही गंभीर आव्हाने समाजासमोर निर्माण होत आहेत. प्रस्तुत लेखामध्ये कृत्रिम बुद्धिमत्तेचा आधुनिक समाजव्यवस्थेवरील प्रभाव, विविध क्षेत्रांतील उपयोग, त्यातून निर्माण होणाऱ्या समस्या आणि भविष्यातील आव्हानांचे विश्लेषणात्मक अध्ययन करण्यात आले आहे.

प्रस्तावना

मानवाच्या प्रगतीच्या इतिहासात विज्ञान आणि तंत्रज्ञानाने महत्त्वपूर्ण भूमिका बजावली आहे. औद्योगिक क्रांतीपासून ते डिजिटल क्रांतीपर्यंत प्रत्येक टप्प्यावर नवीन तंत्रज्ञानाने समाजाच्या कार्यपद्धतीमध्ये बदल घडवून आणले आहेत. सध्याच्या काळात कृत्रिम बुद्धिमत्ता हे तंत्रज्ञान आधुनिक युगातील सर्वात प्रभावशाली नवकल्पनांपैकी एक मानले जाते.

कृत्रिम बुद्धिमत्ता म्हणजे अशी तांत्रिक प्रणाली जी मानवी बुद्धिमत्तेसारखी कार्ये करू शकते. यामध्ये शिकण्याची क्षमता, माहितीचे विश्लेषण, निर्णय घेणे, भाषेचे आकलन, प्रतिमा ओळखणे आणि समस्यांचे निराकरण करणे यांचा समावेश होतो. मशीन लर्निंग (Machine Learning), डीप लर्निंग (Deep Learning), नैसर्गिक भाषा प्रक्रिया (Natural Language Processing) आणि रोबोटिक्स या क्षेत्रांच्या माध्यमातून कृत्रिम बुद्धिमत्ता अधिक विकसित होत आहे.

आज कृत्रिम बुद्धिमत्ता केवळ तांत्रिक क्षेत्रापुरती मर्यादित राहिलेली नसून ती समाजाच्या प्रत्येक स्तरावर परिणाम घडवत आहे.

शिक्षण क्षेत्रावरील परिणाम

शिक्षण क्षेत्रामध्ये कृत्रिम बुद्धिमत्तेने मोठे परिवर्तन घडवून आणले आहे. डिजिटल शिक्षण प्रणाली, आभासी वर्ग (Virtual Classroom), वैयक्तिक शिकवणी प्रणाली (Personalized Learning Systems) आणि स्वयंचलित मूल्यमापन प्रणाली यांमुळे विद्यार्थ्यांच्या शिक्षण प्रक्रियेमध्ये सुलभता निर्माण झाली आहे.

उदाहरणार्थ, विविध शैक्षणिक प्लॅटफॉर्म विद्यार्थ्यांच्या अभ्यासाच्या पद्धतीचे विश्लेषण करून त्यांच्या क्षमतेनुसार अभ्यास साहित्य उपलब्ध करून देतात. कृत्रिम बुद्धिमत्ता विद्यार्थ्यांच्या शिकण्याच्या गतीचे विश्लेषण करून वैयक्तिक शिक्षण अनुभव निर्माण करते.

तथापि, शिक्षण क्षेत्रात तंत्रज्ञानावर अतिनिर्भरता वाढल्यामुळे विद्यार्थ्यांमध्ये सामाजिक संवाद कमी होणे, डिजिटल थकवा (Digital Fatigue), एकाग्रतेमध्ये घट आणि मानसिक ताण वाढण्यासारख्या समस्या निर्माण होत आहेत.

रोजगार आणि अर्थव्यवस्थेवरील परिणाम

कृत्रिम बुद्धिमत्तेमुळे रोजगार क्षेत्रामध्ये मोठ्या प्रमाणावर बदल होत आहेत. स्वयंचलित प्रणाली, डेटा विश्लेषण तंत्रज्ञान आणि रोबोटिक्स यांमुळे अनेक कामे अधिक वेगाने आणि अचूकतेने पूर्ण होत आहेत.

बँकिंग, उत्पादन उद्योग, ग्राहक सेवा, आरोग्य सेवा आणि वाहतूक क्षेत्रांमध्ये कृत्रिम बुद्धिमत्तेचा मोठ्या प्रमाणात वापर होत आहे. उदाहरणार्थ, ग्राहक सेवा क्षेत्रामध्ये चॅटबॉट्स ग्राहकांच्या प्रश्नांना तत्काळ उत्तरे देतात. ई-कॉमर्स क्षेत्रामध्ये कृत्रिम बुद्धिमत्ता ग्राहकांच्या आवडीनिवडी समजून वैयक्तिक शिफारसी देते.

मात्र, स्वयंचलित तंत्रज्ञानामुळे पारंपरिक रोजगार संधींवर परिणाम होण्याची शक्यता वाढली आहे. काही प्रकारची नियमित आणि पुनरावृत्तीची कामे यंत्रांकडे हस्तांतरित होत असल्याने रोजगाराच्या स्वरूपामध्ये बदल होत आहेत. यामुळे नवीन कौशल्ये आत्मसात करण्याची आवश्यकता वाढत आहे.

आरोग्य क्षेत्रातील योगदान

आरोग्य व्यवस्थेमध्ये कृत्रिम बुद्धिमत्तेने महत्त्वपूर्ण योगदान दिले आहे. वैद्यकीय निदान, रोगांचे पूर्वानुमान, वैद्यकीय प्रतिमांचे विश्लेषण आणि आरोग्य व्यवस्थापन प्रणालींमध्ये कृत्रिम बुद्धिमत्तेचा वापर वाढत आहे.

उदाहरणार्थ, काही वैद्यकीय प्रणाली एक्स-रे, एमआरआय किंवा इतर वैद्यकीय चाचण्यांचे विश्लेषण करून रोगांची लवकर ओळख करण्यात डॉक्टरांना मदत करतात. आरोग्य निरीक्षण करणारी डिजिटल साधने व्यक्तींच्या झोपेचे चक्र, हृदयाचे ठोके आणि शारीरिक हालचालींचे निरीक्षण करून आरोग्य व्यवस्थापन सुधारण्यास मदत करतात.

तथापि, वैयक्तिक आरोग्य माहितीची गोपनीयता, डेटा सुरक्षेचे प्रश्न आणि तांत्रिक प्रणालींवरील अवलंबित्व यांसारखी आव्हाने देखील समोर येत आहेत.

सामाजिक जीवनावरील परिणाम

सामाजिक संवाद आणि मानवी संबंधांवर कृत्रिम बुद्धिमत्तेचा मोठा प्रभाव पडत आहे. सामाजिक माध्यमे (Social Media), डिजिटल संवाद प्रणाली आणि माहिती तंत्रज्ञानामुळे व्यक्तींमधील संवाद अधिक वेगवान झाला आहे.

लोक सामाजिक माध्यमांच्या माध्यमातून माहिती शेअर करतात, व्यावसायिक नेटवर्क तयार करतात आणि समाजातील विविध घडामोडींमध्ये सहभाग घेतात. डिजिटल तंत्रज्ञानाने भौगोलिक मर्यादा कमी केल्या आहेत.

मात्र, सामाजिक माध्यमांचा अतिवापर, डिजिटल व्यसन, मानसिक ताण, माहितीचा अतिरेक आणि सामाजिक तुलना यांसारख्या समस्या वाढताना दिसत आहेत. अनेक व्यक्तींमध्ये प्रत्यक्ष सामाजिक संवाद कमी होत असून आभासी जगावर अवलंबित्व वाढत आहे.

न्यायव्यवस्था आणि प्रशासनातील उपयोग

कृत्रिम बुद्धिमत्ता न्यायव्यवस्था आणि प्रशासन क्षेत्रामध्ये देखील महत्त्वपूर्ण भूमिका बजावत आहे. कायदेशीर संशोधन, दस्तऐवज विश्लेषण, प्रकरण व्यवस्थापन आणि प्रशासकीय निर्णय प्रक्रियेमध्ये तांत्रिक साधनांचा वापर वाढत आहे.

उदाहरणार्थ, कायदेशीर संशोधनासाठी वापरल्या जाणाऱ्या डिजिटल प्रणाली मोठ्या प्रमाणातील न्यायनिर्णय आणि कायदेशीर साहित्याचे विश्लेषण करून संशोधन कार्य अधिक सुलभ करतात.

प्रशासनामध्ये कृत्रिम बुद्धिमत्ता सार्वजनिक सेवा वितरण, डेटा व्यवस्थापन आणि निर्णय प्रक्रियेमध्ये कार्यक्षमता वाढवते.

तथापि, तांत्रिक निर्णय प्रक्रियेमध्ये पारदर्शकता, जबाबदारी, पक्षपात (Bias) आणि मानवी हस्तक्षेपाचे महत्त्व या विषयांवर गंभीर चर्चा आवश्यक आहे.

कृत्रिम बुद्धिमत्तेसमोरील प्रमुख आव्हाने

कृत्रिम बुद्धिमत्तेच्या वाढत्या वापरामुळे अनेक गंभीर आव्हाने निर्माण होत आहेत. डेटा गोपनीयता, सायबर सुरक्षा, रोजगारातील बदल, तांत्रिक असमानता, अल्गोरिद्मिक पक्षपात आणि नैतिक प्रश्न ही प्रमुख आव्हाने आहेत.

डेटा संकलन आणि विश्लेषणासाठी मोठ्या प्रमाणावर वैयक्तिक माहिती वापरली जाते. त्यामुळे नागरिकांच्या गोपनीयतेचे संरक्षण अत्यंत आवश्यक बनले आहे.

तसेच, कृत्रिम बुद्धिमत्तेवर आधारित प्रणालींमध्ये वापरण्यात येणाऱ्या माहितीमध्ये पूर्वग्रह असल्यास त्याचा परिणाम निर्णय प्रक्रियेवर होऊ शकतो. उदाहरणार्थ, भरती प्रक्रिया, कर्ज मंजुरी किंवा अन्य स्वयंचलित निर्णय प्रणालींमध्ये अल्गोरिद्मिक पक्षपात सामाजिक असमानता वाढवू शकतो.

नैतिक आणि कायदेशीर पैलू

कृत्रिम बुद्धिमत्तेच्या वापरामुळे नैतिक आणि कायदेशीर प्रश्न अधिक महत्त्वाचे बनले आहेत. तांत्रिक विकासाबरोबर जबाबदार वापर, पारदर्शकता, उत्तरदायित्व आणि मानवी अधिकारांचे संरक्षण आवश्यक आहे.

डेटा संरक्षण कायदे, सायबर कायदे आणि तांत्रिक नियमन यांद्वारे कृत्रिम बुद्धिमत्तेच्या जबाबदार वापरासाठी धोरणात्मक व्यवस्था विकसित करणे आवश्यक आहे.

शैक्षणिक संस्था, शासन, उद्योग क्षेत्र आणि संशोधन संस्था यांनी एकत्रितपणे नैतिक तत्त्वांवर आधारित तांत्रिक विकासाला प्रोत्साहन देणे गरजेचे आहे.

निष्कर्ष

कृत्रिम बुद्धिमत्ता आधुनिक समाजव्यवस्थेमध्ये परिवर्तन घडवून आणणारे प्रभावी तंत्रज्ञान आहे. शिक्षण, आरोग्य, रोजगार, प्रशासन, न्यायव्यवस्था आणि सामाजिक जीवन या सर्व क्षेत्रांमध्ये त्याचे महत्त्वपूर्ण योगदान आहे. कार्यक्षमता, अचूकता आणि सुलभता वाढविण्याबरोबरच कृत्रिम बुद्धिमत्तेमुळे अनेक नवीन संधी निर्माण होत आहेत.

मात्र, तांत्रिक प्रगतीसोबत गोपनीयता, नैतिकता, सामाजिक असमानता, रोजगारातील बदल आणि मानसिक आरोग्य यांसारख्या प्रश्नांवर गंभीरपणे विचार करणे आवश्यक आहे. कृत्रिम बुद्धिमत्तेचा संतुलित, जबाबदार आणि मानवकेंद्रित वापर केल्यास आधुनिक समाज अधिक प्रगत, समावेशक आणि शाश्वत बनविणे शक्य होईल.

संदर्भसूची

1. Path to Precision by Bhawna Mittal, Independently Published (2026). (ASIN: BOGVBHYNT3).
2. एआयच तुफान, by Atul Kahate, मनोविकास प्रकाशन (2025).
3. Emotional Cleanse (Chitta Sudhi) by Bhawna Mittal, Independently Published (2026). (ASIN: BOGV7STVVK).
4. "बुद्धिमत्तेचे नवे युग: AI आणि मी" Buddhimattache Nave Yug - AI Ani Mi, by Surendra Bhobale (2025), Rajyuva Prakashan.

****

Impact of Contempt of Court as a Ground to Restrict Freedom of Speech and Expression – A Critique

By Adv. Swargajit Puran Wasnik

Advocate at Bombay High Court, Ph.D. Researcher
Government Law College, Mumbai.

Abstract

The Courts have the power to punish for contempt however it is one of the most sensitive powers in the judicial system, especially when it is exercised against the means of expression. When a constitutional democracy such as India secures the freedom of speech and expression as a fundamental right, the resort to contempt of court as a means of limitation opens serious issues regarding the compatibility of judicial dignity and democratic discourse. This article attempts a critical review of the Indian contempt of court laws being used as the ground to limit freedom of speech and expression guaranteed under Article 19(1)(a) of the Constitution of India. The paper, using historical, constitutional and comparative perspectives, and analyzing key and recent court decisions, points out that contempt of court law, as presently administered, is characterized by definitional indeterminacy, prosecutorial overreach, and a deterrent impact on public discourse. The study ends by proposing the reform of the system so as to make judicial power and freedom of speech co-exist harmoniously.

Introduction

Freedom of speech and expression is one of the most important fundamental rights in any democracy. Actually, it is not just a legal right, it's the very base on which participatory democracy is built. India grants this freedom to its citizens through Article 19(1)(a) of the Constitution. But, of course, this is not an unfettered right. Article 19(2) lists out the reasonable restrictions and one of them is *'Contempt of Court*, which gives the State and the courts themselves the power to control speech that scandalizes or weakens judicial authority. The main legislative piece dealing with this is

The Contempt of Courts Act, 1971. It looks at contempt in two aspects i.e. civil and criminal, of which criminal contempt is the one that most often gets attention when it comes to curbing speech. Criminal contempt basically refers to publishing content that scandalizes a court, causes prejudice to a judicial case, or in general, obstructs justice. The reason for safeguarding

judicial prestige is definitely there, but the way contempt jurisdiction has been used in India is open to major criticism.

Critics argue that the law of contempt has increasingly become a tool to shield the judiciary from legitimate criticism rather than to protect the administration of justice. The tension is particularly acute in an age of social media, citizen journalism, and heightened public scrutiny of institutions. When lawyers, journalists, activists, and even litigants face contempt proceedings for expressing views about judgments or judges, the chilling effect on speech is palpable. This paper undertakes a critique of this intersection, exploring how the law has evolved, how it fares against constitutional and international standards, and what reforms are needed.

Historical Perspective

Contempt of court law in India has its roots in a colonial history. The principle was taken from English common law, where courts believed they had an inherent power to sanction any behavior that obstructed the course of justice or diminished the authority of the court. This power was used on the spot and without the usual procedural safeguards of a criminal trial. The argument was that faith of the people in the judiciary was a necessary condition for the rule of law, and therefore a prompt response to any assault on judicial authority was a must. In England, the crime of *'scandalizing the court'* dated back to the early seventeenth century. However, by the nineteenth century, it was one of the recognized heads of criminal contempt and was especially used against newspapers that boldly criticized judicial decisions. The Judicial Committee of the Privy Council, in deciding cases from different colonies, saw fit to bring this doctrine into countries such as India, Ceylon, and the West Indies. From their inception, the High Courts of Bombay, Calcutta, and Madras have exercised contempt jurisdiction, using English courts as their model for this practice.

After gaining independence, India enacted the Contempt of Courts Act 1952 which was the first legislative framework post-independence. However, it was later substituted by the Contempt of Courts Act 1971 which continues to be the law till date. The 1971 Act indeed introduced an essential saving provision truth as a defence was not recognized until the 2006 amendment qualified it that way, albeit with the condition that the publication must be in the public interest. The introduction of truth as a defence after so many years, is an indication of how the lawmakers have realized that the scales of justice have been unreasonably tipped in favour of protecting the dignity of institutions to the detriment of recording factual expression. The historical development

therefore shows that the legislation was geared towards a colonial period when protecting the authorities was of greater importance than allowing discourse.

Constitutional Perspective

The Constitution balances free speech with limits under Article 19(1)(a) and (2). Contempt of court appears alongside sovereignty and public order, no different in status. Still, every restriction must be reasonable, and courts can judge that reasonableness. Any limitation on speech needs two things: it must be fair, and it must clearly connect to a legitimate concern. In State of madras v. G. Row (1952), the Supreme Court said the standard isn't subjective, it's about what makes sense objectively. Courts look at the right involved, why the rule exists, and if the restriction fits the problem. For contempt claims, that means scandalous statements must threaten justice directly - not just suggest a problem. A weak link does not cut it. The threat has to be real and real enough to affect how courts operate. Even then, judges don't assume danger just because something sounds offensive. There's a gap between sayings something is bad and showing harm occurs.

The court watches its own dignity. Plus, it judges others. How can justice stay fair when the judge holds both the pen and the shield? Free speech isn't just a right; it's a check on power. If judges aren't challenged, they stop listening to what people actually think. What happens if criticism is seen as personal instead of political? That makes accountability disappear. Some say we've moved forward with section 13(b), letting truth stand up in court cases from 2006. But saying *"Truth helps the Public"* lets judges pick sides, mostly in tense situations where politics runs hot. That means even true facts might not get protection. Courts now use proportionality standards from abroad, but these rules still let judges decide whether a threat to freedom of speech is justified. It's tricky because every decision feels like a balancing act. Is a comment too harsh? Too close to an officer's opinion? The line between criticism and attack blurs fast. Still, silence gives institutions immunity, and that can't last forever. Contempt law, as presently structured, does not always meet this standard.

Judicial Pronouncements and Case Laws

The Supreme Court of India has had plenty of opportunities to address the question of contempt of court and freedom of speech through its landmark cases. One such case is E.M.S. *Namboodiripad vs. T.N. Nambiar (1970),* when the Court considered that a public figure's

statement describing the judiciary as a class institution and making the courts as historical servants of the ruling class was in fact a criminal contempt. The Court leaned towards the protection of the dignity of the judiciary and considered that at that time, truth was not a defence. The case has been heavily debated as sacrificing institutional image for valid political criticism. In Arundhati Roy case (2002), the Supreme Court found the famous writer and activist guilty of criminal contempt based on her sworn statement that she was unable to appear before the Court and later on for her article on the Narmada dam order. The Court said that her words were offensive and obscene. The case sparked a lot of debate over the Court using contempt to suppress a leading voice of dissent, especially when the dam issue was a hot topic of public interest. The steps taken against Roy were largely seen as an overreaction because her critiques were aimed at only a few judicial decisions and their societal impact.

In the case of Re: Suo Motu Contempt Petition of Prashant Bhushan (2020), the Supreme Court took the matter of contempt against advocate Prashant Bhushan on the basis of two tweets that he had posted. In one of his tweets, he remarked about the role of the Chief Justice of India during the COVID-19 lockdown; and, in the other, he shared a thought on the performance of the Supreme Court over the last few decades. The Court considered both of the tweets to be in criminal contempt and a conviction was passed on him. While ordering a symbolic fine of one rupee, the bench held at the same time that the tweets had the effect of scandalizing the Court. The ruling was attacked by a lot of legal experts, bar associations, and civil society groups, both from India and abroad, who argued that the tweets were a part of the freedom of expression on issues of great public interest. The United Nations Special Rapporteur on freedom of expression voiced her concern as well. The case has become a point of contention in the discussion about the limits of contempt law and its incompatibility with contemporary free speech standards.

In *Vijay Kurle and Ors. v. State of Maharashtra (2020)* case, the Bombay High Court took the first step of considering bringing individuals to court for their social media posts. However, the Supreme Court in In Re: Disturbances in Manipur (2023) and the different High Courts' orders on commentary during COVID-19 have brought to light the ongoing judicial awareness towards media and social media criticism. In Subramanian Swamy v. Arun Shourie (2014), the Court has upheld that honest criticism of judgments should be allowed but that the crossing of the line is the disrespect of judges' integrity. Unfortunately, determining the line between faultfinding criticism

and contemptuous publication still remains obscure and is determined by the circumstances making the law uncertain. Recently, the courts have indicated a desire to expand the range of scandalizing the court to include almost any severe criticism of judicial behaviour. Also, the courts have not yet decided clear and objective criteria for protected speech versus contempt, resulting in the law being based mainly on the judges' personal opinion. Besides, the mere existence of this situation discourages the public from expressing their views about the judiciary.

International Perspective

Globally, most countries have either eliminated the offense of scandalizing the court or drastically limited it. England and Wales, where this legal concept originated, got rid of the offence of scandalizing the judiciary through the Crime and Courts Act, 2013. The Law Commission of England and Wales, in its 2012 report, stated that the offence has been hardly ever invoked, there is some uncertainty in the existing law, and even in this day and age, damage to public confidence in the courts from public criticism is at best a remote possibility. The Commission's recommendations echoed a deep change in orientation: in a free and open society, the courts' authority is based on their being impartial and producing high-quality decisions, not on them being immune from criticism. On the rare occasion when the European Court of Human Rights (ECHR) deals with the issue, it recognizes the right of individuals to express their criticism of judicial decisions but imposes the single condition that such criticism should not allege wrong motives without a factual basis. In *Barfod v. Denmark (1989)*, the ECHR acknowledged the fact that courts have the right to protect their prestige however in the following decisions, e.g. Prager and *Oberschlick v. Austria (1995) and Kyprianou v. Cyprus (2005)*, the Court warned against the use of powers of contempt to silence strong criticism. In the latter case, the ECHR found a violation of Article 10 (freedom of expression) and Article 6 (fair trial) because the court that initiated contempt proceedings was the same as the one against whom the criticism was directed, raising structural impartiality concerns directly analogous to India's system.

In this area, the United States offers the most comprehensive protection for free speech. After the landmark decision in Bridges v. California (1941), Supreme Court set the bar for contempt so high that it has rarely been met by requiring that the publication must create a. 'clear and present danger' to the integrity or administration of justice. The US policy is indicative of the wider First Amendment doctrine that, amongst other things, public institutions and courts, must

be able to endure heated discussion. As public officials who wield State power, judges are subjected to the same degree of exposure as other public characters. The United Nations Human Rights Committee, the body responsible for monitoring implementation of Article 19 of the International Covenant on Civil and Political Rights (ICCPR), sees restrictions on expression as measures that should only be implemented when absolutely necessary and only to the extent of the threat. The Human Rights Committee has also aired its concern about the practice of contempt of court laws being used to limit the freedom of the press and the ability of civil society to comment on judicial proceedings. Therefore, India's commitments under international law are in accordance with the domestic constitutional requirement to limit speech-based restrictions on contempt to the minimum necessary to achieve the purpose intended.

Recent Trends

The digital revolution has drastically changed how people express themselves in connection with the judiciary. For example, the social media platforms allow people to comment on court proceedings, judicial decisions, and the behavior of individual judges almost instantly and to a very wide audience. This empowerment of people to express themselves has made the law of contempt not only a source of serious debate but also more frequently used. In fact, Indian courts have on quite a few occasions stated that they are willing to use their contempt powers if they find online comments highly critical of the judiciary, thus indicating their institutional unease with the speed and vastness of digital criticism. The suo motu contempt proceeding - referring to the courts taking up the matter on their own without any official complaint - has been heavily criticized. Prashant Bhushan is the most well-known case for this, but there have been other instances where High Courts have initiated actions against social media posts by litigants, lawyers as well as ordinary citizens. Proceedings without a complainant, besides the court acting as both plaintiff and judge, raise fairness issues in terms of procedure.

One very disturbing recent development is the use of contempt law along with other restrictive measures - such as sedition under Section 124A IPC (which has been largely re-considered by the Supreme Court in *S.G. Vombatkere v. Union of India, 2022)* and criminal defamation under Sections 499500 IPC - to map out a range of legal risks for those who criticize the judicial or governmental powers. Civil society organizations have kept record of the fact that increasingly lawyers, journalists, and litigants are being served contempt notices when there is

adverse publicity about certain court orders. Ultimately, this legal atmosphere results in a significant reduction in the forum for public discussion of judicial matters. On the other hand, there have been some positive changes as well. The Law Commission of India's 274th Report (2018), even though it did not suggest the abolition of the scandalizing-the-court offence, recognized the importance of setting out clearer standards and warned against an overly broad interpretation. Several High Courts have pointed out that genuine criticism should be protected and that the court must not be perceived as a tool of silencing dissent. The Supreme Court's consent in the same case of Prashant Bhushan that penalizing the accused with just one rupee was enough instead of sentencing to jail happens to highlight a certain level of judicial restraint in passing sentence, although not jurisdiction.

Conclusion and Suggestions

The laws about contempt of court in connection to freedom of speech and expression in India needs to be reformed in line with principles. The current system has three major flaws. Firstly, the crime of scandalizing the court is ill-defined, giving judges the power to consider pointed but legitimate criticism as contempt. Secondly, the suo motu contempt procedure, which gives the court the roles of both complainant and judge, is contrary to the very notion of fair judgment. Finally, the intimidation that people feel from the possibility of a contempt action - quick, disgraceful and the accused is the very person who criticizes (judge, court) has the most negative impact on the ways in which the public talks about the actions and the judgments of the courts. Changing the law requires that we accept that judicial legitimacy in a democracy depends on transparent, accountable and quality judicial conduct - not on judges being legally immune to criticism. England's doing away with the scandalizing-the-court offence and America's requirement of a clear-and-present-danger are two examples showing that strong judicial institutions do not need that kind of protection. India should also do that.

Specific proposals can be derived from the above analysis. For one thing, the crime of scandalizing the court should be either done away with completely or at least limited to cover only made-up stories backed up by malice and a serious risk of interfering with the administration of justice. The infringing of a process out of the blue problem should even be discarded in favour of a puzzle that proceedings have to be initiated on the complaint of an independent authority such as the Attorney General or Solicitor General, a rule which has already been made by the framers

of the Constitution in Section 15 of the 1971 Act for proceedings in the Supreme Court and High Courts this would be a measure that should be made mandatory and non-waivable. Truth, which was recognized as a defence in 2006, should be preserved whenever the publication is factually accurate without the additional requirement that it serve the public interest, which is nothing but a return of judicial subjectivity. Lastly, proportionality being the constitutional and international measure for all speech restrictions should be made clear in the 1971 Act as a statutory standard, and at the same time, the courts should be required to prove that the protective purpose cannot be achieved by less restrictive methods before they use their contempt jurisdiction.

A free press and an independent judiciary are both pillars of constitutional democracy. The law must be reformed to ensure that protecting one does not come at the systematic expense of the other. The dignity of courts flows from the quality of their decisions and the integrity of their processes not from their insulation from public scrutiny.

REFERENCES

Primary Sources - Legislation

- Constitution of India, 1950, Articles 19(1)(a) and 19(2).
- Contempt of Courts Act, 1971 (Act No. 70 of 1971), as amended by the Contempt of Courts (Amendment) Act, 2006.
- The Contempt of Courts Act, 1952 (repealed).
- Crime and Courts Act, 2013 (UK), s. 33 (abolishing scandalizing the court).
- International Covenant on Civil and Political Rights, 1966, Article 19, to which India acceded in 1979.

Primary Sources - Case Laws

- Barfod v. Denmark, Application No. 11508/85, European Court of Human Rights, 1989.
- Bridges v. California, 314 U.S. 252 (1941), Supreme Court of the United States.
- E.M.S. Namboodiripad v. T.N. Nambiar, AIR 1970 SC 2015.
- In re: Arundhati Roy, (2002) 3 SCC 343.
- In re: Prashant Bhushan, (2021) 1 SCC 745 (Contempt Petition (Crl.) No. 1 of 2020).
- Kyprianou v. Cyprus, Application No. 73797/01, European Court of Human Rights (Grand Chamber), 2005.

- Prager and Oberschlick v. Austria, Application No. 15974/90, European Court of Human Rights, 1995.
- S.G. Vombatkere v. Union of India, (2022) 7 SCC 433.
- State of Madras v. V.G. Row, AIR 1952 SC 196.
- Subramanian Swamy v. Arun Shourie, (2014) 12 SCC 344.

Secondary Sources - Books and Reports

- Basu, D.D., Commentary on the Constitution of India (9th edn, LexisNexis 2014) vol. 3.
- Law Commission of England and Wales, Report No. 335, Contempt of Court: Scandalising the Court (2012).
- Law Commission of India, 274th Report: Legal Framework: Blasphemy and Racial and Religious Hatred Laws (2018).
- Seervai, H.M., Constitutional Law of India (4th edn, N.M. Tripathi 1993) vol. 1.
- United Nations Human Rights Committee, General Comment No. 34 on Article 19 (Freedom of Opinion and Expression), CCPR/C/GC/34 (2011).

Secondary Sources - Articles

- Baxi, Upendra, 'The Avatars of Indian Judicial Activism: Explorations in the Geographies of [In]justice' in S.K. Verma and Kusum Kumar (eds), Fifty Years of the Supreme Court of India (OUP 2000).
- Divan, Shyam, 'Contempt of Court: A Critical Examination of the Indian Law' (2003) 3 SCC (J) 23.
- Redish, Martin H. and Kaludis, Kellie A., 'The Right of Expressive Access in First Amendment Theory: Redistributive Values and the Democratic Dilemma' (1989) 93 Northwestern University Law Review 1083.
- Sathe, S.P., 'Judicial Activism: The Indian Experience' (2001) 6(1) Washington University Journal of Law and Policy 29.
- Special Rapporteur on Freedom of Opinion and Expression (David Kaye), Statement on Prashant Bhushan Contempt Case (United Nations, August 2020).

****

Regulation of Artificial Intelligence in India: A Comparative Analysis with Global Frameworks

By Adv. Harjot Kaur

Research Scholar, Punjabi University Patiala, Practicing Advocate at Punjab & Haryana High Court
Email: arora7274@gmail.com

Abstract:

Artificial Intelligence (AI) is rapidly becoming a part of everyday life, influencing fields such as healthcare, finance, governance, and even the legal system. While it offers clear advantages in terms of speed, efficiency, and accuracy, it also raises important legal and ethical concerns. This paper looks at how AI is developing and how it is beginning to interact with the law, especially in the Indian context.

The study highlights the growing use of AI in legal processes, including research and decision-making, and examines the challenges that come with it, such as bias in data, lack of transparency, and difficulties in fixing accountability. It also reviews the current legal position in India, focusing on existing laws like the Information Technology Act, 2000 and the Digital Personal Data Protection Act, 2023, and points out their limitations in dealing specifically with AI.

Further, the paper compares India's approach with global models, including those of the European Union, the United States, and China, to understand different regulatory strategies. Based on this analysis, the paper suggests that India needs a more structured and forward-looking legal framework to effectively regulate AI. Overall, the study aims to emphasize the importance of balancing technological innovation with legal responsibility to ensure that AI is used in a fair, transparent, and accountable manner.

Key Words: *artificial intelligence, AI regulation, legal framework in India, data protection, AI ethics, accountability, transparency, comparative AI governance*

Introduction

Artificial Intelligence (AI) has emerged as one of the most influential technological developments in recent years. It is no longer limited to science fiction but is now actively used in areas such as healthcare, finance, governance, and even the legal system. While AI has improved

efficiency and accuracy, it has also raised serious concerns regarding its impact on society and the law.[27]

The judiciary has also begun to engage with technology in meaningful ways. The Supreme Court of India has acknowledged the importance of digital tools in improving access to justice and efficiency in court processes. However, the legal system is still adapting, and there remains uncertainty about how AI-driven decisions should be treated within the framework of existing laws.[28]

Artificial Intelligence (AI) refers to the ability of machines or computer systems to perform tasks that normally require human intelligence. These tasks include learning from data, recognizing patterns, making decisions, and solving problems. In simple terms, AI enables machines to "think" and "act" in ways that resemble human behaviour, although it operates through programmed algorithms and data processing.[29] The concept of AI is not entirely new and can be traced back to the mid-20th century. Early research in AI focused on developing machines that could perform basic logical functions and problem-solving tasks. Over time, advancements in computing power and data availability have significantly improved the capabilities of AI systems, allowing them to handle more complex and dynamic tasks.[30]

In recent years, AI has witnessed rapid growth due to developments in technologies such as machine learning and deep learning. These technologies allow systems to improve their performance automatically by analyzing large amounts of data. As a result, AI is now capable of performing sophisticated functions such as speech recognition, image analysis, and predictive decision-making.[31] Presently, AI is widely used across multiple sectors, including healthcare, education, finance, and law. For instance, in the legal field, AI tools assist in legal research, contract analysis, and case prediction, thereby saving time and increasing efficiency. This widespread adoption highlights the transformative impact of AI on modern society.

[27] Stuart Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach* (3rd edn., Pearson, 2010).
[28] *Justice K.S. Puttaswamy v. Union of India*, (2017) 10 SCC 1.
[29] Stuart Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach* (3rd edn., Pearson, 2010).
[30] Nils J. Nilsson, *The Quest for Artificial Intelligence* (Cambridge University Press, 2010).
[31] Ian Goodfellow, Yoshua Bengio & Aaron Courville, *Deep Learning* (MIT Press, 2016).

Aims and Objectives:

Following are the aims and objectives of the research:

The primary aim of this study is to examine the growing role of Artificial Intelligence (AI) and to analyze the need for an effective legal framework to regulate its use, particularly in the Indian context. Hence, the objectives are as follows:-

1. To understand the concept and development of Artificial Intelligence and its increasing application in various sectors, including the legal field.
2. To analyze the need for regulating AI by identifying key legal and ethical concerns such as bias, lack of transparency, and accountability.
3. To examine the existing legal framework in India, including relevant legislations governing data protection and information technology.
4. To study and compare global approaches to AI regulation, particularly those of the European Union, the United States, and China.
5. To identify gaps in the current Indian framework and assess its effectiveness in addressing AI-related challenges.
6. To suggest measures for strengthening AI regulation in India in line with global standards and best practices.

Research Methodology:

The research methodology and methods align with doctrinal and analytical legal research, supplemented by qualitative approaches for a richer understanding of evolving jurisprudence. The tools and sources used are AIR database, Indian Kanoon and Supreme Court website including Law Commission of India Reports (relevant ones on judicial conduct and constitutional function).

Scope and Limitation:

This study examines the legal and ethical regulation of Artificial Intelligence in India, focusing on existing laws such as the Information Technology Act, 2000 and the Digital Personal Data Protection Act, 2023. It also compares India's approach with global frameworks, particularly the European Union, the United States, and China, to identify best practices and assess the need for a comprehensive AI regulatory framework. The study is doctrinal and based on secondary

sources, without empirical analysis. It is limited to selected jurisdictions and may not reflect all global approaches. Due to the rapidly evolving nature of
AI, some developments may not be fully captured. The study also focuses on legal aspects and does not explore technical details in depth

Literature Review:

Scholarly engagement with Artificial Intelligence (AI) has expanded significantly in recent years, particularly in relation to its regulatory, ethical, and societal implications. Existing literature reflects a shared understanding that while AI fosters innovation and efficiency, it also introduces challenges that strain conventional legal frameworks. Andrew Tutt explores the idea of institutional oversight in his work, suggesting the need for a specialized regulatory body similar to the Food and Drug Administration to supervise algorithmic systems.[1] His argument highlights the growing recognition that traditional regulatory approaches may not be sufficient to manage the complexities associated with AI technologies.

Cathy O'Neil's work brings attention to the ethical concerns surrounding AI, particularly the issue of bias embedded within algorithmic systems.[2] She demonstrates how reliance on large datasets, which often mirror existing social inequalities, can result in discriminatory outcomes. This concern is especially significant in sensitive domains such as hiring processes, law enforcement, and judicial decision-making, where fairness is critical.

The European Commission adopts a more structured approach through its proposed Artificial Intelligence Act, which introduces a risk-based framework for regulation.[3] This model classifies AI systems according to their potential risks and imposes corresponding obligations, thereby aiming to balance innovation with the protection of fundamental rights.

Frank Pasquale contributes to the discourse by examining the problem of transparency in AI systems. [4] He describes the "black box" nature of algorithmic decision-making, where the lack of explainability makes it difficult to understand how decisions are reached. This opacity complicates issues of accountability, particularly when harm arises from automated processes.

Karen Yeung further develops this discussion by analyzing AI within a human rights framework. [5] Her work raises important questions about responsibility and accountability in the context of advanced digital technologies, suggesting that existing legal concepts may require re-evaluation to remain effective in the AI era.

Hence, in the Indian context, the NITI Aayog's National Strategy for Artificial Intelligence reflects the country's initial efforts to engage with AI policy.[6] While it emphasizes the potential of AI for economic and social development, it also acknowledges the absence of a comprehensive legal framework specifically designed to regulate AI. Existing laws provide only limited guidance, leaving significant gaps in areas such as transparency and accountability.

Russell and Norvig provide a foundational understanding of AI, outlining its technical evolution and broad applications. [7] Their work underpins much of the contemporary discussion, offering essential context for analyzing the legal and ethical challenges associated with AI.

Overall, the literature indicates a clear and growing need for well-balanced regulatory mechanisms. While different jurisdictions adopt varied approaches, there is a consistent emphasis on ensuring that AI systems operate in a manner that is transparent, accountable, and aligned with ethical principles. This underscores the importance of developing a comprehensive and context-specific regulatory framework in India.

Why Does Artificial Intelligence Need Regulation?

Artificial Intelligence (AI) has become an integral part of modern society, but its rapid growth has also brought several risks that cannot be overlooked. While AI offers efficiency and innovation, its unchecked use may lead to unintended consequences. This makes regulation necessary to ensure that the technology is developed and used in a responsible manner.[32] One of the primary concerns surrounding AI is the issue of ethics. AI systems often make decisions based on data, and if that data is biased or incomplete, the outcomes may be unfair or discriminatory. This is particularly problematic in sensitive areas such as hiring, law enforcement, and judicial decision-making, where fairness and equality are essential.[33]

Hence, the need for effective regulation becomes evident. Proper legal frameworks can help balance innovation with accountability, ensuring that AI is used in a way that benefits society while minimizing risks. Regulation is therefore not meant to hinder technological progress but to guide it in a responsible and ethical direction.[34]

[32] Stuart Russell, *Human Compatible: Artificial Intelligence and the Problem of Control* (Viking, 2019).
[33] Kate Crawford, *Atlas of AI* (Yale University Press, 2021).
[34] OECD, *Principles on Artificial Intelligence* (2019).

Existing Legal Framework in India

India does not yet have a specific law dedicated exclusively to regulating Artificial Intelligence (AI). Instead, the governance of AI is currently managed through existing legal frameworks that deal with information technology, data protection, and digital conduct. These laws provide a partial structure for addressing issues arising from AI, although they were not originally designed for this purpose.[35]

One of the primary legislations relevant in this context is the Information Technology Act, 2000. This Act governs electronic transactions, cyber security, and data protection to a certain extent. While it does not directly mention AI, its provisions relating to data handling, intermediary liability, and cyber offences can be applied to AI systems, especially those operating through digital platforms.[36] Another significant development is the enactment of the Digital Personal Data Protection Act, 2023. This law focuses on the protection of personal data and establishes obligations for entities that collect and process such data. Since many AI systems rely heavily on large datasets, including personal information, this Act plays an important role in regulating how data is used in AI technologies.[37]

Global Approaches to Regulating Artificial Intelligence: -

The European Union's Regulatory Model

The European Union has taken one of the most comprehensive and structured approaches to regulating Artificial Intelligence (AI). Recognizing both the potential benefits and risks of AI, the EU has aimed to create a legal framework that ensures innovation while safeguarding fundamental rights. This approach reflects a strong commitment to ethical and human-centric AI governance.[38]

The European Union's approach highlights a careful balance between regulation and technological development. By focusing on risk and fundamental rights, the EU model serves as an important reference point for other countries, including India, that are in the process of developing their own AI regulatory frameworks.[39]

[35] Ministry of Electronics and Information Technology, *Report on Artificial Intelligence Governance in India* (2021).
[36] Information Technology Act, 2000.
[37] Digital Personal Data Protection Act, 2023.
[38] European Commission, *White Paper on Artificial Intelligence* (2020).
[39] OECD, *Principles on Artificial Intelligence* (2019).

The United States' Approach to AI Governance

The United States follows a distinct approach to Artificial Intelligence (AI) regulation, which is largely flexible and sector-based rather than relying on a single comprehensive law. This approach reflects the country's emphasis on promoting innovation and technological growth while addressing risks through existing legal mechanisms.[40]

While the U.S. approach encourages innovation and flexibility, it also has certain limitations. The absence of a unified legal framework may lead to inconsistencies and gaps in regulation, especially in areas where multiple agencies have overlapping responsibilities. This can create challenges in ensuring uniform standards for AI governance.[41] Hence, the United States model represents a pragmatic approach that balances regulation with innovation. It offers valuable insights for countries like India, particularly in terms of leveraging existing legal systems, but also demonstrates the need for coherence and clarity in regulatory policies.[42]

China's State-Centric Model

A distinctive feature of China's approach is its strict regulatory oversight. AI systems, particularly those involved in data processing, online content, and public surveillance, are subject to detailed rules and monitoring. The government has also implemented regulations on algorithms, requiring companies to ensure that their systems align with state policies and do not threaten social order.[43]

Overall, China's state-centric approach presents a contrasting model to both the European Union and the United States. It demonstrates how AI regulation can be tightly integrated with governmental control, offering important insights for comparative analysis, particularly for countries like India that are still developing their regulatory strategies.[44]

International Principles and Ethical Guidelines

At the international level, several organizations have taken initiatives to develop common principles for the ethical use of Artificial Intelligence (AI). These efforts aim to guide countries in creating regulatory frameworks that promote innovation while protecting fundamental rights.

[40] National Science and Technology Council, *National Artificial Intelligence Initiative Act Report* (2020).
[41] Federal Trade Commission, *Guidance on the Use of Artificial Intelligence* (2021).
[42] OECD, *Principles on Artificial Intelligence* (2019).
[43] Graham Webster et al., *China's Algorithm Regulation Policy* (Stanford University, 2022).
[44] OECD, *Principles on Artificial Intelligence (2019).*

Although these guidelines are not legally binding, they play an important role in shaping global standards and influencing national policies.[45]

Comparing India with Global AI Frameworks

A comparative analysis of Artificial Intelligence (AI) regulation reveals significant differences in how countries approach governance, risk, and innovation. India's framework is still evolving and largely policy-driven, whereas global models such as those of the European Union, the United States, and China demonstrate more defined regulatory structures. This comparison helps in understanding where India stands and what lessons can be drawn from international practices.[46] In terms of regulatory approach, India primarily relies on guidelines and sector-specific laws, without a dedicated AI legislation. In contrast, the European Union has adopted a comprehensive legal framework through the EU Artificial Intelligence Act, which provides clear classifications and obligations based on risk. The United States, on the other hand, follows a flexible and decentralized approach, while China adopts a strict, state-controlled model.[47]

When it comes to data protection and privacy, India has taken a significant step with the Digital Personal Data Protection Act, 2023. However, its enforcement and scope are still developing. The European Union's General Data Protection Regulation (GDPR) sets a higher global standard with strong protections and penalties, whereas the United States relies on sector-specific privacy laws. China, while having strict data control, prioritizes state interests over individual privacy.[48]

Another key difference lies in the balance between innovation and regulation. India and the United States tend to adopt a more innovation-friendly approach, aiming to encourage technological growth with minimal restrictions. In contrast, the European Union adopts a more cautious, risk-based approach, prioritizing safety and accountability. China combines rapid innovation with strong regulatory control, ensuring that development aligns with national objectives.[49]

[45] Ibid
[46] Ibid
[47] European Commission, *Proposal for a Regulation on Artificial Intelligence* (2021).
[48] Digital Personal Data Protection Act, 2023; Regulation (EU) 2016/679 (General Data Protection Regulation).
[49] Ryan Calo, "Artificial Intelligence Policy: A Primer and Roadmap" (2017) 51 U.C. Davis Law Review 399.

Key Legal and Ethical Issues in AI Regulation

Artificial Intelligence (AI) raises several legal and ethical concerns that make its regulation both necessary and challenging. One of the most significant issues is accountability. When an AI system makes a decision that results in harm, it becomes difficult to determine who should be held responsible. Unlike traditional systems, AI operates with a certain level of autonomy, which creates uncertainty regarding whether liability should rest with the developer, the user, or another entity.[50]

Transparency is another critical issue, often referred to as the "black box" problem. Many AI systems operate in ways that are not easily understandable, even to experts. This lack of explainability makes it difficult to assess how decisions are made, thereby affecting trust and raising challenges for legal accountability.[51]

In addition to these concerns, ethical questions about fairness, privacy, and human control remain central to AI governance. Ensuring that AI systems respect fundamental rights and operate in a socially responsible manner is an on-going challenge. Addressing these issues requires not only legal regulation but also ethical awareness and international cooperation.[52]

Suggestions for Strengthening AI Regulation in India

In order to effectively regulate Artificial Intelligence (AI), India needs to move beyond a purely policy-driven approach and work towards establishing a comprehensive legal framework. While existing initiatives provide a foundation, a dedicated law on AI would help address issues such as accountability, transparency, and ethical use in a more structured manner. Such a framework should be flexible enough to adapt to rapid technological developments.[53] India should also focus on building institutional capacity and technical expertise. Regulatory bodies must be equipped with the necessary knowledge and resources to understand and monitor AI technologies. Encouraging collaboration between government, academia, and industry can further support informed decision-making and innovation.[54]

[50] Ibid
[51] Kate Crawford, *Atlas of AI* (Yale University Press, 2021)
[52] UNESCO, *Recommendation on the Ethics of Artificial Intelligence* (2021).
[53] Ministry of Electronics and Information Technology, *Report on AI Governance in India* (2021).
[54] World Economic Forum, *AI Governance Framework* (2020).

India should also actively engage in international cooperation on AI governance. Since AI operates across borders, collaboration with global organizations and adoption of international best practices can help create more consistent and effective regulatory standards. This will also enable India to play a meaningful role in shaping global AI policy discussions.[55]

Research Methodology

The present study adopts a doctrinal method of research, which primarily involves the analysis of existing legal materials such as statutes, case laws, policy documents, and academic literature. This method is suitable for understanding the current legal framework governing Artificial Intelligence (AI) and identifying the gaps within it. The research relies on secondary sources to examine how laws are interpreted and applied in practice.[56] The research is descriptive and analytical in nature. It not only explains the existing legal position but also critically examines the effectiveness of current frameworks. The study further attempts to evaluate the challenges associated with AI regulation and suggests possible improvements based on global standards.[57]

Conclusion

Artificial Intelligence (AI) is rapidly transforming various aspects of society, offering both opportunities and challenges for legal systems. This study has shown that while AI has the potential to improve efficiency and innovation, it also raises serious concerns related to privacy, accountability, and ethical use. These issues make it essential for countries to develop appropriate regulatory frameworks that can effectively govern AI technologies.[58] Hence, the future of AI regulation in India will depend on its ability to adapt to technological advancements while maintaining a strong legal and ethical foundation. A proactive and well-structured approach will be crucial in ensuring that AI serves as a tool for societal progress rather than a source of risk and inequality.[59]

[55] OECD, *Principles on Artificial Intelligence* (2019).
[56] S.N. Jain, Legal Research and Methodology (LexisNexis, 2016).
[57] NITI Aayog, *Responsible AI for All* (2021).
[58] OECD, *Principles on Artificial Intelligence* (2019).
[59] World Economic Forum, *Global AI Governance Framework* (2020)

REFERENCES

1. Andrew Tutt, "An FDA for Algorithms" (2017) 69 Administrative Law Review 83.
2. Cathy O'Neil, Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy (Crown, 2016).
3. European Commission, Proposal for a Regulation on Artificial Intelligence (Artificial Intelligence Act), 2021.
4. Frank Pasquale, The Black Box Society: The Secret Algorithms That Control Money and Information (Harvard University Press, 2015).
5. Karen Yeung, "A Study of the Implications of Advanced Digital Technologies (Including AI Systems) for the Concept of Responsibility within a Human Rights Framework" (Council of Europe, 2018).
6. NITI Aayog, National Strategy for Artificial Intelligence (2018).
7. Stuart Russell & Peter Norvig, Artificial Intelligence: A Modern Approach (3rd edn., Pearson, 2010).

****

Accountability for AI-Driven Decisions: Frameworks, Failuers and the Path to Global Standards

By Yamini Choudhary

F.Y. BB.A. LL.B. (Hons.)
School of Law, Mody University of Science and Technology, Lakshmangarh.
Email: yaminic031@gmail.com

By Ananya Acharya

F.Y. BB.A. LL.B. (Hons.)
School of Law, Mody University of Science and Technology, Lakshmangarh.
Email: ananyaacharya1238@gmail.com



Abstract

In 2022, an American citizen was wrongfully arrested in New Orleans after a facial recognition algorithm misidentified him as a robbery suspect. He was detained for six days. No one was held accountable. This paper argues that such outcomes are not anomalies they are the structural consequence of a global accountability framework that permits the delegation of human responsibility to machines while insulating human decision-makers from liability for the consequences. Current regulatory responses are inadequate not merely because they are piecemeal, but because they fail to enforce a foundational principle: human responsibility for AI-driven decisions is non-delegable. This paper examines AI accountability across transparency, fairness, and legal liability, conducts a comparative analysis of the European Union, United States, China, and India, and draws on three paradigmatic case studies COMPAS, JP Morgan's fraud detection system, and IBM Watson Health together with India's landmark April 2026 Gujarat High Court AI Policy. It proposes an integrated accountability architecture built on five

criteria: interoperability, normative cohesion, cultural adaptability, transparency of process, and non-delegable human responsibility.

Keywords: *AI accountability, algorithmic fairness, EU AI Act, COMPAS, judicial AI policy, transparency, bias mitigation, global AI governance*

1. Introduction

In March 2023, a Black man in New Orleans became the sixth known wrongful arrest victim of facial recognition AI in the United States. The algorithm matched him to grainy surveillance footage. Police relied on the match without independent verification. Prosecutors dismissed the charges after he had already spent nearly a week in jail. When he sought accountability, the trail vanished into a familiar labyrinth: the AI vendor blamed data quality; the police department cited software reliance; no individual officer faced sanction. AI did not remove responsibility it redistributed it, until it disappeared entirely.

This incident is not exceptional. It is structural. Across healthcare, criminal justice, finance, and public administration, AI systems now make or directly shape decisions of profound consequence. When these systems fail denying bail, misdiagnosing cancer, rejecting loan applications, generating fabricated legal citations the architecture of modern AI deployment systematically diffuses liability across developers, deployers, regulators, and the algorithms themselves, until no single actor is identifiable as answerable. This diffusion is not a bug in our accountability frameworks. It is their defining feature. Accountability that cannot be enforced is accountability in name alone.

This paper advances a structural argument: AI accountability failures are rooted in the delegation of human responsibility to machines, and current regulatory frameworks fail because they do not enforce the principle that such responsibility is non-delegable. The right question is not simply 'which law applies?' but 'who remains answerable, and to whom?' Addressing that question requires more than coordination between regulatory regimes it demands a framework anchored in the irreducible humanity of consequential decisions. *The analysis proceeds as follows*: Section 2 situates accountability within its conceptual foundations. Section 3 compares regulatory models across four major jurisdictions. Sections 4 and 5 examine case studies and judicial responses. Sections 6 and 7 propose an integrated architecture and conclusions.

2. The Conceptual Foundations of AI Accountability

2.1 Accountability as an Ethical Imperative

Accountability in AI systems is the product of the interaction between transparency and fairness. Radanliev (2025) frames these as overlapping principles in which their intersection yields accountability the condition under which 'AI developers and users are held responsible for the outcomes of AI systems.' Without transparency about how a model functions, fairness audits are impossible. Without fairness, even a transparent system produces discriminatory outcomes. And without enforceable accountability structures, neither transparency nor fairness yields any remedy when harm occurs.

Accountability has both procedural and substantive dimensions. Procedurally, it demands that decision-making processes be documented, auditable, and explainable. Substantively, it demands that someone bear legal or institutional responsibility for adverse outcomes. Mittelstadt (2019) warns that without clear accountability structures, it becomes nearly impossible to address AI-caused harms a concern especially acute when multiple stakeholders are involved in designing, training, deploying, and maintaining a system. Yet Radanliev's framework, while analytically useful, risks treating accountability as the natural product of overlapping principles rather than as a legal obligation requiring affirmative enforcement. This framing risks oversimplifying the question of who, specifically, is obligated to act and who bears the cost of inaction.

2.2 Transparency, Explainability, and the Precondition of Accountability

Transparency is the necessary precondition of accountability. A system whose decision logic is opaque cannot be audited, contested, or corrected. Radanliev (2025) usefully distinguishes between transparency (accessibility of AI workings to stakeholders), explainability (the ability to render outputs in non-technical language), and clarity (straightforward communication of AI purposes). Explainable AI (XAI) techniques such as LIME and SHAP represent technical attempts to operationalise this transparency: LIME perturbs input data to reveal how changes affect predictions; SHAP assigns quantified contribution values to each input feature.

However, technical explainability is not sufficient. Jobin, Ienca, and Vayena (2019), in their global survey of AI ethics guidelines, identify transparency as one of the most widely converged-upon principles across jurisdictions — precisely because its absence erodes the public

trust on which AI legitimacy depends. Regulatory frameworks must therefore mandate not only that systems be technically interpretable, but that explanations be practically accessible to those whose lives they affect a patient, a loan applicant, a criminal defendant. Technical transparency that is legally inaccessible is, functionally, no transparency at all.

2.3 Fairness and the Problem of Algorithmic Bias

Fairness demands that AI systems make decisions without prejudice. This is technically and politically complex: AI learns from historical data, and historical data encodes historical injustices. Training a credit model on decades of lending records may reproduce discriminatory patterns; training a recidivism tool on criminal justice data may replicate racially disparate policing practices.

Radanliev (2025) identifies several algorithmic approaches: Fair Representation Learning (FRL), which transforms data into representations invariant to sensitive attributes; Equalised Odds, which ensures equal true-positive and false-positive rates across demographic groups; and Fairness through Awareness (FTA), which adjusts decision boundaries so that similar individuals receive similar predictions. Crucially, these approaches involve trade-offs perfect demographic parity may conflict with individual accuracy. There is no purely technical resolution to such tensions. As Binns (2018) demonstrates drawing on political philosophy, fairness in machine learning is not a single objective but a contested value requiring deliberate normative choice among competing conceptions. Floridi et al. (2018) similarly emphasise that the ethical governance of AI requires human institutions to make and own those choices — not to offload them to algorithmic outputs. The pretence that algorithms can resolve value conflicts is itself a form of accountability evasion.

3. Comparative AI Accountability Frameworks

Radanliev (2025) observes that AI ethics policies are 'deeply influenced by cultural, socio-political, and economic contexts, making cross-regional comparisons inherently complex.' A comparative analysis nonetheless reveals a common structural failure: each major model addresses some dimensions of the accountability problem while leaving others systematically unresolved.

3.1 The European Union: Regulation as the Accountability Instrument

The EU AI Act represents the most comprehensive mandatory accountability framework to date. Its risk-based architecture classifies AI applications by potential harm: 'unacceptable risk' systems are prohibited; 'high-risk' applications in recruitment, credit, law enforcement, and healthcare face

mandatory requirements including technical documentation, human oversight, bias testing, and post-market monitoring. Fines for non-compliance can reach 4% of global annual turnover.

The Act introduces what Radanliev (2025) describes as 'comprehensive provisions that assign legal responsibility' distinguishing it from voluntary frameworks. Deployers of high-risk AI must register systems in a public database, conduct conformity assessments, and provide meaningful explanations of AI-driven decisions. The GDPR reinforces this, granting data subjects rights to explanation of automated decisions. Together, these create an accountability ecosystem with teeth. However, the EU's approach primarily addresses ex ante regulatory compliance; its capacity to enforce accountability when distributed harm occurs across complex AI supply chains remains to be tested.

3.2 The United States: Accountability Through Voluntary Standards

The United States has taken a fundamentally different approach. The NIST AI Risk Management Framework (2023) provides a comprehensive but non-binding structure. Accountability is encouraged rather than mandated: companies develop internal policies tailored to their operational risks, with accountability structures emerging from industry self-regulation. Radanliev (2025) notes that the US framework received 'intermediate scores' on accountability dimensions precisely because of this lack of enforceability.

Where accountability is voluntary, it tends to be inconsistent, concentrated among well-resourced firms, and unavailable as a remedy to those harmed. The US model conflates internal risk management with public accountability a confusion that the JP Morgan case study below exposes.

3.3 China: State-Directed Accountability

China's governance model frames accountability primarily in terms of social harmony, national security, and state oversight. The Provisions on the Administration of Deep Synthesis Internet Information Services (2022) and the Interim Measures for the Management of Generative AI Services (2023) place obligations on service providers, requiring content labelling and prohibiting outputs that 'endanger national security.' Accountability runs upward to the state rather than downward to individuals.

China's use of AI in facial recognition for public security illustrates the distinctive character of this model: privacy concerns, which in EU and US discourse are central to accountability, are

subordinated to collective security. Radanliev (2025) observes that these 'diverging priorities highlight the inherent challenges in creating universal standards.' Yet the Chinese model also demonstrates that decisive governance action is structurally possible if the political will exists. The question is whether it serves the individuals most at risk.

3.4 India: An Emerging Framework

India presents a particularly dynamic case: a democracy with massive AI ambitions, rapidly developing regulatory awareness, and no comprehensive AI-specific legislation yet in force. The Digital Personal Data Protection Act (DPDP Act, 2023), once fully implemented, will provide a data protection baseline, but AI-specific accountability rules remain to be developed. India's approach has thus far been characterized by institutional improvisation courts, rather than legislators, have been at the forefront of grappling with AI accountability, as Section 5 details.

3.5 Synthesis: Four Models, One Unsolved Problem

Taken together, these four models expose a global accountability gap that no single framework resolves. The EU's rights-based model is strong on obligation but untested on enforcement across complex AI supply chains. The US's market-based model enables innovation but systematically under-protects those harmed. China's state-centric model enforces accountability upward, not outward to individuals. India's hybrid approach is responsive and adaptive, but structurally incomplete in the absence of legislation. Across all four, the attribution problem identifying which actor bears responsibility for a specific AI-driven harm remains unsolved. Regulatory diversity is not the obstacle; structural unwillingness to enforce non-delegable human liability is.

"AI does not remove responsibility, it redistributes it. The task of accountability law is to ensure that redistribution has a destination."

4. Three Case Studies in AI Accountability

4.1 COMPAS: Opacity as a Shield Against Contestability

The COMPAS recidivism risk assessment tool, used widely across the United States, became the paradigmatic case of algorithmic accountability failure. ProPublica's landmark 2016 analysis of over 10,000 defendants in Broward County, Florida found that COMPAS, while achieving roughly comparable overall accuracy for Black and white defendants (63.8% for Black and 67.0% for white defendants respectively), made systematically different types of errors: Black

defendants were far more likely to be misclassified as high-risk, while white defendants were more likely to be misclassified as low-risk. A system predicting similar accuracy while producing racially disparate error rates illustrates what Radanliev (2025) identifies as the core tension in algorithmic fairness satisfying one criterion while violating another.

The deeper accountability failure was structural: Northpointe, COMPAS's developer, treated its algorithm as proprietary, resisting disclosure of its internal logic. Defendants facing incarceration had no meaningful ability to challenge a risk score they could neither see nor scrutinize. In State v. Loomis (Wisconsin Supreme Court, 2016), the court held that COMPAS use did not violate due process, provided judges did not treat it as determinative a finding that satisfied neither critics of opacity nor defenders of efficiency. The case has since driven demand for algorithmic impact assessments and post-hoc auditing tools such as AI Fairness 360 (AIF360).

The analytical takeaway from COMPAS is precise: opacity undermines contestability. When affected individuals cannot access decision logic, procedural accountability becomes impossible, and substantive accountability becomes improbable. A legally enforceable right to explanation must include access to decision logic, not merely simplified summaries.

"Opacity is not a technical flaw — it is an accountability shield."

4.2 JP Morgan Fraud Detection: Internal Accountability Is Not Public Accountability

JP Morgan's AI-powered fraud detection system, operating within the NIST AI Risk Management Framework, illustrates the limits of self-regulatory accountability. Radanliev (2025) describes how the system 'permits adaptive risk management strategies, providing companies with the autonomy to tailor their ethical standards.' The company developed proprietary methods for continuous monitoring and auditing internal accountability mechanisms substituting for external regulatory mandates.

This approach has genuine strengths: internal systems can be technically sophisticated, agile, and aligned with specific operational risks. Companies with reputational stakes have real incentives to ensure their AI works. However, when accountability is internally generated and privately held, it is structurally inaccessible to those the system affects. A customer whose transaction is incorrectly flagged, or who is denied service on algorithmic risk assessment, has limited visibility into the system and limited recourse against it.

The analytical takeaway from JP Morgan is that internal accountability and public accountability are categorically distinct. Accountability that runs inward to shareholders and internal auditors while remaining opaque to affected individuals is not accountability in any meaningful legal sense. The US framework's voluntary approach systematically produces this gap.

4.3 IBM Watson Health: Regulation Can Shape System Design

IBM Watson Health's deployment in European oncology diagnostics offers a contrasting lesson. Under the EU AI Act's transparency and explainability requirements for high-risk healthcare AI, Watson Health's diagnostic recommendations were required to be accompanied by mechanisms enabling medical professionals and patients to understand AI-driven conclusions. Radanliev (2025) documents how 'this regulatory requirement has led to the modification of AI models to ensure compliance, particularly by providing more transparent decision-making processes that can be audited by healthcare regulators.'

The analytical takeaway from IBM Watson is that binding regulatory accountability obligations can drive genuine improvements in system design not merely compliance paperwork. The EU model demonstrates that treating accountability as a constitutive design requirement, rather than an external constraint, changes what systems are built. This is the strongest empirical argument against the US voluntary approach: it is not that companies won't comply, but that without binding standards, the market selects against accountability features that add cost without adding competitive advantage.

5. Judicial Responses to AI-Driven Decisions: India as a Global Model

5.1 The Gujarat High Court AI Policy (April 2026): A Globally Significant Accountability Framework

On 4 April 2026, the Gujarat High Court released its Policy on Use of Artificial Intelligence in Judicial and Court Administration the most comprehensive judicial AI governance framework issued by any Indian court, and one of the clearest real-world implementations of non-delegable human responsibility as an accountability principle. Unveiled by Supreme Court Justice Vikram Nath at the Annual Conference of District Judiciary Judges, the policy applies to all judicial officers, court staff, legal assistants, and para-legal volunteers in Gujarat.

The policy establishes a categorical prohibition: 'Artificial intelligence shall never be employed for any form of decision-making, judicial reasoning, substantive order drafting or

judgment preparation, bail/sentencing considerations, or any substantive adjudicatory process.' This prohibition is framed as a constitutional matter issued under Articles 225 and 227 of the Constitution and anchored in the right to a fair hearing under Article 21. Simultaneously, the policy recognizes AI's legitimate role in enhancing judicial efficiency (in case management, research, translation, and transcription), drawing a firm line at substantive adjudication.

The accountability mechanism is direct and personal: judges and court officers who sign AI-assisted documents bear full personal responsibility for those outputs. They 'cannot blame AI for any mistakes. Relying on AI offers no protection against errors, misconduct, or negligence.' Legal assistants using AI must disclose this to the supervising judge and document their usage transparently. This is a structural implementation of the non-delegable responsibility principle: AI outputs are treated as research inputs, not decisions, and human responsibility cannot be outsourced to the algorithm.

The global significance of the Gujarat policy lies not in its geographic scope, but in its analytical clarity. At a time when most jurisdictions are still debating whether AI accountability should be mandatory, Gujarat has operationalized a principle that many scholars endorse but few institutions enforce: that consequential decisions cannot be made by machines, and that the humans who use AI outputs must be personally and institutionally answerable for them.

"AI does not adjudicate. It assists. The accountability for every decision remains with the person who holds the pen."

5.2 The Hallucination Problem: AI-Generated Citations and the Accountability Crisis

The Gujarat policy was precipitated, in part, by a series of incidents in which AI-generated case citations proved unreliable. In proceedings involving Marhaba Overseas Pvt. Ltd. (March 2026), the Gujarat High Court identified a 'worrying trend' of quasi-judicial orders relying on AI-generated case law that could not be located, or that had been misattributed to the wrong court. Several rulings cited in a GST order were found not to exist; others were shown as Gujarat High Court decisions when they were actually Supreme Court precedents.

In a related matter, Lubrizol Advance Materials India Pvt. Ltd. v. Union of India (March 2026), the court held that a quasi-judicial authority relying on AI-generated citations without verification was acting inappropriately, as such authorities are 'expected to exercise independent application of mind and rely only on authentic legal precedents.' In low-stakes contexts, AI

hallucination is an inconvenience; in judicial contexts, it is a potential denial of justice. The Gujarat response institutional prohibition combined with personal liability is the correct structural solution.

5.3 AI in Indian Courts: Assistance without Adjudication

The Gujarat policy must be understood alongside India's broader judicial AI initiatives. SUVAS has translated over 36,000 Supreme Court judgments into Hindi and 16 regional languages, improving access to justice for non-English speakers. SUPACE enables rapid summarization of voluminous case files. These tools demonstrate the appropriate accountability model: AI as assistant, not adjudicator. The accountability for legal outputs remains entirely with the human judge; AI extends judicial capacity without substituting for judicial reasoning. As Justice Vikram Nath observed: 'Adjudication is not a purely mechanical exercise. It involves interpretation, discretion, and a nuanced understanding of facts and human circumstances empathy, fairness, and a sense of justice that cannot be reduced to algorithmic outputs.'

6. Toward an Integrated Accountability Architecture

The preceding analysis reveals a global landscape of AI accountability characterized by aspiration and structural inconsistency. Each case study identifies a distinct failure: COMPAS demonstrates that opacity destroys contestability; JP Morgan demonstrates that internal accountability does not extend to public accountability; IBM Watson demonstrates that binding regulation can improve system design. Each comparative model identifies a distinct gap: the EU model is strong on obligation but faces enforcement challenges in complex supply chains; the US model produces systematic accountability gaps for individuals; China's model orients accountability toward state interests rather than individual rights; and India is developing mechanisms through judicial innovation in the absence of legislation.

What is needed is not mere regulatory harmonization the differences in political culture and legal tradition are too deep but an integrated framework anchored in a principle that transcends jurisdictional difference: human responsibility for AI-driven decisions is non-delegable. Radanliev's (2025) four integration criteria interoperability, normative cohesion, cultural adaptability, and transparency of process provide a useful structural foundation. This paper adds a fifth criterion, non-delegable human responsibility, derived directly from the case studies and the

Gujarat model. *Each criterion addresses a specific failure identified in the analysis*:

Criterion	Content and Application	Accountability Failure Addressed
Interoperability	AI systems and accountability records must function across regulatory regimes. Conformity assessed under the EU AI Act should be recognizable by US and Indian regulators.	JP Morgan: internal accountability does not translate to public accountability or cross-border enforceability.
Normative Cohesion	Core principles transparency, non-discrimination, human oversight must be non-negotiable global minima, even where implementation varies.	COMPAS: without shared normative floors, opacity becomes a legally protected competitive advantage.
Cultural Adaptability	Accountability mechanisms must reflect the social, legal, and political contexts of deployment. Structural equivalence not textual uniformity is the goal.	China-EU divergence: state-directed and rights-based models serve different ends; a universal template serves neither.
Transparency of Process	Design, training, auditing, and review processes must be visible and contestable to regulators and to affected individuals alike.	COMPAS: proprietary opacity prevented defendants from contesting decisions affecting their liberty. Opacity is not a technical flaw it is an accountability shield.
Non-Delegable Human Responsibility	In high-stakes domains, AI may assist but never supplant human decision-makers. Responsibility for AI-assisted outputs cannot be passed to the algorithm.	Gujarat High Court: judges who sign AI-assisted documents bear full personal responsibility. The hallucination problem reveals what happens when this principle is violated.

6.1 Practical Recommendations

The following recommendations are derived from specific accountability failures identified in the analysis, and are designed to be enforceable rather than aspirational:

First, mandatory pre-deployment algorithmic impact assessments must be required for all high-risk AI applications. These assessments must include fairness audits using tools such as AIF360, and results must be publicly disclosed. Compliance must be a precondition for deployment, not an ex post review.

Second, a legally enforceable right to explanation must include access to decision logic not merely simplified summaries. An individual subject to a consequential AI-driven decision must be able to understand which inputs drove the output, and must have a meaningful legal avenue to challenge that output. This directly addresses the COMPAS opacity failure.

Third, continuous monitoring obligations must require post-deployment bias monitoring and drift detection using frameworks such as ADWIN, with mandatory recalibration and public disclosure when significant deviations are detected. A system that passed pre-deployment review but develops discriminatory patterns over time is an unresolved accountability gap in every current framework.

Fourth, developer-deployer joint liability must be established in law. The accountability gap that arises when responsibility is passed between AI vendors and deployers must be closed by statute. Joint liability ensures that the party closest to the harm cannot escape accountability by pointing to another actor in the supply chain.

Fifth, human-in-the-loop requirements must be mandatory in judicial, medical, and criminal justice contexts. No AI system may constitute the decision in these domains. All jurisdictions should follow the Gujarat model in establishing this as a non-negotiable structural requirement, not a policy preference.

Sixth, international minimum accountability standards developed through UNESCO, the OECD, and ISO must be binding, not aspirational. A binding floor below which no national framework may fall is the minimum necessary condition for global accountability coherence.

Finally, structured AI literacy training must be mandatory for judges, administrators, and regulatory officials. This training must specifically address the hallucination risk in generative AI, since AI-generated outputs can be wrong without appearing to be.

7. Conclusion

The accountability gap in AI-driven decisions is real, consequential, and growing. The structural diffusion of responsibility across developers, deployers, regulators, and algorithms combined with the opacity of many AI systems ensures that when AI causes harm, no single actor is readily identifiable as answerable, and affected individuals are left without effective recourse. This is not a regulatory gap that can be filled by better coordination. It is a structural problem requiring a structural solution: the explicit, legally enforced principle that human responsibility for AI-driven decisions is non-delegable.

The three case studies examined in this paper illustrate this problem across criminal justice, finance, and healthcare. COMPAS demonstrates that opacity undermines contestability. JP Morgan demonstrates that internal accountability is not public accountability. IBM Watson demonstrates that binding regulation can transform accountability from constraint to design feature. The Gujarat High Court's April 2026 policy demonstrates that the non-delegable responsibility principle can be institutionally operationalized and that when it is, it produces a framework that is simultaneously protective of individuals and clear in its assignment of responsibility.

The comparative analysis reveals that no single existing model is adequate. The EU provides the most robust mandatory framework, but its enforcement across complex AI supply chains remains untested. The US voluntary approach systematically produces accountability gaps. China's model assigns accountability to collective state interests rather than individual rights. India's evolving judicial approach demonstrates both the urgency and the complexity of developing accountability frameworks in real time. None fully solves the attribution problem.

The integrated architecture proposed in this paper five criteria that connect each specific accountability failure to a structural remedy is offered as a framework capable of functioning across jurisdictions while respecting legitimate differences in political and legal culture. Its animating principle is the one that Justice Vikram Nath articulated at Gujarat on 4 April 2026: that at the heart of every AI-driven system affecting human lives, a human conscience must remain present and answerable.

"Technology will evolve. Algorithms will improve. But accountability requires a human being who cannot hide behind the machine."

REFERENCES

1. Aldoseri, A., Al-Khalifa, K. N., & Hamouda, A. M. (2023). Re-thinking data strategy and integration for artificial intelligence: Concepts, opportunities, and challenges. Applied Sciences, 13(12), 7082.
2. Bar and Bench. (2026, April 4). Gujarat High Court bans use of AI by judges, court staff in judicial work. Retrieved from https://www.barandbench.com
3. Bar and Bench. (2026, April 4). Judge must be guided by conscience, not algorithms: Supreme Court Justice Vikram Nath. Retrieved from https://www.barandbench.com
4. Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? FAccT 2021 — Proceedings of the ACM Conference on Fairness, Accountability, and Transparency, 610–623.
5. Binns, R. (2018). Fairness in machine learning: Lessons from political philosophy. Proceedings of Machine Learning Research, 81, 149–159.
6. Bommasani, R., Klyman, K., Zhang, D., & Liang, P. (2023). Do foundation model providers comply with the draft EU AI Act? Stanford Center for Research on Foundation Models.
7. European Parliament. (2023). AI Act: A step closer to the first rules on artificial intelligence. European Parliament Press Room.
8. Floridi, L., Cowls, J., Beltrametti, M., et al. (2018). AI4People — an ethical framework for a good AI society: Opportunities, risks, principles, and recommendations. Minds and Machines, 28(4), 689–707.
9. Gujarat High Court. (2026, April 4). Policy on Use of Artificial Intelligence in Judicial and Court Administration. High Court of Gujarat.
10. High Court of Gujarat. (2026, March 12). Lubrizol Advance Materials India Pvt. Ltd. v. Union of India & Ors. [Quasi-judicial AI citation case]. TaxO Online Report.
11. IBM. (2018). AI Fairness 360 — Open Source. IBM Open Project. Retrieved from https://www.ibm.com/opensource/open/projects/ai-fairness-360/
12. Jobin, A., Ienca, M., & Vayena, E. (2019). The global landscape of AI ethics guidelines. Nature Machine Intelligence, 1(9), 389–399.

13. LawChakra. (2026, March 4). Worrying trend: Gujarat High Court slams AI-generated case law in GST orders. Retrieved from https://lawchakra.in
14. Mittelstadt, B. (2019). Principles alone cannot guarantee ethical AI. Nature Machine Intelligence, 1(11), 501–507.
15. NIST. (2023). AI Risk Management Framework (AI RMF 1.0). National Institute of Standards and Technology. https://doi.org/10.6028/NIST.AI.100-1
16. ProPublica. (2016, May 23). How we analyzed the COMPAS recidivism algorithm. Larson, J., Mattu, S., Kirchner, L., & Angwin, J. Retrieved from https://www.propublica.org
17. Radanliev, P. (2025). AI ethics: Integrating transparency, fairness, and privacy in AI development. Applied Artificial Intelligence, 39(1), e2463722. https://doi.org/10.1080/08839514.2025.2463722
18. Roberts, H., Cowls, J., Morley, J., Taddeo, M., Wang, V., & Floridi, L. (2021). The Chinese approach to artificial intelligence: An analysis of policy, ethics, and regulation. AI & Society, 36(1), 59–77.
19. UNESCO. (2023). Recommendation on the Ethics of Artificial Intelligence. United Nations Educational, Scientific and Cultural Organization.
20. Wachter, S., Mittelstadt, B., & Russell, C. (2023). Health care bias is dangerous. But so are 'fairness' algorithms. Wired.
21. Wisconsin Supreme Court. (2016). State v. Loomis, 881 N.W.2d 749 (Wis. 2016).

****

Artificial Intelligence in Judiciary Challenges, Opportunities and Constitutional Implications

By Jaya Shyamsunder Varshney

T.Y. LL.M. Sem. III
D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.

"Technology will integrate police, forensic, jails, and courts, and will speed up their work as well. We are moving towards a justice system that will be fully future-ready."
- Prime Minister, Shri Narendra Modi

Abstract

Artificial Intelligence (AI) is increasingly transforming judicial systems across the world by enhancing efficiency, reducing case backlogs, and improving access to justice. In India, AI is being cautiously integrated into judicial processes primarily as an assistive tool rather than a decision-maker. While AI offers significant advantages in legal research, case management, and translation, it raises serious constitutional concerns relating to privacy, due process, transparency, and equality. This paper adopts a doctrinal approach, supported by institutional and comparative insights, to analyze the implications of AI in judiciary. It argues that AI must remain subordinate to human judicial reasoning and be governed by constitutional safeguards to ensure fairness and accountability.

Keywords: *artificial intelligence (AI), judiciary, constitutional governance, judicial decision-making, right to privacy, due process, equality, transparency, accountability, legal research, case management, access to justice, algorithmic bias, human oversight, AI ethics*

I. Introduction

The rapid advancement of Artificial Intelligence (AI) has significantly transformed multiple sectors, including the judiciary, by introducing data-driven tools that enhance efficiency and streamline institutional processes. Courts across jurisdictions are increasingly adopting AI-based technologies to manage caseloads, automate administrative functions, and improve access to justice. In India, however, the judiciary has adopted a cautious and incremental approach, limiting the use of AI primarily to assistive and administrative functions rather than adjudicatory decision-making. This cautious approach is evident from recent developments where the Supreme Court has emphasized that AI tools such as SUPACE and other systems are to be used strictly for research, transcription, and case management, and must always remain subject to human verification and judicial control.

Recent judicial discourse further reflects growing concern regarding the misuse and limitations of AI in legal processes. The Supreme Court has explicitly warned against the increasing reliance on AI-generated content, particularly "hallucinated" or fabricated case laws, cautioning lawyers and litigants to verify all AI-assisted outputs before submission. This concern has also been echoed in lower courts, where instances of AI-generated pleadings and citations have been criticized for undermining the integrity of judicial proceedings. Such developments highlight the judiciary's recognition of AI not merely as a technological tool, but as a potential source of procedural and substantive risk. Judicial responses at the High Court level further demonstrate a regulatory trend toward restricting the role of AI in decision-making.

For instance, policy guidelines issued by the Kerala High Court explicitly prohibit the use of AI tools for judicial reasoning or adjudication, emphasizing that reliance on such technologies may compromise privacy, data security, and public trust in the justice system. Similarly, concerns have been raised by the Gujarat High Court regarding the use of AI-generated case law in quasi-judicial orders, where unverifiable citations were found to have influenced administrative decision-making, thereby raising questions about the reliability and accountability of AI-assisted processes. From a constitutional perspective, these developments must be understood in light of established judicial principles governing fairness, accountability, and transparency.

The landmark judgment in Justice K.S. Puttaswamy (Retd.) v. Union of India reinforces the importance of informational privacy, which is directly implicated in AI systems relying on large-scale data processing. Likewise, the doctrine of due process articulated in Maneka Gandhi v. Union of India requires that all decision-making procedures be just, fair, and reasonable standards that opaque algorithmic systems may struggle to meet. The principle of non-arbitrariness under Article 14, as laid down in E.P. Royappa v. State of Tamil Nadu, further underscores the risks posed by algorithmic bias and automated decision-making. The central concern, therefore, is whether AI can coexist with the foundational principles of justice, which inherently rely on human reasoning, discretion, and ethical judgment.

Recent judicial observations have made it clear that AI cannot substitute the "human intelligence or humane element" required in adjudication, reaffirming the indispensable role of judges in interpreting law and delivering justice. While AI can undoubtedly enhance efficiency

and support judicial functions, its deployment must be carefully regulated to ensure that it does not undermine fundamental rights or erode the core values of the justice system.

II. Concept and Scope of AI in Judiciary

Artificial Intelligence in the judiciary refers to the application of advanced computational technologies, including machine learning, natural language processing, and data analytics, to support and enhance legal and judicial functions. Unlike traditional rule-based automation, AI systems possess the capability to analyze vast and complex datasets, identify patterns, generate insights, and, in some contexts, offer predictive assessments. These features enable AI to function as a powerful assistive tool in modern judicial systems, particularly in addressing challenges such as case backlogs, delays, and inefficiencies in legal processes.

In the Indian context, the scope of AI within the judiciary remains deliberately limited and carefully controlled. Its deployment is primarily confined to non-adjudicatory and administrative functions, thereby ensuring that the core function of judicial decision-making continues to rest with human judges. Presently, AI is utilized in areas such as case management, legal research assistance, document analysis, and language translation, all of which contribute to improving efficiency and access to justice. This cautious approach is consistent with constitutional principles emphasized by the Supreme Court, particularly in State of Punjab v. Jagdev Singh Talwandi, where the Court underscored the importance of procedural fairness and institutional integrity in decision-making processes.

The judiciary in India has consciously refrained from extending the use of AI to adjudicatory decision-making, recognizing the constitutional risks associated with algorithmic bias, lack of transparency, and absence of accountability. The requirement that all state action must be non-arbitrary, as laid down in E.P. Royappa v. State of Tamil Nadu, is particularly relevant in this context, as AI systems may produce biased outcomes based on flawed or incomplete data. Similarly, the principle of due process articulated in Maneka Gandhi v. Union of India mandates that any procedure affecting rights must be just, fair, and reasonable standards that opaque algorithmic systems may fail to satisfy.

Further, the necessity of transparency and reasoned decision-making, emphasized in Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan, highlights the limitations of AI systems that operate as “black boxes” without providing intelligible explanations for their outputs. Judicial decision-

making involves nuanced interpretation of law, appreciation of facts, and application of equitable principles, all of which require human reasoning and ethical judgment. The recognition of informational privacy as a fundamental right in Justice K.S. Puttaswamy (Retd.) v. Union of India further reinforces concerns regarding the extensive data processing involved in AI systems. Accordingly, the Indian judiciary has adopted a principled and cautious approach, emphasizing that AI should function as a supplementary tool to assist judges rather than replace them. This approach ensures that technological innovation remains aligned with constitutional values, preserving the integrity, fairness, and accountability of the justice system.

III. Applications of AI in Judiciary

1. Case Management and Court Administration

Artificial Intelligence plays a crucial role in enhancing administrative efficiency within the judicial system by automating routine and time-consuming tasks such as case scheduling, cause-list preparation, document management, and workflow optimization. These technological interventions enable courts to streamline procedural operations, reduce human error, and improve overall institutional productivity.

In jurisdictions like India, where judicial backlog remains a persistent challenge, AI-driven case management systems offer significant potential in expediting the disposal of cases and ensuring better allocation of judicial resources. The constitutional importance of timely justice has been firmly established by the Supreme Court in Hussainara Khatoon v. State of Bihar, where it was held that the right to a speedy trial is an essential component of the right to life and personal liberty under Article 21. By facilitating efficient case flow management, AI systems contribute to the realization of this constitutional mandate.

Furthermore, the integration of AI in court administration supports transparency and accountability by maintaining accurate digital records and enabling real-time tracking of case progress. This reduces procedural opacity and enhances public trust in the judicial system. However, while AI improves administrative functions, it must be implemented with adequate safeguards to ensure data integrity, confidentiality, and security. The digitization of judicial processes, if not properly regulated, may expose sensitive information to risks such as unauthorized access or misuse. Therefore, while AI-driven case management represents a

significant step toward modernizing the judiciary, it must operate within a robust legal and institutional framework that safeguards constitutional values and procedural fairness.

2. Legal Research and Analytics

Artificial Intelligence has significantly transformed the domain of legal research and analytics by enabling judges, lawyers, and legal scholars to efficiently process and analyze vast volumes of legal data. AI-powered tools utilize machine learning algorithms and natural language processing to identify relevant case laws, statutes, and legal principles, thereby substantially reducing the time required for traditional legal research. These systems can quickly extract patterns, highlight precedents, and generate structured insights, which enhance both the speed and quality of legal analysis. In a judicial system like India's, characterized by an extensive body of case law, such technological assistance is particularly valuable in ensuring consistency and coherence in legal reasoning.

However, the use of AI in legal research also raises concerns regarding accuracy, reliability, and accountability. AI-generated outputs may occasionally produce incorrect or "hallucinated" citations, which, if relied upon without verification, can undermine the integrity of judicial proceedings. The importance of accuracy and reasoned reliance on precedents has been emphasized by the Supreme Court in Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan, where it was held that judicial decisions must be supported by proper reasoning and relevant material. Additionally, the increasing reliance on digital tools must be balanced with professional responsibility, ensuring that legal practitioners exercise independent judgment rather than blindly relying on algorithmic outputs.

From a constitutional perspective, AI-assisted legal research must align with the principles of fairness, transparency, and due process. While these tools enhance efficiency, they cannot substitute human reasoning or judicial discretion. Instead, they should function as supplementary aids that support informed decision-making. Therefore, the integration of AI in legal research represents a significant advancement in judicial efficiency, provided it is accompanied by safeguards ensuring accuracy, accountability, and adherence to constitutional values.

3. Translation and Accessibility

Artificial Intelligence plays a pivotal role in enhancing accessibility within the judicial system, particularly in a linguistically diverse country like India. AI-based translation tools,

powered by natural language processing, enable the conversion of legal documents, court orders, and judgments into multiple regional languages, thereby reducing linguistic barriers that often impede access to justice. Given that a significant portion of the Indian population may not be proficient in English the primary language of higher judiciary such technological interventions are crucial in democratizing legal knowledge and ensuring inclusivity in the justice delivery system. These tools facilitate better understanding of legal rights and judicial processes, thereby empowering litigants and promoting transparency.

The constitutional significance of accessibility in justice delivery is closely linked to the principles of equality and fair procedure under Articles 14 and 21. The Supreme Court has repeatedly emphasized that access to justice is a fundamental component of the rule of law, as reflected in Hussainara Khatoon v. State of Bihar, where the Court underscored the importance of removing barriers that hinder effective participation in the legal process. Language, as a structural barrier, can significantly disadvantage individuals, and AI-driven translation systems serve as an important mechanism to bridge this gap.

However, despite their advantages, AI-based translation tools must be used with caution. Legal language is often complex, nuanced, and context-specific, and inaccurate translations may lead to misinterpretation of legal provisions or judicial reasoning. This raises concerns regarding reliability and the potential impact on legal outcomes. Therefore, while AI enhances accessibility, human oversight remains essential to ensure accuracy and preserve the integrity of legal communication. In this context, AI should be viewed as a facilitative tool that supports, rather than replaces, human expertise, thereby aligning technological innovation with constitutional mandates of fairness, equality, and access to justice.

4. Predictive Analytics.

Predictive analytics represents one of the most advanced and controversial applications of Artificial Intelligence in the judicial domain, involving the use of algorithms to forecast case outcomes, assess litigation risks, or assist in decision-making processes such as bail or sentencing. In certain jurisdictions, particularly in the United States, algorithmic tools have been employed to evaluate the likelihood of recidivism or to guide judicial discretion. However, the use of such systems has raised significant constitutional and ethical concerns. For instance, in *State v. Loomis*, the Wisconsin Supreme Court examined the use of the COMPAS risk assessment tool and

highlighted the limitations of relying on opaque algorithms in sentencing decisions, noting concerns regarding transparency, bias, and the inability of defendants to challenge the basis of algorithmic assessments.

In the Indian context, the judiciary has consciously refrained from adopting predictive analytics in adjudicatory functions, primarily due to its potential incompatibility with constitutional principles. The use of predictive systems may undermine the requirement of individualized justice, as decisions could be influenced by statistical probabilities rather than the specific facts and circumstances of each case. This approach would be inconsistent with the doctrine of fairness and reasonableness established in Maneka Gandhi v. Union of India, which mandates that all procedures affecting rights must be just, fair, and non-arbitrary. Furthermore, reliance on historical data may perpetuate existing social and institutional biases, thereby violating the principle of equality under Article 14, as articulated in E.P. Royappa v. State of Tamil Nadu.

Another critical concern associated with predictive analytics is the lack of transparency and explainability. Many AI models operate as "black boxes," making it difficult to understand how conclusions are reached. This undermines the requirement of reasoned decision-making emphasized in Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan, where the Supreme Court held that recording reasons is essential for ensuring accountability and enabling judicial review. In the absence of explainability, affected individuals may be deprived of the opportunity to challenge decisions, thereby violating principles of natural justice.

Consequently, the Indian judiciary has adopted a cautious and principled approach by restricting the use of AI to assistive functions and avoiding its deployment in predictive or decision-making roles. This restraint reflects a broader commitment to preserving judicial discretion, safeguarding fundamental rights, and ensuring that justice remains rooted in human reasoning rather than algorithmic determinism. While predictive analytics may offer efficiency and consistency, its adoption in the Indian judicial system must be carefully evaluated within the framework of constitutional values, ensuring that technological advancement does not come at the cost of fairness, transparency, and accountability.

V. Constitutional Framework and Judicial Approach

The Indian Constitution provides the normative and legal foundation for evaluating the use of Artificial Intelligence in the judiciary, ensuring that technological innovation remains

subordinate to constitutional principles. Fundamental rights such as equality under Article 14, freedom under Article 19, and the right to life and personal liberty under Article 21 impose substantive and procedural limitations on the deployment of AI in judicial functions. These rights collectively establish that any state action including the use of technological tools must be fair, reasonable, non-arbitrary, and consistent with due process. The Supreme Court, through its expansive constitutional jurisprudence, has consistently reinforced that procedural fairness and protection of individual rights are integral to the rule of law. The principle of non-arbitrariness, as articulated in E.P. Royappa v. State of Tamil Nadu, establishes that equality is antithetical to arbitrariness, thereby requiring that all state actions, including algorithmic processes, adhere to standards of fairness and rationality. Similarly, the doctrine of due process developed in Maneka Gandhi v. Union of India mandates that any procedure affecting rights must be "just, fair, and reasonable." These principles are directly relevant to AI systems, particularly where automated processes may lack transparency or fail to provide adequate procedural safeguards. The recognition of informational privacy as a fundamental right in Justice K.S. Puttaswamy (Retd.) v. Union of India further strengthens the constitutional framework by imposing limits on data collection, processing, and surveillance core components of AI technologies.

The judiciary has consistently emphasized that technology must function as an aid to justice rather than a substitute for judicial reasoning. This approach reflects a broader constitutional commitment to preserving human dignity, judicial independence, and the integrity of the adjudicatory process. The requirement of reasoned decisions, highlighted in Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan, underscores the importance of transparency and accountability, which may be compromised by opaque AI systems. Judicial reasoning involves not only the application of legal principles but also the exercise of discretion, ethical judgment, and contextual understanding elements that cannot be fully replicated by algorithmic models.

Accordingly, the Indian judiciary has adopted a cautious and principled approach toward the integration of AI, ensuring that its use remains confined to assistive and administrative functions. This approach seeks to balance the benefits of technological innovation with the imperatives of constitutional governance, ensuring that AI systems operate within a framework of fairness, transparency, and accountability. Ultimately, the constitutional framework serves as a safeguard against the unregulated use of AI, reinforcing the principle that technological

advancement must align with the core values of justice, rule of law, and protection of fundamental rights.

V. AI and Right to Privacy

The integration of Artificial Intelligence in the judiciary necessitates the processing and analysis of vast volumes of personal and sensitive data, thereby raising significant concerns regarding the protection of privacy. AI systems often rely on data-intensive mechanisms such as profiling, pattern recognition, and predictive analytics, which may involve the collection, storage, and dissemination of personal information. In the judicial context, where confidentiality and trust are paramount, the use of such technologies must be carefully scrutinized to prevent unauthorized access, misuse, or surveillance. The constitutional foundation of privacy in India was firmly established in Justice K.S. Puttaswamy (Retd.) v. Union of India, where the Supreme Court recognized the right to privacy as an intrinsic part of the right to life and personal liberty under Article 21.

In this landmark judgment, the Court articulated a threefold test to determine the validity of any state action that infringes upon privacy: legality, which requires the existence of a valid law; necessity, which mandates that the action must serve a legitimate state aim; and proportionality, which ensures that the means adopted are not excessive in relation to the objective sought to be achieved. These principles provide a critical framework for assessing the constitutionality of AI systems, particularly in judicial processes where data handling is inevitable. Any deployment of AI that involves personal data must therefore comply with these requirements, ensuring that data collection is lawful, limited to specific purposes, and proportionate to the intended objective.

Furthermore, the use of AI in judicial administration raises concerns about informational privacy and data security, especially in light of increasing digitization of court records and proceedings. Unauthorized access to sensitive judicial data or breaches in data protection mechanisms could undermine public confidence in the justice system. The recognition of informational self-determination in *Puttaswamy* implies that individuals must retain control over their personal data, which places an obligation on institutions to implement robust safeguards, including data minimization, encryption, and accountability mechanisms.

While AI offers significant benefits in improving efficiency and access to justice, its deployment must not come at the cost of fundamental rights. The challenge lies in balancing technological advancement with the protection of individual privacy. Accordingly, AI systems used in the judiciary must be designed and regulated in a manner that upholds constitutional values, ensures transparency in data processing, and provides adequate remedies in cases of privacy violations. This approach reinforces the principle that the use of technology in governance must remain consistent with the constitutional guarantee of dignity, autonomy, and personal liberty.

VI. AI and Due Process

The principle of due process constitutes a foundational element of constitutional governance, requiring that any action affecting individual rights must be carried out through procedures that are fair, reasonable, and transparent. The Supreme Court, in Maneka Gandhi v. Union of India, significantly expanded the scope of Article 21 by holding that the "procedure established by law" must be "just, fair, and reasonable," thereby incorporating substantive due process into Indian constitutional jurisprudence. This doctrinal development has direct implications for the use of Artificial Intelligence in judicial processes, particularly where algorithmic systems are involved in decision-making or decision-support functions.

AI-based systems may pose serious challenges to due process if they operate without adequate transparency or explainability. Many advanced AI models function as "black boxes," making it difficult for individuals to understand the rationale behind specific outputs or recommendations. This lack of transparency undermines the fundamental requirement that decisions affecting rights must be reasoned and open to scrutiny. The necessity of providing reasons for decisions has been emphasized in Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan, where the Court held that recording reasons is essential for ensuring accountability, preventing arbitrariness, and facilitating judicial review.

AI systems that fail to generate intelligible reasons risk violating this principle. Another critical aspect of due process is the right to be heard and the ability to challenge decisions. If AI-generated outputs cannot be effectively questioned or reviewed, affected individuals may be deprived of meaningful remedies, thereby violating principles of natural justice. This concern is particularly relevant in scenarios involving automated decision-making, where reliance on algorithmic outputs may limit human intervention and discretion. The absence of mechanisms to

contest or audit AI decisions creates a procedural deficit that is inconsistent with constitutional guarantees.

Furthermore, the use of AI in judicial processes must also be evaluated in light of the principle of non-arbitrariness under Article 14, as established in E.P. Royappa v. State of Tamil Nadu. Algorithmic decisions based on biased or incomplete data may lead to arbitrary outcomes, thereby undermining fairness and equality. Consequently, the integration of AI into the judiciary must be accompanied by safeguards such as explainability, human oversight, and auditability to ensure compliance with due process requirements. In essence, while AI has the potential to enhance efficiency and support judicial functions, its deployment must not compromise the procedural safeguards that are central to the rule of law. Ensuring transparency, accountability, and the ability to challenge decisions is essential to maintaining the integrity of judicial processes. Therefore, AI must remain a supplementary tool.

VII. AI and Equality

Algorithmic bias represents one of the most significant constitutional challenges associated with the use of Artificial Intelligence in the judiciary. AI systems are inherently dependent on data for training and operation, and when such data reflects existing social, economic, or institutional biases, the resulting outputs may perpetuate or even amplify discrimination. In the judicial context, this poses serious risks, as biased algorithms may influence legal research, risk assessments, or administrative decisions in ways that disproportionately affect certain groups. Such outcomes are fundamentally incompatible with the principle of equality before the law and equal protection of laws guaranteed under Article 14 of the Constitution.

The Supreme Court has consistently held that arbitrariness is antithetical to equality, as articulated in E.P. Royappa v. State of Tamil Nadu. This principle establishes that any state action, including the use of AI systems, must be free from arbitrariness and must adhere to standards of fairness and reasonableness. Algorithmic decision-making, if based on biased or incomplete data, may lead to arbitrary classifications or unjust outcomes, thereby violating the constitutional mandate of equality. The risk is particularly acute in systems that rely on historical data, as such data may encode structural inequalities relating to caste, class, gender, or other socio-economic factors.

The doctrine of reasonable classification, developed in cases such as State of West Bengal v. Anwar Ali Sarkar, requires that any classification must be based on intelligible differentia and must have a rational nexus with the objective sought to be achieved. AI systems that produce outcomes without clear, explainable criteria may fail to satisfy this test, thereby raising concerns regarding their constitutional validity. The lack of transparency in many AI models compounds this issue, making it difficult to assess whether decisions are based on legitimate considerations or hidden biases. In addition, the evolving jurisprudence on substantive equality emphasizes not merely formal equality but the need to address systemic disadvantages.

In this context, unregulated AI systems may inadvertently reinforce existing disparities rather than mitigate them. Therefore, it is imperative that AI technologies used in the judiciary incorporate safeguards such as bias detection, fairness audits, and inclusive data practices to ensure compliance with constitutional principles. Ultimately, the integration of AI into judicial processes must be guided by the overarching objective of promoting justice and equality. While AI offers the potential to enhance efficiency and consistency, it must not do so at the cost of fairness or non-discrimination. Ensuring that AI systems are transparent, accountable, and free from bias is essential to aligning technological innovation with the constitutional guarantee of equality and the broader ideals of the rule of law.

VIII. Transparency and Accountability

Judicial decisions must be reasoned and transparent. In Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan, the Court emphasized the importance of reasoned orders. AI systems often operate as “black boxes,” making it difficult to understand how decisions are made. This lack of explainability undermines accountability and trust in the judicial system.

IX. Advantages of AI in Judiciary

The integration of Artificial Intelligence into the judiciary offers significant advantages that contribute to the modernization and efficiency of judicial systems. One of the most notable benefits is the reduction in case backlog, a persistent challenge in India’s justice delivery system. By automating administrative functions such as case listing, scheduling, and document management, AI enables courts to handle a higher volume of cases with greater efficiency. This directly supports the constitutional mandate of timely justice, which has been recognized as an

essential component of the right to life and personal liberty under Article 21 in Hussainara Khatoon v. State of Bihar.

Another significant advantage lies in faster and more efficient legal research. AI-powered tools can analyse extensive legal databases within seconds, identify relevant precedents, and generate structured insights, thereby enhancing the quality and speed of judicial decision-making. This not only reduces the workload on judges and legal practitioners but also promotes consistency in the application of legal principles.

AI also contributes to improved efficiency in court administration by streamlining procedural processes and minimizing human error. Automated systems for document handling, record maintenance, and workflow management enhance institutional productivity and transparency. In addition, AI-driven technologies play a crucial role in enhancing access to justice, particularly through translation tools and digital platforms that make legal information more accessible to individuals across linguistic and geographical barriers.

This aligns with the broader constitutional objective of ensuring equality before the law and inclusive access to legal remedies. Furthermore, the adoption of AI can lead to cost reduction by optimizing resource allocation and reducing the need for manual intervention in routine tasks. Lower operational costs can make the justice system more efficient and accessible, particularly for marginalized sections of society. Overall, these advantages demonstrate that AI, when used responsibly, serves as a powerful tool for strengthening the judiciary. However, its benefits must be balanced with appropriate safeguards to ensure that efficiency does not come at the expense of fairness, accountability, and constitutional values.

XX. Challenges in AI Adoption

Despite its transformative potential, the adoption of Artificial Intelligence in the judiciary presents a range of significant challenges that necessitate cautious and well-regulated implementation. One of the foremost concerns is algorithmic bias, wherein AI systems, trained on historical data, may replicate or even amplify existing social and institutional prejudices. Such bias can lead to discriminatory outcomes, thereby undermining the constitutional guarantee of equality under Article 14, as emphasized in E.P. Royappa v. State of Tamil Nadu. Closely related to this is the issue of lack of transparency, as many AI systems operate as “black boxes,” making it difficult to understand or scrutinize the basis of their outputs. This opacity conflicts with the requirement

of reasoned decision-making and accountability highlighted in Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan.

Another critical challenge involves privacy concerns, particularly given that AI systems rely heavily on large datasets that may include sensitive personal information. The right to privacy, recognized as a fundamental right in Justice K.S. Puttaswamy (Retd.) v. Union of India, imposes strict limitations on data collection, processing, and use, thereby requiring robust safeguards in the deployment of AI technologies. Furthermore, the absence of a comprehensive legal framework governing AI in India creates regulatory uncertainty and limits accountability, as existing laws are not adequately equipped to address the complexities of algorithmic decision-making.

Equally significant is the potential threat to judicial independence, as excessive reliance on AI tools may inadvertently influence judicial reasoning or create undue dependence on technological outputs. Judicial decision-making inherently involves discretion, contextual understanding, and ethical judgment, elements that cannot be fully replicated by algorithmic systems. The substitution or undue influence of AI in this domain risks undermining the autonomy and authority of the judiciary.

These challenges collectively underscore the need for a cautious and balanced approach to AI adoption in the judicial system. While AI offers considerable benefits in terms of efficiency and accessibility, its integration must be guided by constitutional principles, supported by a robust regulatory framework, and accompanied by safeguards that ensure transparency, accountability, and protection of fundamental rights.

XI. Comparative Perspective

Globally, jurisdictions have adopted different approaches to AI in judiciary. The European Union treats judicial AI as high-risk and emphasizes strict regulation. In the United States, cases such as *State v. Loomis* have raised concerns about algorithmic bias and due process. India, in contrast, follows a cautious and assistive approach, ensuring that AI does not replace judicial reasoning.

XII. Recommendations

To ensure responsible use of AI in judiciary, the following measures are necessary:

1. Enact comprehensive AI legislation
2. Ensure human oversight in all judicial processes

3. Promote explainable AI systems
4. Strengthen data protection laws
5. Establish regulatory and ethical frameworks
6. Provide training for judicial officers

XIII. Conclusion

Artificial Intelligence has the potential to significantly improve the efficiency and accessibility of the judiciary. However, it cannot replace human judgment, which is essential for ensuring fairness, justice, and constitutional compliance. The future of AI in judiciary lies in a balanced approach that integrates technological innovation with constitutional safeguards. AI must remain an assistive tool, operating under strict regulatory oversight, to ensure that justice is not only done but also seen to be done.

BIBLIOGRAPHY / REFERENCES

A. PRIMARY SOURCES

1. Constitutional Provisions

a) INDIA CONST. arts. 14, 19, 21, 32.

2. Statutes and Legislative Materials

a. Information Technology Act, 2000, No. 21 of 2000, India.
b. Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.
c. Digital Personal Data Protection Act, 2023, No. 22 of 2023, India.
d. Artificial Intelligence (Ethics and Accountability) Bill, 2025 (India) (Private Member Bill).
e. European Union Artificial Intelligence Act (EU AI Act), 2024.

B. CASES (TABLE OF AUTHORITIES)

1. *Justice K.S. Puttaswamy (Retd.) v. Union of India*, (2017) 10 SCC 1.
2. *Maneka Gandhi v. Union of India*, (1978) 1 SCC 248.
3. *Shreya Singhal v. Union of India*, (2015) 5 SCC 1.
4. *E.P. Royappa v. State of Tamil Nadu*, (1974) 4 SCC 3.
5. *Kranti Associates Pvt. Ltd. v. Masood Ahmed Khan*, (2010) 9 SCC 496.
6. *Shayara Bano v. Union of India*, (2017) 9 SCC 1.
7. *Hussainara Khatoon v. State of Bihar*, (1980) 1 SCC 81.

8. *State of West Bengal v. Anwar Ali Sarkar*, AIR 1952 SC 75.
9. *State of Punjab v. Jagdev Singh Talwandi*, (1984) 1 SCC 596.
10. *S. Karthik v. Union of India*, 2020 SCC OnLine Ker.
11. *State v. Loomis*, 881 N.W.2d 749 (Wis. 2016).

C. GOVERNMENT & INSTITUTIONAL REPORTS

1. NITI Aayog, *Responsible AI for All: Adopting Strategy for the AI Era in India* (2021).
2. Supreme Court of India, *White Paper on Artificial Intelligence and Judicial Accountability* (2025).
3. Law Commission of India, Report No. 302, *Artificial Intelligence and its Legal Implications in India* (2020).
4. Press Information Bureau, Government of India, *From Digitization to Intelligence: How AI is Enhing Access to Justice in India* (2026).
5. Organization for Economic Co-operation and Development (OECD), *Governing with Artificial Intelligence: The State of Play and Way Forward in Core Government Functions* (2025).

D. BOOKS

1. The Black Box Society, FRANK PASQUALE, *THE BLACK BOX SOCIETY: THE SECRET ALGORITHMS THAT CONTROL MONEY AND INFORMATION* (Harvard Univ. Press 2015).

E. JOURNAL ARTICLES & RESEARCH PAPERS

1. Akash Konde, *Artificial Intelligence and Algorithmic Accountability: The Need for a Legal Framework in India*, 6 INDIAN J. LEGAL REV. 151 (2026).
2. Dr. Honey G. Thakkar, *Artificial Intelligence and Judicial Decision-Making in India: A Critical Doctrinal and Empirical Analysis*, 12 INT'L J. LAW 219 (2026).
3. Srinivas M.K. & Prof. Dr. M.S. Benjamin, *AI Governance and Constitutional Law: Recalibrating Constitutional Frameworks in the Age of Artificial Intelligence*, 5 ILE CONST. REV. 1 (2026).
4. Ram Krishna Mani Tripathi, *AI in Judicial Decision-Making: Opportunities and Challenges*, 8 INT'L J. L. MGMT. & HUMAN. 2274 (2025).

5. Joylin Y. Jacob et al., *Artificial Intelligence and Legal Accountability in India: A Socio-Legal Perspective*, 7 INDIAN J. L. & LEGAL RES. (2025).
6. Nithyakalyani S., *Canonizing AI and Algorithms: Assessing the Indian Constitution's Accommodation of New-Age Rights*, 12 TIJER (2025).
7. Rohit Chaudhary et al., *AI and Accountability in India: Constitutional Concerns*, 13 INT'L J. CREATIVE RES. THOUGHTS (2025).

F. ONLINE SOURCES (WEBLIOGRAPHY)

1. NITI Aayog, https://www.niti.gov.in
2. Supreme Court of India, https://main.sci.gov.in
3. OECD AI Policy Observatory, https://oecd.ai
4. Ministry of Electronics and Information Technology (MeitY), https://www.meity.gov.in

G. SECONDARY THEMATIC SOURCES

1. Literature on algorithmic bias, explainable AI, and constitutional governance.
2. Studies on AI tools in judiciary (SUPACE, SUVAS).
3. Comparative materials on global AI regulation (EU, U.S., OECD frameworks).

****

Artificial Intelligence and Law

By Sufiya Sultana Nisar Ahmad

D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.
Email ID: sufiyanisar134@gmail.com

Introduction

Artificial Intelligence (AI) refers to the capability of machines to imitate human intelligence, including learning, reasoning, and decision-making. With rapid technological advancement, AI has become an integral part of modern society, including the legal system. From legal research to predictive analytics, AI is transforming traditional legal practices.

However, AI also raises serious legal concerns such as data privacy, accountability, bias, and misuse. The Indian legal system is gradually adapting to these challenges through judicial interpretation and evolving jurisprudence.

AI in Legal Research and Practice

AI has significantly improved legal efficiency by:

- Automating legal research
- Assisting in contract analysis
- Predicting case outcomes

Indian courts have also started adopting technology. For instance, the introduction of AI-based tools like SUPACE (Supreme Court Portal for Assistance in Court Efficiency) shows how AI can assist judges in handling large volumes of cases. In the case of State of Maharashtra v. Dr. Praful B. Desai (2003) the Supreme Court allowed the use of video conferencing for recording evidence. This case laid the foundation for the acceptance of advanced technologies, including AI, in judicial processes.

Ethical and Legal Challenges of AI

1. Algorithmic Bias & Fairness: AI systems may produce biased outcomes due to flawed training data.

2. Lack of Transparency: AI decision-making is often not explainable ("black box problem").

3. Accountability Issues: It is unclear who is responsible for AI errors—developer, user, or organization.

4. Misuse of AI in Courts: A recent issue in India involved the use of AI-generated fake case laws in court proceedings.

The Supreme Court held that relying on AI-generated fake judgments amounts to misconduct, not just an error. This marked a significant step in regulating AI use in the judiciary. In another instance, a litigant submitted hundreds of fabricated AI-generated precedents, raising serious concerns about misuse of AI in legal practice.

AI and Data Protection Laws

AI depends heavily on personal data, making privacy protection essential. In Justice K.S. Puttaswamy v. Union of India (2017) the Supreme Court recognized the Right to Privacy as a Fundamental Right under Article 21. This case is highly relevant to AI because AI systems process large amounts of personal data, and any misuse may violate fundamental rights. In the case of Shreya Singhal v. Union of India (2015), the Court struck down Section 66A of the IT Act, emphasizing freedom of speech and expression in the digital space, which is crucial in regulating AI-driven online platforms.

AI in Criminal Justice System

AI is increasingly used in:

- Predictive policing
- Facial recognition
- Surveillance systems

However, these raise concerns regarding:

- Violation of privacy
- Mass surveillance
- Risk of wrongful identification

The judiciary has stressed that such technologies must comply with constitutional safeguards.

Role of Judiciary

The judiciary plays a vital role in regulating AI by:

- Interpreting laws in light of technological developments
- Protecting fundamental rights
- Ensuring ethical use of AI

Courts are increasingly cautious about AI misuse in legal proceedings, especially after incidents involving fake judgments. In AI Deepfake Cases, the Court granted protection against

misuse of AI-generated content and deepfakes, recognizing personality rights and privacy violations. These developments show that Indian courts are actively shaping AI jurisprudence even without specific legislation.

Conclusion & Suggestion

Artificial Intelligence is revolutionizing the legal field by increasing efficiency and accessibility. However, it also poses serious legal and ethical challenges. It is suggested to:

- Enact specific AI regulation laws in India
- Ensure transparency in AI algorithms
- Establish accountability mechanisms
- Strengthen data protection laws
- Train legal professionals in AI technology
- Develop ethical guidelines for AI use

In conclusion, while AI offers immense benefits, its use must be carefully regulated to protect justice, fairness, and constitutional rights.

BIBLIOGRAPHY

Textbooks:

Russell, Stuart & Norvig, Peter – *Artificial Intelligence: A Modern Approach*

Sood, Vivek – *Cyber Law Simplified*

Bansal, Ashok – *Law and Technology in India*

Journal Articles:

"Artificial Intelligence and Legal Liability" – Journal of Law & Technology

"Ethical Issues in AI Governance" – Indian Law Review

"Data Protection and Privacy in the Age of AI" – Journal of Cyber Law

****

Artificial Intelligence in Judiciary and Access to Justice

By Ashok Kumar Yadav

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: dr.askok.yadav79@gmail.com

Abstract

The integration of Artificial Intelligence (AI) into judicial systems represents one of the most transformative developments in modern legal frameworks. Across the globe, courts and legal institutions are increasingly adopting AI-driven tools to enhance efficiency, reduce case backlogs, and improve access to justice. This paper critically examines the role of AI in the judiciary, focusing on its potential to democratize legal services while addressing inherent challenges such as algorithmic bias, transparency, and ethical concerns. Drawing upon global practices, including developments in India, Singapore, and China, the paper evaluates whether AI can bridge the justice gap or risks exacerbating existing inequalities. It concludes with recommendations for responsible implementation to ensure that technological advancement aligns with the core principles of justice.

1. Introduction

Access to justice is a cornerstone of democratic societies, ensuring that individuals can seek and obtain remedies through formal or informal institutions of justice. However, traditional judicial systems worldwide face persistent challenges, including delays, high costs, procedural complexity, and limited accessibility.

Artificial Intelligence (AI), defined broadly as computational systems capable of performing tasks requiring human intelligence, has emerged as a powerful tool to address these challenges. From legal research automation to predictive analytics, AI is transforming the functioning of courts and legal professionals.

Recent global reports highlight that AI has the potential to improve efficiency, fairness, and accessibility in justice systems, though its adoption remains uneven across jurisdictions ([OECD] [1]). This paper explores the intersection of AI and access to justice, analyzing both its transformative promise and the risks it poses the perspective of the sociology of the future, which investigates how present practices and discourses influence different possibilities for the future, Halford and Southerton (2023) argue that the construction of the future should not be seen as a simple temporal sequence or linear causality, in which the past determines the present and, by

extension, projects the future. They point out that this linear approach can restrict the ability to imagine and create scenarios, suggesting instead the exploration of futures that go beyond current patterns and open up space for new ways of thinking and acting.

From this perspective, building a path for the proper application of AI in the judiciary must be oriented towards the future, not as it probably will be, but as it could or should be. Projecting expectations and identifying fundamental principles can help to create alternative scenarios that guide actions in the present and direct the construction of futures aligned with the objectives of judicial provision. To do this, it is necessary to adopt a critical approach that analyzes and considers the impacts of these innovations.

Understanding these implications involves questioning the underlying assumptions and assessing the wider social and ethical effects, as discussed by Foucault, Marx and the first-generation thinkers of the Frankfurt School. This approach must recognize that the impact of AI on the judiciary is not limited to its institutional boundaries, but affects society as a whole, considering the role of this power in protecting fundamental rights and freedoms. In this context, critical theory provides a framework for examining the complexities and risks associated with AI, allowing for reflections that question established truths.

According to Horkheinier and Adorno (1973), this critical perspective helps to broaden the understanding of reality and promote a dialectic that challenges and reconsiders assumptions, including those that are widely accepted. Thus, given the ethical, social and conceptual challenges that AI imposes on the justice system and society in general, it is imperative to deepen theoretical analysis in order to better understand these complexities. In this context, this theoretical essay discusses the practical implications of AI in the judiciary, culminating in three research proposals that seek to explore and foster debate about the challenges of this scenario.

To achieve this goal, the essay interacts with critical theory and the challenges of applying AI systems in the judiciary. Considering AI's ability to shape reality and influence future ways of life and social structures (Lindgren, 2023), this text proposes a space for reflection that aims to build new forms of knowledge and perspectives on the future. It begins with an overview of what critique is, subsequently focusing on critical theory and, more specifically, the critical theory of technology, providing the necessary theoretical context to discuss the implications of AI in the Judiciary.

2. Conceptual Framework: AI and Access to Justice:

A) Understanding Access to Justice -

Access to justice encompasses the ability of individuals to obtain fair outcomes through legal processes. It includes:

- Legal awareness
- Availability of legal services
- Affordability
- Timely resolution of disputes

Despite being a fundamental right, access to justice remains elusive for many, especially in developing countries like India, due to systemic inefficiencies and socio-economic barriers ([Lex Localis][2]).

B) Artificial Intelligence in Legal Context -

AI in the judiciary involves technologies such as:

- Machine learning algorithms
- Natural language processing (NLP)
- Predictive analytics
- Automated decision-support systems

These technologies enable automation of repetitive legal tasks, thereby increasing productivity and reducing human error ([ResearchGate][3]).

3. Applications of AI in Judiciary:

A) Legal Research and Document Analysis-

AI-powered platforms can analyze vast legal databases, identify precedents, and summarize judgments in seconds. This significantly reduces the time required for legal research.

For example: AI tools assist in identifying relevant case laws, Automated summarization helps judges and lawyers process information efficiently.

B) Case Management and Court Administration

AI systems streamline case management by:

- Automating scheduling
- Tracking case progress
- Prioritizing urgent cases

Such applications help address the issue of judicial backlog, which is a major concern in countries like India.

C) Predictive Analytics -

AI can predict:

- Case outcomes
- Litigation risks
- Sentencing patterns

While controversial, predictive analytics can assist legal professionals in decision-making.

D) Virtual Courts and Online Dispute Resolution -

The COVID-19 pandemic accelerated the adoption of virtual courts, where AI tools support:

- Video hearings
- E-filing systems
- Digital evidence analysis

These innovations enhance accessibility, particularly for remote populations.

E) Assistance to Self-Represented Litigants -

AI-driven chatbots and legal assistants provide:

- Basic legal advice
- Document drafting support
- Guidance on court procedures

This is particularly important for individuals who cannot afford legal representation.

4. Global Perspectives on AI in Judiciary:

A) India - India has taken significant steps toward integrating AI in the judiciary:

- The Supreme Court's "SUPACE (Supreme Court Portal for Assistance in Courts Efficiency)" assists judges in legal research.
- AI tools are being used in various High Courts for case management.

AI has shown potential to address systemic issues such as delays and lack of infrastructure ([Lex Localis] [2]).

B) **Singapore -** Singapore is a global leader in judicial innovation. AI is used primarily as an assistive tool rather than a decision-maker:

- Case summarization

- Evidence analysis
- Tools for self-represented litigants

This approach emphasizes augmentation rather than replacement of human judgment ([SSRN][4]).

C) China - China has implemented advanced AI systems in criminal justice, such as the "206 system":

- Assists judges and prosecutors.
- Automates aspects of case handling.

However, concerns exist regarding transparency and potential bias ([ScienceDirect][5]).

D) United States and Europe - Recent studies show increasing adoption of AI by judges, primarily for research and document review, though concerns about misuse persist ([Reuters][6]).

5. AI and Enhancement of Access to Justice:

A) Reduction in Costs - AI reduces legal costs by:

- Automating routine tasks.
- Minimizing reliance on expensive legal professionals.

This makes legal services more affordable.

B) Increased Efficiency - AI accelerates:

- Case processing,
- Legal research,
- Document review,

This leads to faster resolution of disputes.

C) Democratization of Legal Knowledge -

AI tools provide legal information to the public, empowering individuals to:

- Understand their rights,
- Navigate legal procedures.

D) Bridging the Justice Gap -

AI can significantly reduce the "justice gap" — the disparity between legal needs and available services — especially for marginalized communities.

6. Challenges and Risks:

A) Algorithmic Bias- AI systems may reflect biases present in training data, leading to:

- Discriminatory outcomes,

- Unfair judgments.

This undermines the principle of equality before the law.

B) Lack of Transparency - Many AI systems operate as "black boxes," making it difficult to:

- Understand decision-making processes,
- Ensure accountability.

C) Ethical Concerns - Key ethical issues include:

- Delegation of judicial decision-making to machines,
- Erosion of human judgment,
- Privacy concerns.

D) Risk of Over-Reliance - Excessive reliance on AI can lead to:

- Reduced critical thinking among legal professionals,
- Blind acceptance of AI-generated outputs.

E) Data Privacy and Security - Judicial systems handle sensitive information, making data protection crucial.

7. Legal and Regulatory Framework:

A) Need for Regulation - The integration of AI in judiciary requires:

- Clear legal frameworks,
- Ethical guidelines,
- Accountability mechanisms.

B) International Standards - Organizations like the OECD emphasize:

- Human-centric AI,
- Transparency,
- Fairness.

C) Indian Scenario - India is still in the early stages of regulating AI in the judiciary. A cautious approach is being adopted to ensure judicial integrity ([The Times of India][7]).

8. Ethical Considerations:

A) Human Oversight - AI should assist, not replace, human judges.

B) Fairness and Equality - Systems must be designed to avoid discrimination.

C) Accountability - Clear responsibility must be established for AI-generated decisions.

D) Transparency - AI processes should be explainable and auditable.

9. Future Prospects:

A) Advanced Legal AI Systems - Future developments may include:

- Fully automated legal reasoning systems,
- Integration with blockchain for secure records.

B) Personalized Legal Assistance - AI could provide tailored legal advice based on individual circumstances.

C) Expansion of Online Dispute Resolution - AI-driven platforms may handle:

- Small claims disputes,
- Consumer grievances.

D) Collaboration between Law and Technology - Interdisciplinary collaboration will be essential for responsible innovation.

10. Recommendations:

To ensure effective implementation of AI in judiciary:

1. Develop Comprehensive Legal Frameworks,
2. Ensure Human Oversight in Decision-Making,
3. Promote Transparency and Explainability,
4. Invest in Training for Legal Professionals,
5. Address Bias through Diverse Data Sets,
6. Strengthen Data Protection Measures,
7. Encourage Public Awareness and Accessibility.

11. Conclusion:

Artificial Intelligence has the potential to revolutionize judicial systems and significantly enhance access to justice. By improving efficiency, reducing costs, and democratizing legal knowledge, AI can help bridge longstanding gaps in justice delivery.

However, its adoption must be approached with caution. Issues such as bias, lack of transparency, and ethical concerns cannot be ignored. The challenge lies in balancing technological innovation with the fundamental principles of justice.

Ultimately, AI should serve as a tool to augment human judgment, not replace it. With appropriate safeguards, policies, and ethical frameworks, AI can play a pivotal role in creating a more accessible, efficient, and equitable justice system.

REFERENCES

1. OECD, AI in Justice Administration and Access to Justice (2025) ([OECD][1])
2. Khatana & Choudhary, Role of AI in Enhancing Access to Justice in India ([Lex Localis][2])
3. Srivastava & Srivastava, AI in Judicial Processes ([ResearchGate][3])
4. Remolina, AI in Singapore Judiciary ([SSRN][4])
5. Laptev & Feyzrakhmanova, AI in Justice Systems ([Springer][8])
6. Reuters, AI Adoption by Judges ([Reuters][6])
7. ScienceDirect, China's AI Criminal Justice System ([ScienceDirect][5])

****

Bridging the Gap: Evaluating International Human Rights Frameworks in the Age of Artificial Intelligence

By Jaspreet Kaur

Research Scholar
School of Law, Mody University of Science and Technology, Lakshmangarh, Rajasthan.

By Dr. Rashmi Gupta

Assistant Professor
School of Law, Mody University of Science and Technology, Lakshmangarh, Rajasthan.

Abstract

As artificial intelligence (AI) systems increasingly shape social, political, and economic life, questions arise about whether existing international human rights frameworks are adequate to safeguard human dignity, fairness, and equality in this rapidly evolving digital era. This study critically evaluates the alignment and gaps between current human rights instruments—such as the Universal Declaration of Human Rights (UDHR), the Convention on the Rights of the Child (CRC), and emerging AI governance guidelines—and the ethical, social, and legal challenges posed by AI technologies. Drawing on interdisciplinary literature from law, computer science, and ethics, the research analyzes how principles such as accountability, transparency, privacy, and non-discrimination are interpreted and operationalized in global AI policies. The paper further explores case studies on algorithmic bias, data governance, and children's rights in digital environments to identify where human rights frameworks succeed and where they fall short in addressing AI-driven harms. Ultimately, the study proposes a model for "rights-based AI governance," emphasizing participatory regulation, algorithmic accountability, and international cooperation. By bridging the normative gap between human rights law and technological innovation, this research contributes to shaping a more equitable and human-centered digital future.

Keywords: *artificial intelligence (AI), human rights, international law, algorithmic accountability, digital ethics, governance, fairness, children's rights, transparency, global policy.*

Introduction

AI systems may now represent a variety of society values instead of merely the goals of engineers or policymakers thanks to this social approach. Public involvement, however, is not a perfect answer to the problems with AI governance. Like politicians, the general population might not have the technical know-how to completely comprehend the intricacies of AI systems.

Additionally, special interests occasionally have the ability to control or sway public engagement. Therefore, public engagement procedures must be created to steer clear of these problems in order to be successful[60].

It is important to note that different levels of stakeholder participation may be advantageous in different regulatory processes. Public commenting during rule-making by regulatory bodies such as the U.S. government is an example of how initial agenda-setting and review procedures may prioritize extensive public consultation. Bureau of Industry and Security, Department of Commerce While implementation and enforcement benefit from independent monitoring agencies that can balance conflicting interests, drafting technical laws may call for more in-depth expert engagement from academics and industry. In a similar vein, various regulatory issues can call for various ratios of power and participation. Technical standards may rely significantly on industry experience, but applications that impact basic rights can necessitate more stringent government regulation and extensive public discussion[61].

Holding those who designed such systems accountable is the second way to include accountability. It is reasonable to assume that developers' adherence to AI regulations will affect how these systems operate. This strategy has elements of vicarious responsibility. The organizations and people creating, implementing, or running AI systems should be held responsible for the choices and behaviors of these systems, according to the cardinal concept of AI accountability. Therefore, even if they did not make the decisions themselves, the second approach suggests that if a company or individual gives an artificially intelligent system the capacity to make decisions, they must also be held vicariously liable for the outcomes of those decisions.[2] The EU AI Act, which was passed by the European Union in 2023 and is the first comprehensive law on artificial intelligence regulation in the world, incorporates some of the aforementioned insights.

This complaint alleges that the insurance company discontinued or refused to pay for essential and required medical treatments because it employed certain AI algorithms to forecast health-care decisions. Such problems must be avoided since these professional sectors supply the

[60] S. Jasanoff, *The Ethics of Invention: Technology and the Human Future*. Norton & Company. 2016: 18.
[61] Not even countries swaying far from the rule of law are openly against the rule of law. *See* S. Walker, *'Hungary and Poland to counter critics with "rule of law institute"'*. The Guardian. 28 October 2020

general public with necessary goods and services, and any disparity in that respect may impact the rights of the public at large[62].

It's also important to remember that every vocational field has distinct problems that the AI system needs to be specially designed to solve. Therefore, industry-specific accountability must be implemented. In light of this, we will examine two distinct industries that are creating AI-powered systems and discuss accountability concerns in both settings. Approximately 16 percent of India's GDP comes from the agricultural sector, which is one of the most important industries in terms of employment. The development of the agricultural industry through technology breakthroughs has been a priority in recent years as part of India's digital revolution. One strategy implemented by the Indian government is the Digital Agriculture Mission, which uses digital infrastructure to monitor a variety of resources, including groundwater, viable seeds, crop yield, drought and flood monitoring, etc., in order to help farmers get the most out of their land and resources[63]. Artificial intelligence may be used extensively to process agricultural data and can offer creative answers to problems in this field.

Five key principles and a considerably longer number of specific goals and indicators are included in the most recent (and longer) checklist created by the Venice Commission of the Council of Europe. Legality, legal clarity, equality before the law, nondiscrimination, and access to justice are the fundamental tenets. A global index of the rule of law is maintained by the World Justice Project (WJP). In addition to a set of principles (or categories) for assessing the notion, this entails a complete methodology. According to the WJP, the rule of law consists of transparent governance, just legislation, accountability, and fair and easily accessible conflict settlement.

The EU has created a rule of law system to gauge the rule of law inside the Union with a same pragmatic objective. The recent – and first – rule of law report from the European Commission is a sobering read. Many European nations are seeing a decline in the rule of law. This isn't because of digitalization or automation, but it's possible that the Commission will emphasize automation more in its next reports[64]. In contrast to checklist approaches, this perspective asks what the purpose of the rule of law is, starting from a more basic but earlier

[62] High-Level Expert Group on AI, *A definition of AI: Main capabilities and disciplines*. European Commission. 2019.

[63] R. Karlsson, *Den digitala statsförvaltningen – Rättsliga förutsättningar för automatise- rade beslut, profilering och AI*. 1 Förvaltningsrättslig tidskrift 2020

[64]

starting point: an ultimate objective. Its primary objective, which is to lessen or minimize the arbitrary exercise of power, is the reason the rule of law is valued and has remained important across time. This is true regardless of the specific institutions or principles that are associated with it. Fundamentally, law is about the use of power, or what it does. The efficiency of a sociotechnical system depends on the combined optimization of norms, processes, metrics, roles, expectations, cultural background, and coordination mechanisms on the social side and tools, equipment, infrastructure, and technology (such as software) on the technical side.

Since such hybrid systems are immersed in a network of individual acts, the interaction between these components precludes their disentanglement as separate observable portions for particular outcomes, just as it precludes the detection of a general function. "AI tools can support trained judges, while the content and contours of the laws and the legal systems of democratic societies must remain authoritatively governed by humans." It can be challenging for an individual to completely engage with an automated or semi-automatic system for decision-making. This odd echo contradicts Aristotle's assertion that, following his experience with despotic rulers, he trusted the law to govern rather than people. Aristotle believed that man represented passion, the irrational, the easily corrupted, and twisted ruler, whereas law represented reason and equality before the law (isonomia). It appears that we are now worried that man cannot reign and is being driven to the sidelines by automated, logical, and cold decision-making, even though the outcome might be more predictability.

This approach to accountability aligns with public discourse demands that AI and its developers and implementers be "more accountable." The characteristics that allow interested parties to have enough input, supervision, or restitution are frequently absent from AI and those who use it. Since accountability-as-a-virtue is a close antonym of forensic accountability, it may also aid in clarifying some of the conceptual ambiguity around accountability. In the context of forensics, accountability is typically a bad trait connected to blame and penalties. However, virtue-based accountability is a positive attribute linked to incentives and recognition.

Accountability is frequently characterized as a more context-dependent attribute connected to certain social behaviors, in addition to its application in moral evaluation and legal research. Principal-agent interactions are a component of accountability practices, in which the principal assigns certain responsibilities or authority to the agent and then keeps an eye on the agent's

performance. According to the conditions outlined in their connection, which may or may not be stated, the agent owes the principal accounting of this performance.

According to Waldron, this agent responsibility is the most common type of accountability in businesses, governments, and interpersonal interactions. The interaction between citizens and public leaders may also be described in this way. Accountability, according to some, is the "essence" of democracy since it gives those who are subject to coercive authority a means of limiting it. When members of an accountability relationship subtly dispute about whether accountability model is appropriate in a particular circumstance, issues might occur. The accountability debate surrounding multilateral institutions serves as a useful example. According to Grant and Keohane, the World Bank is extraordinarily unaccountable to the people impacted by its actions, but surprisingly accountable to the governments that sanction it.

Literature Review

Rights Foundation (2025) [1] The *Children & AI Design Code* (2025) published by the 5Rights Foundation represents a comprehensive, up-to-date guide for responsible AI development concerning children. Building upon earlier frameworks such as *Child Rights by Design*, this document outlines actionable principles for AI developers, policymakers, and educators to ensure that AI systems serve children's best interests. It introduces standards for transparency, data minimization, and explainability while emphasizing inclusivity and participation of children in the design process. The 2025 Code consolidates prior research into a practical, enforceable framework that operationalizes the protection and empowerment of children in an AI-driven world.

Caivano, Danilo; Fernandez Nieto, Berenice; Gigante, Domenico; Ragone, Azzurra; and Tibidò, Sara (2024) [2] In their 2024 conference paper, *Ensuring Child Rights in the Age of AI: A Multidimensional Analysis of Existing Frameworks*, Caivano et al. conduct a comparative analysis of international initiatives addressing children's rights in relation to AI. Presented at the *International Conference on Information Technology for Social Good (GoodIT '24)*, their study evaluates the effectiveness of existing policy frameworks and ethical codes, identifying gaps in implementation and oversight. They emphasize the multidimensional nature of safeguarding child rights—encompassing technical design, policy development, and educational initiatives—and call for greater coherence among stakeholders. Their findings support the notion that protecting children in digital contexts requires both normative alignment and actionable technical guidance.

Digital Future Commission and 5Rights Foundation (2023) [3] The *Child Rights by Design* framework (2023), developed collaboratively by the Digital Future Commission and the 5Rights Foundation, translates the United Nations Convention on the Rights of the Child (UNCRC) into practical design principles for digital and AI technologies. This report highlights how developers can proactively embed child rights—such as safety, participation, and access to information—into the digital ecosystem. It promotes a shift from reactive regulation toward a proactive, rights-based design philosophy. The framework underscores the importance of designing for children's developmental needs, ensuring that emerging technologies empower rather than exploit young users.

Dulka, Anne (2022) [4] explores the intersection of artificial intelligence (AI) and international human rights law, emphasizing how existing legal frameworks struggle to keep pace with the rapid evolution of AI technologies. Her work in the *Stanford Technology Law Review* provides a foundational understanding of the legal challenges associated with embedding human rights considerations into AI governance. Dulka argues for the necessity of developing binding international norms to ensure that AI systems respect principles such as privacy, equality, and non-discrimination. This study is particularly relevant for later works focusing on child rights and AI, as it sets the stage for integrating human rights into AI design and deployment.

Escobar Planas, Marina (2024) [5] in her doctoral dissertation *Trustworthy Conversational Agents for Children*, focuses on the design and evaluation of AI-driven conversational agents tailored for young users. Conducted at the Universitat Politècnica de València, her research contributes a technical and ethical perspective to the discussion of child-focused AI systems. Escobar Planas emphasizes trust, transparency, and adaptability as core elements for building conversational agents that support learning and emotional well-being without compromising safety or privacy. Her work bridges technical design principles with child-centered ethics, illustrating how AI systems can be both pedagogically effective and developmentally appropriate.

IEEE P2089 Task Group (2023) [6] The IEEE P2089 Task Group (2023) released the *IEEE Recommended Practice for the Application of the IEEE 802.11 Standard*, which provides technical and ethical guidance for implementing Wi-Fi standards with a focus on privacy, safety, and data governance. While primarily addressing technical network communication practices, this

standard also reflects the IEEE's broader commitment to responsible technology development. It highlights how engineering protocols can incorporate principles of fairness, inclusivity, and ethical accountability, especially in contexts where users include vulnerable populations such as children. The document underscores the importance of transparent, standardized practices in ensuring interoperability, data security, and equitable access to technology.

IBM (2023) [7] documentation on *Disparate Impact in Watson OpenScale Fairness Metrics* presents a practical application of fairness assessment in AI models. The report details how disparate impact is quantified to detect and mitigate biases in machine learning systems deployed through IBM's Watson OpenScale platform. By operationalizing fairness metrics, IBM provides tools for developers to measure inequality in model outcomes across demographic groups. This work contributes to the growing body of literature emphasizing algorithmic accountability and ethical AI practices, bridging theoretical frameworks of fairness with real-world implementation strategies. It serves as a critical resource for organizations seeking to embed fairness into AI systems through measurable, transparent evaluation.

Kim, Seyun; Bai, Yuanchen; Zhu, Haiyi; and Eslami, Motahhare (2025) [8] In their 2025 paper, *A Systematic Literature Review on Equity and Technology in HCI and Fairness: Navigating the Complexities and Nuances of Equity Research*, Kim et al. present an extensive analysis of how equity has been conceptualized and operationalized in Human–Computer Interaction (HCI) research. Published in *Proceedings of the ACM on Human–Computer Interaction*, the review synthesizes prior work across fairness, inclusion, and accessibility, highlighting both methodological gaps and ethical dilemmas in technology design. The authors argue for a more context-sensitive and participatory approach to equity, emphasizing that fairness must go beyond algorithmic accuracy to include social, cultural, and political dimensions. Their framework offers valuable guidance for designing equitable AI systems that align with broader human rights and justice principles.

Lindgren, Helena (2024) [9] in her article *Emerging Roles and Relationships Among Humans and Interactive AI Systems* in the *International Journal of Human–Computer Interaction*, investigates the evolving dynamics between humans and AI-driven systems. Her work conceptualizes AI not as a static tool but as an interactive agent embedded in social, organizational, and cognitive contexts. Lindgren introduces models of human–AI relationships, including

collaboration, guidance, and negotiation, highlighting how role fluidity affects user trust and ethical responsibility. This research contributes significantly to the discourse on human–AI interaction by framing it as a reciprocal relationship shaped by both technological affordances and human values.

Mahmud, Bahar; Hong, Guan; and Fong, Bernard (2023) [10] In their 2023 study, *A Study of Human–AI Symbiosis for Creative Work: Recent Developments and Future Directions in Deep Learning*, Mahmud, Hong, and Fong explore how advances in deep learning are reshaping creative collaboration between humans and AI. Published in *ACM Transactions on Multimedia Computing, Communications and Applications*, their research reviews emerging tools that enable co-creation in art, design, and media production. The authors argue that human–AI symbiosis represents a paradigm shift, where AI functions not merely as an assistant but as a creative partner. They identify challenges such as authorship, trust, and ethical ownership while calling for design frameworks that preserve human agency and creativity within AI-assisted environments.

Committee on the Rights of the Child (2021) [11] Building on the CRC, the Committee on the Rights of the Child (2021) issued *General Comment No. 25 on Children's Rights in Relation to the Digital Environment*, which provides authoritative guidance on applying the Convention's principles within digital spaces. The document emphasizes that children's rights—to safety, privacy, play, participation, and access to information—must be upheld online just as they are offline. It urges states and private actors to design digital products and AI systems that respect and promote children's rights, including protection from exploitation and exposure to harmful content. This General Comment represents a critical step in bridging traditional child protection frameworks with the realities of the modern, data-driven digital environment.

UNICEF Innocenti (2021) [12] advances the conversation by addressing the specific implications of artificial intelligence for child rights. This guidance document outlines principles for governments, corporations, and researchers to ensure that AI systems are designed and deployed in ways that prioritize children's best interests. It identifies key risk areas—such as bias, surveillance, and exclusion—while advocating for transparency, accountability, and child participation in AI development. The publication is one of the earliest comprehensive efforts to align AI ethics with child-centered policy, positioning children not merely as users but as rights-holders in digital ecosystems.

UNICEF (2024) [13] UNICEF expanded on its earlier work with *Developing Global Guidance for Child Rights Impact Assessments in Relation to the Digital Environment*. This initiative provides a methodological framework for assessing how digital products, including AI systems, affect children's rights. The guidance emphasizes the need for child rights impact assessments (CRIAs) at all stages of technological development—from design to deployment—to anticipate and mitigate risks. UNICEF's approach integrates human rights due diligence with technical evaluation, promoting cross-sector collaboration between governments, tech companies, and child advocates. This document represents a key evolution in operationalizing child rights within AI governance and digital policy.

Zafar, Muhammad Bilal; Valera, Isabel; Gomez Rodriguez, Manuel; and Gummadi, Krishna P. (2017) [14] in their influential paper *Fairness Beyond Disparate Treatment & Disparate Impact: Learning Classification without Disparate Mistreatment*, published in the *Proceedings of the 26th International Conference on World Wide Web (WWW '17)*, propose a new fairness criterion for machine learning models. Their concept of "disparate mistreatment" extends fairness analysis beyond traditional measures by focusing on differences in error rates between demographic groups. This approach helps identify bias in algorithmic decision-making processes, ensuring that predictive models do not unfairly harm specific populations. Although not explicitly focused on children, the study has significant implications for fairness in AI systems used in educational, social, or digital environments involving minors. It provides a technical foundation for ensuring equitable AI outcomes that align with broader human rights and child protection principles.

Chu, T.; Song, Z.; and Yang, C. (2024) [15] in their paper *How to Protect Copyright Data in Optimization of Large Language Models* published in the *Proceedings of the AAAI Conference on Artificial Intelligence*, examine the pressing issue of intellectual property protection within the development and training of large language models (LLMs). The authors explore strategies for preventing the unauthorized use of copyrighted materials during model optimization, proposing technical mechanisms such as selective data filtering, traceable data sourcing, and privacy-preserving learning algorithms. Their findings highlight the tension between the need for vast, high-quality datasets to improve AI performance and the ethical and legal obligations to respect creators' rights. This research contributes to emerging debates on the responsible governance of

AI systems and provides practical guidance for aligning model training processes with international copyright standards.

Chen, G. H.; Chen, S.; Liu, Z.; Jiang, F.; and Wang, B. (2024) [16] in their study *Humans or LLMs as the Judge? A Study on Judgement Bias*, presented at the *Conference on Empirical Methods in Natural Language Processing (EMNLP 2024)*, investigate the comparative biases exhibited by humans and large language models in evaluative decision-making. By analyzing judgment tasks across multiple domains, the authors reveal that while LLMs can reduce certain forms of human inconsistency, they also introduce distinct forms of bias stemming from their training data and model architecture. The paper provides a rigorous quantitative assessment of how bias manifests differently between human and AI evaluators, offering insights into the complexities of fairness and accountability in automated judgment systems. This work underscores the need for hybrid evaluation frameworks that leverage the strengths of both human oversight and AI efficiency while mitigating their respective biases.

Chabot, C.; Raman, V.; and Popken, B. (2025) [17] present an interdisciplinary white paper titled *Large Language Models in a Global Context: An Interdisciplinary Analysis of Human Rights Impacts in Law, Education, and Journalism*, published by the UC Berkeley Human Rights Center. Their analysis situates LLMs within a global human rights framework, exploring both their potential to enhance access to information and their risks related to misinformation, surveillance, and systemic bias. The authors argue that the integration of LLMs into key social sectors—such as legal systems, educational institutions, and media organizations—necessitates a robust rights-based governance structure. By combining perspectives from law, communication studies, and computer science, the paper advances an interdisciplinary model for assessing LLM impacts on fundamental rights, including freedom of expression, equality, and privacy. The authors conclude with policy recommendations for ensuring that LLM deployment aligns with international human rights standards and social justice principles.

Costanza-Chock, S.; Raji, I. D.; and Buolamwini, J. (2022) [18] in their influential work *Who Audits the Auditors? Recommendations from a Field Scan of the Algorithmic Auditing Ecosystem*, provide a comprehensive examination of the emerging field of algorithmic auditing. The authors analyze the practices, challenges, and ethical dilemmas surrounding the evaluation of AI systems, particularly focusing on who conducts audits and under what conditions. Their

research highlights the power imbalances that exist between developers, auditors, and affected communities, arguing that current auditing practices often lack transparency, inclusivity, and accountability. They propose a set of recommendations to make algorithmic auditing more participatory, equitable, and independent—emphasizing the inclusion of marginalized voices in the auditing process. This study has become a cornerstone in the discourse on AI ethics and governance, directly influencing debates on fairness, accountability, and the social responsibility of AI practitioners.

Cools, H.; and Diakopoulos, N. (2024) [19] in their article *Uses of Generative AI in the Newsroom: Mapping Journalists' Perceptions of Perils and Possibilities* published in *Journalism Practice*, investigate how journalists perceive and engage with generative AI tools in contemporary media production. Through empirical research, they map both the opportunities—such as efficiency, creativity, and data analysis—and the challenges—such as misinformation, ethical risks, and loss of editorial control—associated with generative AI integration in newsrooms. Their findings reveal a nuanced spectrum of attitudes among journalists, ranging from cautious optimism to deep skepticism, reflecting tensions between technological innovation and journalistic integrity. The study underscores the need for professional guidelines, transparency, and critical literacy in the use of AI within journalism. It contributes to ongoing conversations about media ethics, automation, and the evolving role of human judgment in the age of AI-driven content creation.

Magesh, V.; Surani, F.; Dahl, M.; Suzgun, M.; Manning, C. D.; and Ho, D. E. (2025) [20] in their study *Hallucination-Free? Assessing the Reliability of Leading AI Legal Research Tools* published in the *Journal of Empirical Legal Studies*, critically evaluate the accuracy and reliability of AI-powered legal research platforms. The authors investigate whether these systems—many built upon large language model (LLM) architectures—produce legally sound and verifiable outputs or exhibit the phenomenon of "hallucination," where AI generates plausible but false information. Through a systematic empirical analysis comparing AI-generated legal citations and case summaries with verified legal databases, the study finds that while AI tools can significantly enhance research efficiency, they still demonstrate notable inaccuracies and overconfidence in unsupported claims.

Research Methodology

The United States has mostly depended on a combination of harsh restrictions, such liability standards and transparency requirements at the state level, and soft regulations, like voluntary standards and ethical principles at the federal level. Nonetheless, there are increasing demands for more robust and enforceable federal regulations, particularly in high-risk industries. According to the 5W1H framework, the U.S. has, at least so far, chosen a more fragmented, sector-specific, and mostly soft regulatory strategy, whereas the EU has adopted a more comprehensive, centralized, and predominately harsh regulatory approach.

The U.S. has so far concentrated on tackling individual AI problems when they emerge in certain industries through downstream actions, whereas the EU seeks to guide AI development through a risk-based, lifecycle strategy[65].

When the 5W1H paradigm is applied to these disparate approaches, several insights and possible areas for development in both jurisdictions are revealed. The framework indicates that creating a more thorough government AI policy might be advantageous for the United States. One reason is that the United States' present regulatory approach to artificial intelligence is fragmented, which might result in large gaps in U.S. legislation or uneven standards, benchmarks, and regulatory restrictions. Additionally, as was previously said, industry self-regulation may result in insufficient scrutiny and conflicts of interest. For high-risk applications, a more thorough regulatory approach can involve putting in place upstream governance systems and more robust enforcement mechanisms.

The 5W1H framework emphasizes the necessity of flexibility in adjusting to the quickly evolving AI landscape as the EU proceeds with the AI Act. As was previously said, underestimating danger might lead to insufficient protection, while overestimating risk could unintentionally impede innovation[66]. Furthermore, the 5W1H framework highlights the possible drawbacks of a centralized regulatory framework, which can fail to take into account a variety of viewpoints and result in blind spots in AI governance. The EU and the US might both gain from

[65] S. Larsson, *Conceptions in the Code: How Metaphors Explain Legal Challenges in Digital Times*. Oxford Studies in Language and Law. Oxford University Press. 2017.

[66] *See* Government of Sweden, *Regeringens proposition 2016/17:180, En modern och rättssäker förvaltning – ny förvaltningslag*. 2017.

international coordination and harmonization of respective governance systems, given the global character of AI development and implementation. The 5W1H framework offers a useful tool for navigating this complex policy landscape by reminding us to address these concerns. It guarantees that our digital governance rules are based on a thorough comprehension of our goals, core values, and the possible compromises associated with various regulatory strategies.

The 5W1H framework highlights the advantages of current governance measures as well as potential areas for improvement when applied to projects like the EU's AI Act and the evolving regulatory landscape in the United States. In the end, a successful digital governance strategy should be able to strike a balance between fostering innovation and defending human values, public welfare, and individual rights. The different tools available to politicians, technical specialists, and the general public to attain this balance are made evident by the 5W1H framework. There are growing requests to regulate AI as a general class as a result of the constant barrage of concerning errors and apocalyptic scenarios that expose the shortcomings of patchwork regulatory standards. For example, Tutt suggests creating a new federal organization to supervise algorithm testing and approval that is based on the U.S. Food and Drug Administration. In order to implement such recommendations, all kinds of AI would need to adhere to a single set of normative standards, technical specifications, and/or reporting obligations. There might be substantial trade-offs, but this would undoubtedly make AI more formally accountable. The ethical risks associated with AI vary greatly and are not uniform. Proposals to govern AI as a whole may overlook the fact that many applications of AI are mostly private and have low potential for damage[67]. Think about AI music composition apps. Although such technology may create or exacerbate intellectual property issues, it poses no clear risks to equality, safety, or health, and the case for giving the state more control over this area seems to be weak. Demands for public responsibility that lack distinction have the potential to interfere with more or less private and benign activity.

Many AI applications fall into a more ambiguous middle ground, even if AI for music composition and AI for court sentence obviously occupy opposing poles on the private-public spectrum. One example is the recommender algorithms seen on social media sites and search engines. Despite being private companies, search engines and social media platforms have the potential to dominate the information flow, which might have a significant impact on political

[67] M. Krygier, *What's the Point of the Rule of Law?* 67 Buffalo Law Review 3, p. 747. 2019.

stability and public discourse. A more promising approach to regulation would include a number of contextual elements, including the varied interests at risk, the types of agents engaged, the sphere of operation, and information and power asymmetries[68]. Depending on the degree of human oversight, the level of competition, the high or low stakes of the judgments, the degree of externality risk, the degree of competition, and other factors, different criteria may be applicable. This concept shares a lot of similarities with Nissenbaum's well-known theory of privacy, known as "contextual integrity," which maintains that privacy is not a stand-alone property but rather one that requires different things depending on the situation[69].

The concepts of explainability and openness are frequently used while discussing bridging the accountability gap. Enhancing AI's explainability and transparency is frequently cited as a key element of increasing accountability as, without knowing what AI chooses and why, humans are unable to assess whether it conforms to applicable standards. Enhancements in both aspects are undoubtedly necessary to increase AI's accountability. However, concentrating only on one aspect might lead to certain pitfalls[70]. Transparency is frequently neither desired nor necessary for holding AI responsible, as Kroll has noted. It is undesirable for applications that need to safeguard trade secrets, national security, or the privacy of data subjects. In most situations, it is insufficient since simply being able to examine the data set or algorithm code is not always enough to ensure understanding it.

What utility is the information to a person, even if the right to information should be interpreted more broadly to include a thorough description of the methods used? How can this knowledge be appropriately evaluated and, if wanted, used to make an educated decision about what to do? The Working Party Guidelines for Article 29 suggest using visual aids, such as graphics, to clarify the steps involved in an automated decision and its outcomes. This relates to the sociolegal and behavioral viewpoint that was previously discussed, which holds that humans comprehend the law through embodiments and metaphors. Other methods are required to support a cognitive anchoring of what automated decisions mean when the human element is eliminated

[68] L. Fuller, *The Morality of Law*. University Law Publishing. 2004.

[69] J. Raz, *The Authority of Law. Essays on Law and Morality.* Oxford University Press. 1979.

[70] For an overview, *see* J. Waldron, *Thoughtfulness and the Rule of Law*. NYU School of Law, Public Law Research Paper No. 11–13. 2011.

from public decision-making and algorithms are so complex that describing their operation would be useless in helping to understand how a decision was made.

The underlying notion that openness leads to explainability or interpretability frequently seems to be the foundation of demands for transparency. According to this theory, we are more likely to comprehend the algorithm's choices if we can see the data or the code. The pursuit of explainability is somewhat counterintuitive, despite the fact that intriguing research and experiments on making algorithmic judgments more explainable are still ongoing. The most sophisticated AI systems are produced via deep learning methods, which automatically generate and modify many parameters in response to training data, rather than by human programming. It may be nearly impossible to understand the significance of these settings or the rationale behind their choice. Understanding AI's processes becomes increasingly difficult as it gets more complicated, and attempts to reverse-engineer it is not without biases and limits.

Analysis

When transparency and explainability are lacking, a number of different techniques have been put forth to keep an eye on the dependability and integrity of algorithmic systems. These include the commonplace but frequently disregarded techniques of thorough documentation and record-keeping, distinct roles and responsibilities throughout the development process, promoting and adhering to a set of standard operating procedures, and various visualization and reporting techniques, like dashboards and "nutrition labels," to monitor and convey the characteristics of an algorithm.

Giving those who create and implement AI a duty of care to reduce the ethical concerns associated with AI systems is another suggested remedy for the AI accountability gap. It is true that increased awareness of ethical problems by designers and operators can reduce many of the hazards associated with AI. Some terrible errors, such as the introduction of facial recognition software that labels Black faces as gorillas, may be avoided with increased knowledge of systemic injustice and the kind of biases that may exist in training data. A duty of care, however, can easily misused. The ethical arrogance of many computer workers is already well-known, and many ethical problems are too complicated to be resolved without more sophisticated knowledge. It can be a recipe for well-intentioned errors, motivated thinking, or embedding local value judgments into software when experts are asked to assume responsibility for protecting their products in an

ethical manner. One may argue that many ethical problems are too big for tech workers to handle alone. Many of these call for fair public discourse and feedback from impacted communities. An overzealous application of the duty of care might lead to accusations of technocracy or paternalism[71].

Some argue that restricting the scope of acceptable explanations for AI designs and results can help allay concerns about the private control of AI. Any and all citizens should be able to support the "public reason" that underpins the standards by which we evaluate AI. This approach might undoubtedly aid in eliminating the most partisan or divisive arguments, such as those based on flawed reasoning or limited ideas of human happiness. Some of the difficulties in guaranteeing accountability for AI and people who develop and use it have been covered in the previous debate. But it's also important to think about how AI might both strengthen and weaken traditional businesses' responsibility. Malicious actors and systems may be able to avoid responsibility thanks to AI. It may also be used as a tool to help make people and institutions more accountable.

Blockchain is a related digital technology that demonstrates this dichotomy, even though it is not an example of AI. A blockchain is a distributed database that stores value, makes transactions easier, and verifies transactions using encryption[72]. Applications for blockchain include identity verification, digital asset storage, contract fulfillment assurance, and voting system security. By lowering reliance on personal trust or outside organizations like governments, attorneys, and banks, it fosters strong mutual accountability. The most well-known application of blockchain technology is in cryptocurrencies, which are decentralized forms of trade that are neither regulated nor controlled by central banks. People and locations that are underserved by fiat currencies—where financial services may be unavailable, broken, or discriminatory—benefit greatly from cryptocurrency. However, there are two sides to the ungovernability of cryptocurrencies. The preferred means of exchange for illegal transactions is an unmanageable currency.

Naturally, artificial intelligence (AI) has many positive uses in governance and can support more reasonable and just policies. Theoretically, choices based on thorough data analysis can

[71] European Commission for Democracy through Law (Venice Commission), *The Rule of Law Checklist*. Council of Europe. 2016.

[72] World Justice Project, *Rule of Law Index 2020.*

produce more accurate, consistent, equitable, and efficient results. AI may potentially increase government accountability by decreasing reliance on human judgment, if it can overcome the obstacles of prejudice and opacity. However, AI also gives authorities strong tools for avoiding responsibility by increasing their abilities to monitor citizens, manage populations, and suppress opposition.

By enabling "sousveillance" techniques that hold influential people accountable, artificial intelligence (AI) can also contribute to the solution of state oppression, as Danaher explores (although skepticically). Attempts to record police wrongdoing on cellphones are an example of sousveillance, which is defined as "watching from below." By empowering the weak to examine data for indications of wrongdoing, artificial intelligence (AI) in the hands of people and civil society organizations may make sousveillance easier. This might be human rights activists monitoring abuse through social media posts, criminal justice advocates examining forensic evidence for indications of wrongful convictions, or journalists following freedom of information requests. Applications that utilize bots to contest bank fees, product defects, and price gouging are examples of how sousveillance technologies may also be used to safeguard consumers.

Calling for more accountability in public decision-making is simple. Accountability is not an unqualified good, though, since its application (the context), in connection with what (i.e., the process or results), and when (timing) affects whether it has a favorable impact on assessments and decision-making. It is suggested that these considerations are even more important for automated governance, especially with reference to AI, because context, time, and process or outcome aspects make it more difficult to identify accountability. For someone to believe they are accountable, it also important how responsibility is articulated. There must be a legally supported range of options for how to behave or what choices to make. Accountability shouldn't be generated by unrealistic expectations or responsibilities that are impeded by strong limits, making it impossible to do certain duties.

The issue of accountability seldom deviates from its usual intellectualization when automated governance is used to handle quantifiable and simple judgments. Accountability becomes more challenging in circumstances where the law allows for discretion and judgment or when machine learning is used. It becomes challenging because technology is truly taking the place of human activity rather than just acting as a tool. Additionally, timing has a favorable impact

on decision-making and bears weight for responsibility. According to research, enforcing responsibility only after a decision has been taken, or post-decision accountability, appears to increase adherence to previous plans. Pre-decisional accountability reduces commitment to a certain course of action when an individual is aware that they will be held accountable before making a decision.

According to Tetlock and Lerner's paradigm, there are a number of issues with AI and responsibility. For starters, the locus of accountability changes whenever technology is used, and it may get harder to pinpoint as technology for complicated issues gets more sophisticated. Accountability measures that are normally found in connection to public officials are transferred to developers, programmers, and individuals who purchase technological services for use in the public domain.

The location of supervision and control also changes. Control, in the sense of being able to keep an eye on things and fix or modify mistakes, shifts from public agencies to private businesses if they depend increasingly on automated systems for decision-making. In addition to the physical manifestation of who is in charge of what, accountability and the capacity to implement an effective system for control and supervision are also impacted over time. In Sweden, a number of towns have started making decisions about income support cases automatically. It's unclear if this is legal, but accountability is a bigger problem. How much responsibility does the southern Swedish municipality of Trelleborg, which already uses automated decision-making, have for choices made by algorithms created outside of its direct control? According to Tet-lock and Lerner, here is where the timing problem arises.

Conclusion

The evolution of artificial intelligence has outpaced the capacity of existing international human rights frameworks to fully anticipate and mitigate its ethical, legal, and social implications. While foundational instruments such as the *Universal Declaration of Human Rights* and the *Convention on the Rights of the Child* continue to provide invaluable normative guidance, they were not designed to address the algorithmic opacity, data dependency, and autonomous decision-making that define the AI era. This analysis reveals that although numerous global and regional initiatives have sought to extend human rights principles into digital governance—through mechanisms such as ethical AI guidelines, algorithmic accountability frameworks, and child

rights–centered digital policies—implementation remains fragmented and inconsistent across jurisdictions. Bridging the gap between human rights and AI governance requires more than aspirational principles; it demands enforceable regulatory structures, transparent auditing mechanisms, and meaningful inclusion of diverse stakeholders, particularly those most vulnerable to algorithmic harms. Governments, international organizations, technology developers, and civil society must collaborate to ensure that AI systems are developed and deployed in ways that uphold dignity, equality, and justice. Integrating human rights impact assessments, participatory policy design, and cross-border cooperation can help translate normative ideals into operational realities. Ultimately, the path forward lies in reimagining human rights frameworks not as static legal texts but as dynamic instruments capable of evolving alongside technological change. By embedding human rights values at every stage of AI design and governance, the global community can move toward an equitable digital future—one where innovation serves humanity rather than undermines it.

REFERENCE

1. Rights Foundation. 2025. Children & AI Design Code. https://5rightsfoundation.com/children-and-ai-code-of-conduct/ Accessed: 2025-05-08.
2. Danilo Caivano, Berenice Fernandez Nieto, Domenico Gigante, Azzurra Ragone, and Sara Tibidò. 2024. Ensuring Child Rights in the Age of AI: A Multidimensional Analysis of Existing Frameworks. In *Proceedings of the 2024 International Conference on Information Technology for Social Good* (Bremen, Germany) (*GoodIT '24*). Association for Computing Machinery, New York, NY, USA, 76–83.
3. Digital Future Commission and 5Rights Foundation. 2023. Child Rights by Design. https://5rightsfoundation.com/resource/child-rights-by-design/ Accessed: 2025-05-09.
4. Anne Dulka. 2022. The use of artificial intelligence in international human rights law. *Stan. Tech. L. Rev.* 26 (2022), 316.
5. Marina Escobar Planas. 2024. *Trustworthy Conversational Agents for Children*. Ph. D. Dissertation. Universitat Politècnica de València.

6. IEEE P2089 Task Group. 2023. IEEE Recommended Practice for the Application of the IEEE 802.11 Standard.
7. IBM. 2023. Disparate impact in Watson OpenScale fairness metrics. *https://dataplatform.cloud.ibm.com/docs/content/wsj/model/wos-disparate-impact.html*. Accessed: 21 May 2025.
8. Seyun Kim, Yuanchen Bai, Haiyi Zhu, and Motahhare Eslami. 2025. A Systematic Literature Review on Equity and Technology in HCI and Fairness: Navigating the Complexities and Nuances of Equity Research. *Proceedings of the ACM on Human-Computer Interaction* 9, 2 (2025), 1–40.
9. Helena Lindgren. 2024. Emerging roles and relationships among humans and interactive AI systems. *International Journal of Human–Computer Interaction* (2024), 1–23
10. Bahar Mahmud, Guan Hong, and Bernard Fong. 2023. A study of human–ai symbiosis for creative work: Recent developments and future directions in deep learning. *ACM Transactions on Multimedia Computing, Communications and Applications* 20, 2 (2023), 1–21.
11. Committee on the Rights of the Child. 2021. General Comment No.25 (2021) on children's rights in relation to the digital environment. https://www.ohchr.org/en/documents/general-comments-and-recommendations/general-comment-no-25-2021-childrens-rights-relation Accessed April 2025.
12. UNICEF. 2024. Developing Global Guidance for Child Rights Impact Assessments in Relation to the Digital Environment
13. UNICEF Innocenti. 2021. Policy Guidance on AI and Children. https://www.unicef.org/innocenti/reports/policy-guidance-ai-children Accessed: April 2025.
14. Muhammad Bilal Zafar, Isabel Valera, Manuel Gomez Rodriguez, and Krishna P. Gummadi. 2017. Fairness Beyond Disparate Treatment & Disparate Impact: Learning Classification without Disparate Mistreatment. In *Proceedings of the 26th International Conference on World Wide Web* (Perth, Australia) (*WWW '17*). International World Wide Web Conferences Steering Committee, Republic and Canton of Geneva, CHE, 1171–1180.

15. Chabot, C.; Raman, V.; and Popken, B. 2025.Large Language Models in a Global Context: An Interdisciplinary Analysis of Human Rights Impacts in Law, Education, and Journalism.White paper, UC Berkeley Human Rights Center.
16. Chen, G. H.; Chen, S.; Liu, Z.; Jiang, F.; and Wang, B. 2024.Humans or LLMs as the Judge? A Study on Judgement Bias.In Al-Onaizan, Y.; Bansal, M.; and Chen, Y.-N., eds., *Proceedings of the 2024 Conference on Empirical Methods in Natural Language Processing*, 8301–8327. Miami, Florida, USA: Association for Computational Linguistics.
17. Chu, T.; Song, Z.; and Yang, C. 2024.How to Protect Copyright Data in Optimization of Large Language Models?*Proceedings of the AAAI Conference on Artificial Intelligence*, 38(16): 17871–17879.
18. Cools, H.; and Diakopoulos, N. 2024.Uses of Generative AI in the Newsroom: Mapping Journalists' Perceptions of Perils and Possibilities.*Journalism Practice*.
19. Costanza-Chock, S.; Raji, I. D.; and Buolamwini, J. 2022.Who Audits the Auditors? Recommendations from a field scan of the algorithmic auditing ecosystem.
20. Magesh, V.; Surani, F.; Dahl, M.; Suzgun, M.; Manning, C. D.; and Ho, D. E. 2025.Hallucination-Free? Assessing the Reliability of Leading AI Legal Research Tools.*Journal of Empirical Legal Studies*, 22(2): 123–145.

****

AI in Judiciary and Access to Justice

By Asmita Antani

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction:

In today's digital era, Artificial Intelligence (AI) is no longer limited to technical and commercial domains. It is rapidly entering the fields of judiciary and law enforcement. Technologies like Machine Learning (ML), Natural Language Processing (NLP), Optical Character Recognition (OCR), and Predictive Analytics are being used for judicial processes, legal research, and law enforcement. AI can make the functioning of the judiciary more transparent, faster, and effective. Similarly, in law enforcement, AI assists in crime prevention, identifying criminals, and making investigation processes more scientific and accurate.

Modernization of the Judiciary

AI enhances the efficiency of judicial work. It accelerates the adoption of digital technologies and reduces the burden on human resources. In the third phase of e-Courts, extensive use of AI is observed, such as:

- *Automated Case Management:* Prioritizing cases and monitoring pending cases.
- *Legal Research:* Analyzing Supreme Court and High Court judgments.
- *Prediction of Delays/Postponements:* Estimating possible obstacles and reasons for pending cases.

The SUPACE (Supreme Court Portal for Assistance in Courts Efficiency) portal helps judicial officers in decision-making by analyzing case filings and related data in the Supreme Court. AI-based translation software is used to ensure public access to all judicial documents and judgments.

- *SUVAS (Supreme Court Legal Translation Software):* Translates over 31,000 Supreme Court judgments into 16 languages.
- *e-SCR Portal:* Provides digital access to AI-translated judgments.

Thus, AI not only modernizes the judiciary but also makes access to justice easier for the public.

Law Enforcement and Crime Prevention: AI helps law enforcement agencies predict crimes. By analyzing crime patterns, it can identify high-crime areas and potential offenders. This enables the police to prepare strategies based on forecasts.

AI-Powered Surveillance

- *Drones and CCTV Monitoring* – Real-time monitoring of crime scenes.
- *Facial Recognition Systems* – Applications like NAFRS (National Automated Facial Recognition System) developed by NCRB and ABHED (AI Based Human Face Detection) are used by Rajasthan and Punjab Police.

Digital Evidence and Forensic Analysis

AI-based forensic tools collect and analyze digital evidence from crime scenes.

- Voice Recognition Systems – Assist in filing FIRs.
- Augmented Reality (AR) – Digital reconstruction of crime scenes.
- Integration with National Systems – Systems like CCTNS, e-Jail, and e-Forensics integrate with AI to improve crime tracking and coordination among investigative agencies.

This way, AI makes law enforcement more scientific, faster, and efficient in less time.

Challenges in Adopting AI in Judiciary and Law Enforcement

AI models are only as good as the data they are trained on. Poor-quality or biased data can lead to unfair and unexpected outcomes. In Western countries, AI models have shown bias against Black people and women. In India, the digital divide may create barriers for remote and underprivileged communities in accessing justice.

Transparency and Black-Box Models

AI algorithms are often "black boxes," meaning the reasoning behind their decisions is unclear. This can create legal challenges in judicial and policing decisions. Lack of transparency can reduce public trust.

Ethics, Law, and Privacy

AI usage raises questions about privacy rights and ethics.

- Lack of accountability.
- Risks due to unclear laws.

- Decisions based on incorrect data or models can lead to delays in justice and wrongful judgments.

Capacity and Resistance

Adopting AI also faces challenges due to technical expertise and funding constraints.

- Fear of job loss among officials and staff.
- Distrust of new technology.
- Need for investment in training and skill development.

Positive Impacts and Future of AI

AI not only enhances efficiency but also strengthens transparency and accountability in the justice system.

- Use of block chain technology to securely maintain case records.
- Forecasting of pending cases and judgments through AI analytics.
- Prevention of digital crimes by enhancing cybersecurity.

Improvement in Legal Research

- Faster and more accurate access to case law and judgments for judges and lawyers.
- Rapid analysis of decisions across different languages and jurisdictions.

Crime Prevention and Predictive Analytics

- Effective policing through identification of criminals and crime-prone areas.
- Swift crime response using AI-based digital surveillance, forensic tools, and facial recognition systems.

Education and Training

AI can enhance efficiency by providing digital and technical training to judicial and law enforcement personnel.

Conclusion

The future of AI in the judiciary and law enforcement is extremely promising, but challenges exist. Ensuring data security, algorithmic transparency, ethics, and compliance with legal and social norms is critical. Adopting AI can bring the following positive changes to India's justice system:

1. *Increased Judicial Efficiency* – Reduction in pending cases and faster case disposal.
2. *Equal Access to Justice* – Multilingual translation of judgments for broader reach.
3. *Effectiveness in Law Enforcement* – Crime prediction, faster investigation, and digital monitoring.
4. *Transparency and Accountability* – Improvement in judicial decisions through AI analytics.
5. *Cybersecurity and Digital Evidence* – Digital forensics and secure record-keeping.

Summary

AI has the potential to make judicial and law enforcement processes more transparent, fair, and timely. However, addressing challenges related to data security, ethics, transparency, and technical capability is essential. Overcoming these barriers could allow AI to revolutionize the Indian justice system and law enforcement.

****

Artificial Intelligence in Corporate Governance and Compliance

By Mohini Khushal Paliwal

D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.
Email ID: mohinipaliwal93@gmail.com

Introduction

Corporate governance is no longer just about quarterly meetings and dusty physical binders; it is entering a transformative phase. As a Company Secretary and law student, I find it fascinating that Artificial Intelligence is now acting as a "Digital Trustee." In the Indian corporate landscape, AI is shifting the boardroom from reactive oversight where we look at what went wrong to predictive systems that tell us what *might* go wrong. This research examines how "Thinking Compliance" can prevent the next corporate scandal before it even begins.

Augmented Intelligence: The Board's New Co-Pilot

AI is not replacing our Board of Directors but acting as a high-speed "Co-Pilot."

- *Strategic Scenario Modelling***:** Boards are now using AI to stress-test decisions, simulating thousands of market variables in real-time something impossible for a human brain alone.
- *Predictive Risk Oversight***:** Instead of waiting for annual audits (which often feel like an autopsy of past mistakes), AI flags "*early warning signals*" in milliseconds.

RegTech: The Death of the Compliance Checklist

We are seeing the end of the "checkbox exercise."

- *Automated Monitoring*: Platforms like Compliance.ai now track global law changes and map them to company policies automatically.
- *Real-time Anomaly Detection*: In India, our leading banks are already using AI risk engines to catch suspicious activity and insider trading as it happens.

The "Black Box" & the Burden of Liability

This is where the law gets complicated. The "*Accountability Void*" created by opaque algorithms is a major concern for future legal professionals.

- *Director Liability:* Under Section 166 of the Companies Act, directors must show "reasonable care." If a "Black Box" AI makes a biased decision, can a director simply say, "The machine did it"? My research suggests the answer is no.

- *Algorithmic Bias:* Skewed data can lead to gender or credit bias, exposing companies to massive fines and ethical crises.

Role of Judiciary: Policing the Corporate Machine

The Indian Judiciary and SEBI are stepping up. Courts are making it clear: directors cannot "blindly rely" on automated reports. Human oversight must remain the final check. We are essentially entering a "Machine-vs-Machine" regulatory environment.

Conclusion & Suggestion: Ethical by Design

The future lies in Explainable AI (XAI)—where the logic is transparent to everyone. I believe Indian corporations should establish an AI Risk and Ethics Committee (AIREC). Much like an Audit Committee, this body would ensure every AI model used by the company is logged and risk assessed. In this AI-driven era, the most successful companies won't just be the ones with the best tech, but the ones with the strongest *Digital Integrity*.

BIBLIOGRAPHY

Textbooks

1. Jha, Aruna and Bhatia, Anuj, Taxmann's Corporate Governance (2nd ed., Taxmann Publications 2026).
2. Ryder, Rodney D., Artificial Intelligence and Law (Challenges Demystified) (2nd ed., Law & Justice Publishing Co. 2024).

Journal Articles

1. Institute of Company Secretaries of India (ICSI), "Artificial Intelligence (AI) in Corporate Governance," Chartered Secretary Journal (August 2024).
2. "AI-Powered Decision-Making in Corporations," International Journal of Law Management & Humanities (August 2025).

****

Artificial Intelligence and Cyber Law: Analyzing Information Technology Act, 2000

By Nishant Vishnu Parulekar

SYLLM SEM. 3
D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.
Email: parulekarnv@gmail.com

Introduction:

Artificial Intelligence (AI) is the study of the nature of human intelligence and the creation of intelligent artifacts that can do jobs that need intellect when executed by humans. Any significant technological innovation brings with it a variety of problems and possibilities. While AI is expected to promote significant economic growth, it is also expected to result in the loss of employment. As a result, the requisite policy and infrastructure must be in place. Even though AI has been a subject of research because the concept was created in 1956, it has only lately led to the widespread implementation of intelligent applications for various disciplines and jobs. The work in the late 1950s and early 1960s was focused on the creation of broad procedures that could be used in a variety of fields. The findings were not reassuring, prompting the field's first winter, which began in the late 1960s and lasted into the late 1970s.

Cyber Law in 2026 is no longer just about "unauthorized access"; it is about Algorithmic Governance. AI impacts Cyber Law by shifting the burden of proof. Traditionally, a prosecutor had to prove a human sent a malicious packet. Today, the law must determine if the training data of an AI was inherently biased toward criminal output. The "Electronic Personhood" Debate under Section 2(1)(t) of the IT Act, "electronic record" is defined broadly. LLM scholars argue that if an AI generates an autonomous record leading to a crime, the AI acts as a "de-facto agent."

It might alternatively be defined as any type of man-made organism capable of using the functioning capacity to perform cognitive activities such as abstract reasoning and logical deduction, as well as learning new information on its own. Using these cognitive powers, this organism would also be able to develop long-term plans for the future. Of fact, until we get to the point when the programs we construct have true intelligence, this term won't fully explain AI. Current AI is well below this criterion; most algorithms can only work independently in a very limited domain, severely limiting their utility. Artificial intelligence platforms have subsequently acquired tremendous traction in this incredibly innovative society over the last decade, with highly technical and sophisticated technology being applied to construct inventive, intelligent, and intellectual AI systems. As a result, the day is not far away when these intelligent bots will begin

to create useful and amazing inventions without the assistance of human brains. Some AI researchers believe that anything that replicates human intellect in any manner is "artificial intelligence," while others believe that the only "artificially intelligent" systems are those which replicate how individuals understand. Many "artificially intelligent" algorithms are classified as complicated informational networks by those in the domain of information networks with "real" artificial intelligence designated for meta-level strategic thinking that is frequently referred to as "wisdom." Artificial intelligence (AI) has advanced and become more widely used in recent years. Just about every industry is hurrying to take advantage of AI's capabilities, investing vast sums of money in the process. The potential for technology to promote productivity and creativity across a business is enormous. However, as the use of this technology grows, so do its drawbacks. Most programmers are often unaware of how an AI learns, adapts to new situations, and makes decisions. It would be difficult to decide who should be held responsible if something went wrong in this manner.

Human decision-making will undoubtedly drift into the context when AI develops at a quicker rate. In this setting, it is unavoidable that specific AI systems may fail to complete tasks. We will see an escalation in disagreements as a result of AI shortcomings in this area. An automated vehicle has murdered a woman in an Arizona roadway. When the first autonomous vehicles appeared on public roads in 2013, the main objective of automakers was to develop a self-driving car system that is plainly and demonstrably safer than a typical human-controlled vehicle. We can draw our legal rights and responsibilities from the law. Following the law entails carrying out responsibilities and receiving benefits. As a result, legal conception for AI raises the topic of whether AI should have legal rights and responsibilities. Although the answer may seem progressive and advanced, a thorough examination should include a consideration of AI's legal personality, as this would hold AI responsible for its actions

Role of Information Technology Act, 2000 in AI

The IT Act, 2000 has broadened the concept of abetment to also include acts or omissions through the use of encryption or any electronic methodology, to keep up with the schedule of technological advancement. IT ACT 2000 (hereinafter referred to as the IT Act), which attempts to govern all elements of modern-day technology, describes the computer and relevant terms such as software. However, the Internet of Things, data analytics, and AI are not covered by the IT Act,

nor are the liabilities that may be committed by humans using these IT systems (specifically AI software). Given that the primary goal of the Act was to give a legal character to digital signatures and electronic records, the Indian legislature did not place a strong emphasis on the scope of responsibility deriving from AI acts and countermeasures.

Criminal liability for AI will necessitate the AI's legal personhood and will be equivalent to the commercial criminal liability which some legal regimes recognize. Corporate responsibility is seen as a fabrication; it is an interpreted type of liability in which the company is held liable for the actions of its individuals. Unlike businesses, AI would be made responsible for its actions rather than being responsible for the actions of others. Even while it appears to be a straightforward answer that does not violate the rule of law, it demands a more thorough examination.

Why do criminal laws carry a different approach for artificial intelligence?

When a person or individual executes a crime towards any other individual, he or she will undoubtedly be liable to the criminal laws that have been established in that country. Whenever it concerns artificial intelligence, therefore, any criminal activity perpetrated towards humanity by it may not be classified as a traditional crime, even though it has been committed with the help of a software or a robot that is not related to the person who created the software, program, or machine. Consequently, to identify the criminal liability of crimes perpetrated by artificial intelligence, we must first evaluate whether artificial intelligence is a legal entity in and of as a whole as well as what the major obstacle has been in establishing and identifying the actus reus and mens rea, or the act and mental (intention) component, respectively.

There is no particular Indian legislation dealing with the criminal or civil liability of such acts perpetrated with AI in the Indian regulatory system. As a result, it is important to note that India is one of the countries that is heading towards its implementation of the policies that will allow AI to be integrated into the entire government system, but at the same time, the legal system is neglecting the potential negative consequences of future cybercrimes committed using these highly technological and advanced AI systems.

In the case of TESLA, "Every coin has 2 sides", the adoption of AI in the workplace causes certain problems that are regarded as the largest scandals in humanity. Everybody can acquire complete information about controversial scandals at a certain moment, thanks to the Internet and its data storage potential. Tesla settled two lawsuits with the U.S securities and exchange

commission (SEC) Elon Musk, the CEO of Tesla, is among the greatest well-known hi-tech businesses in the AI and Big Data fields. With his whimsical tweet suggesting the privatization of Tesla at $420 per share in August 2018, Elon Musk had to face a lawsuit from the US Securities and Exchange Commission (SEC). It was one of the most widely publicized scams, with millions of people following it throughout the world. Elon Musk claimed that a shareholder's vote will be conducted before Tesla became a private corporation and that the decision was taken because the strain of being a public firm caused numerous diversions, which are not beneficial to future profitability.

The SEC has brought a lawsuit over Musk, charging that he made false and deceptive representations in a tweet in which he did not check with the stakeholders before naming certain verified identities. The lawsuit was settled in September, and while Elon Musk did not accept or deny the charges, he was forced to stand down as CEO and become chairman of Tesla's board of directors for three years. Elon was hit with a huge $20 million fine, while Tesla was hit with a $20 million fine but no charges of fraud. In December 2018, he stated that the SEC is doing an excellent job as the short seller Enrichment Commission. In February 2019, the SEC filed a complaint alleging that he was in contempt of federal court for blatantly violating the conditions of his Tesla agreements. The lawsuit is still ongoing, and the ultimate decision is still pending.

Judiciary's role in determining responsibility

The Indian judiciary is the only sign of hope left in the Indian legal system for dealing with these instances due to the legislative vacuum, the formulation of final penalty, and the criminal/civil liability of such acts perpetrated by AI systems, software, and robots against other humans.

Even though there has yet to be a substantial landmark ruling on the guidelines for the use of artificial intelligence software or robots to prevent the commission of any criminal or civil violation against others, the judiciary is expected to do so with the rapid advancement of artificial intelligence to transfer such regulations and judicial precedents from which the use of artificial intelligence could be changed immediately by identifying the criminal and civil liability of such artificial intelligence systems that may trigger harm or damage to other individuals through numerous unethical practices such as phishing, hacking and data theft, etc.

Conclusion and Suggestions

A future filled with competent AI-powered robots and technologies may appear frightening at first, but some believe that our future is bright, and the possibilities are far more than we can now grasp. Rather than discussing the potential benefits of AI and how we might utilize it to better ourselves, create an ideal society, and even explore other worlds, I've recently seen experts explaining the perils of AI and painting a picture of a Terminator-style doomsday scenario. This negative perspective is counterproductive and it should not allow it to stifle AI growth.

Today, AI is not recognized as a separate entity under both national and international law, which means it cannot be held liable for the devastation it causes. As a result, the principle guaranteed by Article 12 of the United Nations Convention on the Use of Electronic Communications in International Contracts, which states that the person at whose behest the system was configured must ultimately be held liable for any act done or message generated by that system, may be extended to AI liability. The suggestions are to be vigilant and take action against Cybercrime and report the incident of cyber fraud to cyber police by written complaint to cyber cell in your region and to avoid or block unattended or spurious and vague calls starting with international code number other than Indian code +91 and avoid unknown numbers especially for senior citizens.

****

Artificial Intelligence and Right to Privacy

By Parikshit Pandey, S.Y. LL.B. SEM. IV

D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.
Email: parikshitpandey6995@gmail.com

Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the 21st century, reshaping governance, commerce, healthcare, and law enforcement. Its reliance on massive datasets, including sensitive personal information, has generated significant concerns regarding the protection of the right to privacy. This paper examines the evolving relationship between AI technologies and privacy rights, focusing on constitutional, statutory, and international legal frameworks. It critically analyzes issues such as mass surveillance, algorithmic opacity, consent deficits, and data misuse. The paper further evaluates regulatory developments such as the General Data Protection Regulation (GDPR) and India's Digital Personal Data Protection Act, 2023, while highlighting the gaps in addressing AI-specific challenges. It concludes by proposing a balanced approach that integrates legal safeguards, ethical principles, and technological solutions to ensure that innovation does not undermine fundamental rights.

***Keywords**: Artificial Intelligence, Privacy, Data Protection, Surveillance, GDPR, India*

Introduction

Artificial Intelligence refers to computational systems capable of performing tasks that traditionally require human intelligence, including learning, reasoning, and decision-making. In recent years, AI has become deeply embedded in everyday life, influencing areas such as financial services, healthcare diagnostics, predictive policing, and digital governance. These systems operate by processing vast quantities of data, often derived from individuals' digital footprints.

The right to privacy, a cornerstone of democratic societies, is increasingly challenged in this data-driven ecosystem. AI technologies can collect, analyze, and infer personal information in ways that are often invisible to individuals. This raises serious concerns regarding autonomy, dignity, and informational self-determination.

In India, the Supreme Court in *Justice K.S. Puttaswamy v. Union of India* recognized the right to privacy as a fundamental right under Article 21 of the Constitution.

This paper seeks to explore how AI affects the right to privacy, analyze the adequacy of existing legal frameworks, and suggest reforms to address emerging challenges.

Concept of the Right to Privacy

The right to privacy encompasses an individual's ability to control access to personal information and maintain autonomy over personal decisions. It includes multiple dimensions such as informational privacy, bodily privacy, and decisional autonomy. Internationally, privacy is recognized under Article 12 of the Universal Declaration of Human Rights and Article 17 of the International Covenant on Civil and Political Rights.

In India, the Supreme Court in Puttaswamy held that privacy includes informational self-determination and protection against arbitrary state interference. The Court emphasized that privacy is intrinsic to life and personal liberty.

AI and Its Impact on Privacy

AI systems rely heavily on large datasets for training and operation. These datasets often include personal identifiers, behavioral patterns, and biometric information. The extensive use of such data increases the risk of misuse, unauthorized access, and breaches.

AI enables advanced surveillance techniques such as facial recognition, predictive policing, and real-time tracking. These technologies can create detailed profiles of individuals without their consent, raising concerns about mass surveillance and erosion of civil liberties.

AI systems are increasingly used to make decisions in areas such as employment, credit scoring, and healthcare. These decisions may significantly impact individuals' lives, yet the underlying processes are often opaque.

AI systems can infer sensitive attributes such as health conditions, political affiliations, and sexual orientation from seemingly innocuous data. This raises serious privacy concerns, as individuals may not even be aware of such inferences.

Legal Framework Governing AI and Privacy

The GDPR represents one of the most comprehensive data protection regimes globally. It establishes key principles such as data minimization, purpose limitation, and accountability. Article 22 provides safeguards against automated decision-making.

However, AI poses significant challenges to GDPR compliance, particularly in ensuring transparency and implementing the right to erasure.

India's legal framework for privacy includes constitutional protection under Article 21 and statutory provisions such as the Digital Personal Data Protection Act, 2023. The Act emphasizes consent-based data processing and imposes obligations on data fiduciaries.

The Information Technology Act, 2000, also provides remedies for data breaches and unauthorized disclosure of information.

Globally, regulatory approaches to AI are evolving. The European Union's proposed AI Act adopts a risk-based approach, while the United States relies on sector-specific regulations.

Key Challenges to Privacy in AI

a. AI systems often function as "black boxes," making it difficult to understand how decisions are made.
b. Users frequently lack meaningful control over their data and may not fully understand how it is used.
c. The concentration of large datasets increases vulnerability to cyberattacks and data breaches.
d. AI systems may perpetuate existing biases present in training data, leading to discriminatory outcomes.
e. Implementing the right to erasure is technically challenging in AI systems, particularly in machine learning models.

Case Studies

The deployment of facial recognition technologies by law enforcement agencies has raised concerns about surveillance and misuse of personal data.

AI-generated deep fakes pose risks of identity theft, misinformation, and non-consensual content creation.

AI raises ethical concerns regarding autonomy, fairness, and accountability. Ethical AI requires transparency, non-discrimination, and respect for human dignity. To balance innovation with privacy, several measures can be adopted, including privacy-by-design, data minimization, and the development of explainable AI systems.

Suggestions and Recommendations

1. Enact comprehensive AI-specific legislation.
2. Strengthen enforcement of data protection laws.
3. Promote public awareness about privacy rights.
4. Encourage development of privacy-enhancing technologies.

Conclusion

AI presents both opportunities and challenges. While it offers significant benefits, it also threatens the fundamental right to privacy. A balanced approach is necessary to ensure that technological advancement does not undermine human rights.

****

Artificial Intelligence and Right to Privacy

By Mamta R. Shukla

F.Y. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon, Thane.
manashukla@gmail.com

Abstract

The rapid advancement of artificial intelligence (AI) poses significant challenges to the fundamental human right to privacy. As AI technologies evolve exponentially, they increasingly threaten individuals' control over personal data. This paper examines the evolving relationship between AI and privacy across different contexts, including cases such as social media platforms, pseudonymous technologies, and algorithmic governance in democratic systems.

With AI becoming deeply embedded in daily life, there is a growing need to better understand privacy rights and develop stronger safeguards within the information society. This study highlights the conflict between AI deployment and privacy protection, emphasizing the need for robust data protection laws, greater transparency and explain ability in AI decision-making, and enhanced user control over personal data.

Ultimately, preserving privacy must remain a central priority in AI development to protect human dignity, rights, and individual agency. A balanced approach is essential to harness the benefits of AI while safeguarding personal freedoms.

Keywords*: tweeter case, pseudo-technology, democracy algorithm*

Introduction

Artificial Intelligence (AI) is the ability of computer systems to mimic human intelligence by making decisions, predictions, and processing large amounts of data. It includes technologies like machine learning and natural language processing. The right to privacy is a fundamental human right that protects individuals from unauthorized access to their personal data. With the increasing use of AI, concerns about data privacy have grown worldwide.

Therefore, it is important to balance the use of AI for innovation with the protection of personal data and privacy. This balance will ensure that technological advancements benefit society while safeguarding individual rights.

Review of Literature

As AI systems become more advanced in collecting and processing data, concerns about privacy and human rights are increasing. Technologies like smart cameras and AI-based monitoring systems collect large amounts of personal data, often without user consent, leading to risks of surveillance and tracking. The "black box" nature of AI makes it difficult for users to understand how their data is used, limiting their control over personal information. AI is also used in policing and security, raising issues related to fairness, discrimination, and violation of privacy rights. However, AI can also support privacy through techniques like secure data analysis and protection against cyber threats.

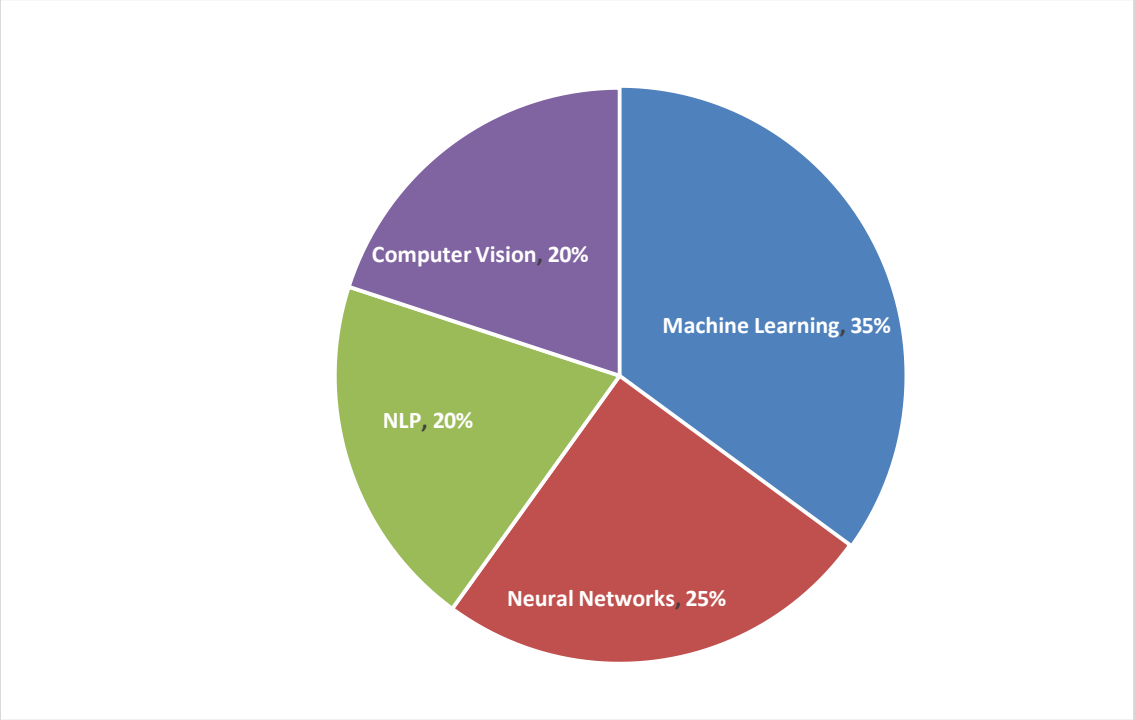
Overall, balancing the benefits of AI with the protection of privacy requires cooperation between policymakers, technologists, and society to ensure responsible and ethical use.

Methodology

Artificial Intelligence (AI) as a scientific field encompasses multiple approaches, including machine learning, artificial neural networks, natural language processing, and computer vision. These techniques largely depend on the use of big data, which serves as the foundation for training and improving AI systems. However, the ethical use of these methodologies raises significant concerns regarding privacy. Privacy is a fundamental human right that ensures the protection of individuals' personal information and data. As AI systems become increasingly advanced and integrated into everyday life, issues related to the collection, storage, and use of personal data have become more prominent. These challenges highlight the urgent need to balance technological progress with the protection of individual privacy.

Below is an illustrative pie chart showing how different AI approaches rely on data (approximate conceptual distribution) - [AI Approaches & Data Use Machine Learning]

The existing research gap in the field of artificial intelligence (AI) and the right to privacy lies in the need to better understand the recognition of privacy as a fundamental right within AI systems, particularly in areas such as predictive analysis and automated decision-making. Current frameworks often fail to adequately address how AI-driven processes impact individual privacy rights.



To bridge these gaps, a collaborative and interdisciplinary approach is essential, involving computer scientists, legal scholars, ethicists, policymakers, and the broader public. Such cooperation can help develop balanced frameworks that integrate technological innovation with legal and ethical safeguards.

Further research is crucial to ensure that the objectives of the Fourth Industrial Revolution—namely, enhanced productivity and innovation through AI—are achieved without compromising the universally recognized human right to privacy. As AI technologies continue to expand, growing concerns emphasize the need to ensure that these advancements do not encroach upon fundamental privacy rights.

Relationship between Artificial Intelligence and Right to Privacy

Artificial Intelligence (AI) and the right to privacy are deeply interconnected, presenting both positive and negative implications for society. While AI offers significant advancements, it also introduces risks, particularly through its ability to collect, process, and exploit vast amounts of personal data. This extensive data access increases the vulnerability of individual privacy. A major concern associated with AI is surveillance and monitoring. Advanced systems can analyse large volumes of personal information, including communication records, browsing history, and

behavioral patterns. Such capabilities may lead to violations of privacy and raise ethical questions about the extent of data usage.

These concerns prompt critical societal questions: *Should such technologies be widely used? If so, who is accountable for their misuse?* There is a growing need to strengthen data protection and privacy laws to address these challenges. AI is increasingly used in decision-making processes that significantly affect individuals, such as employment, healthcare, and financial services. Algorithm-driven decisions may be biased or influenced by hidden factors, potentially infringing on personal privacy and fairness. Furthermore, the integration of AI with other technologies such as the Internet of Things (IoT) and Human- Machine Interaction (HMI), particularly through biometric systems, intensifies privacy concerns. Data collected from IoT devices and biometric identifiers can be used to build detailed personal profiles, enabling extensive monitoring. This raises important questions about the limits and ethical use of personal data.

AI Application Area	Privacy Risk Level	Key Concern
Surveillance Systems	High	Mass monitoring, tracking behaviour
Predictive Analytics	High	Profiling and data misuse
Automated Decision-Making	High	Bias, lack of transparency
IoT Devices	Medium-High	Continuous data collection
Biometrics (HMI)	Very High	Sensitive identity data exposure

Emerging AI Technologies and Privacy Challenges

Generative AI Models

- Tools like GPT-3, DALL-E, and Stable Diffusion create realistic text, images, audio, and video.
- They can generate deep fakes and synthetic media, fuel misinformation and reducing public trust.
- Privacy risks arise when outputs involve individuals without their consent.

Biometric Identification and Surveillance

- Advanced facial recognition enables powerful biometric identification.
- Used for security or public monitoring, it can infringe on constitutional privacy rights.
- Concerns include bias, potential abuse, and lack of user control.

Emotion Recognition and Affective Computing

- Systems analyses facial expressions, posture, and biometrics to detect emotions.
- Applied in marketing, security, and other areas, raising concerns about covert surveillance, fairness, and freedom of expression

Smart Home and IoT Devices

- Smart speakers, cameras, and appliances collect extensive personal data.
- Security and confidentiality of these devices are critical, as misuse or hacking is possible.
- AI-enabled automation enhances convenience but amplifies privacy risks.

Autonomous Vehicles and Transportation

- Sensors and communication systems in self-driving vehicles track travel, location, and activities.
- While supporting traffic management and vehicle maintenance, they also pose significant privacy risks.

Regulatory Frameworks and Governance

Comprehensive Data Protection Regulations

- Define who can collect and process personal data, and how it is stored, shared, and used in AI systems.
- Uphold data minimization, purpose limitation, and user consent.
- Grant individuals' rights to access, correct, and delete their data.

Algorithmic Accountability and Auditing

- Evaluate AI algorithms for bias, discrimination, and privacy risks.
- Require developers to disclose potential impacts and vulnerabilities.
- Introduce legal measures to hold organizations accountable for privacy violations.

Governance and Oversight Frameworks

- Establish independent bodies to monitor and audit AI technologies.

- Empower them to set industry standards and best practices.
- Include privacy experts, civil liberties advocates, and disadvantaged groups.

Regulatory Sandboxes and Experimentation

- Test AI technologies safely under legal and ethical oversight.
- Promote collaboration between policy, industry, and research.
- Use results to refine regulations and guidelines continuously.

International Cooperation and Harmonization

- Align global privacy protection standards for AI.
- Collaborate with international organizations to set guidelines and best practices.
- Share research to create a coordinated global response.

Public Awareness and Capacity Building

- Educate the public about AI privacy risks and protections.
- Train policymakers and industry stakeholders on ethical AI use.
- Promote AI policies that respect human rights and civil liberties.

The Rise of AI and its Implications for Privacy

Artificial intelligence (AI), particularly predictive modelling and machine learning, has grown rapidly due to innovations in AI applications. AI is now widely used across sectors such as healthcare, finance, transportation, and entertainment, bringing new opportunities while raising critical privacy concerns.

Implications for Privacy

(a) Data Collection and Aggregation

- AI relies on large volumes of user data to build accurate models.
- Aggregation and analysis of this data carry privacy risks, including potential misuse for purposes beyond the user's consent.
- Concerns include lack of transparency and unethical secondary uses of data.

(b) Algorithmic Decision-Making

- AI systems make automated decisions in areas like credit, employment, and justice.
- Complex algorithms are often opaque, leading to unfair or biased outcomes, particularly for marginalized groups.

- Users typically have limited knowledge or control over how these decisions are made.

(c) Surveillance and Monitoring

- AI-enabled cameras and video analytics, including facial recognition and object detection, enable extensive tracking.
- Raises civil liberties concerns, as data may be used for targeted advertising, social control, or suppression of dissent.
- Obtaining meaningful consent is challenging, and opting out is often impossible.

(d) Manipulation and Profiling

- AI-driven predictive analytics and personalization generate highly detailed user profiles.
- Risks include monetary or political manipulation, opinion polarization and AI targeted misinformation.
- Raises concerns over autonomy, freedom of expression, and psychological influence.

(e) Lack of Accountability and Redress

- AI systems are often complex and opaque, making responsibility for privacy violations unclear.
- Users face challenges in understanding data processing and accessing remedies for violations.

The Tension between AI Capabilities and the Right to Privacy

AI systems increasingly access and process vast amounts of personal data—often without consent—including web history, social media activity, location data, and biometric features. By aggregating and categorizing this information, AI can construct detailed life profiles, revealing habits, preferences and behaviours that individuals may wish to keep private.

Gathering and Combining Data

- Ai requires large datasets to improve models and expand capabilities.
- Expansion of data collection techniques often encroaches on individual privacy.
- Users are frequently unaware of how their data is gathered and combined.
- AI decisions increasingly impact lives in credit, employment, healthcare and justice.

- Algorithmic complexity makes it difficult to understand or challenge decisions.
- Potential bias in algorithms can produce unfair outcomes for marginalized or vulnerable populations.
- AI powered technologies like facial recognition and object tracking enable extensive monitoring.
- These practices raise concerns about civil liberties, abuse and inadequate consent mechanisms.
- Lack of proper oversight and accountability makes such technologies a clear threat to privacy.
- Predictive analytics and personalization create detailed user profiles and can influence behaviour.
- Personal data may be exploited for commercial or political manipulation, including fake news and micro-targeting.
- Such practices threaten autonomy, freedom of choice and individual privacy.
- AI's complexity makes it difficult to identify responsibility for privacy violations.
- Users may struggle to understand data processing or obtain legal remedies.
- Absence of accountability erodes public trust in AI systems and privacy protections.

Managing the Tension

To address these challenges:

- Establish strict privacy standards and robust downstream oversight mechanisms.
- Enforce algorithmic transparency and procedures to protect individual rights.
- Policymakers should design frameworks that balance AI opportunities with safeguarding core human rights, such as privacy.

Conclusion

The rapid advancement of Artificial Intelligence (AI) presents significant threats to the right to privacy:

- AI systems can collect, analyses, and exploit massive amounts of personal data, creating serious risks to individual privacy.

- Applications range from predictive policing to consumer-focused services, often using personal data in ways that erode personal agency.
- Only strong legal frameworks and governance structures can balance the potential of AI with respect for fundamental human rights.

Opportunities for Privacy Protection

- AI can also be leveraged to enhance privacy, e.g., via privacy-preserving machine learning algorithms.
- Collaboration between governments, industry, and civil society is critical to:
    - Maximize AI benefits
    - Safeguard against privacy infringements
- AI represents a focal point for privacy, highlighting the ongoing tension between technological innovation and individual freedom.

Future Outlook

- A sustainable future requires parallel development of technology and human rights, ensuring AI respects privacy and civil liberties while fostering innovation.
- Policymakers, developers, and society must work together to create AI solutions that protect privacy without stifling progress.

REFERENCE

1 https://www.springer.com/gp/book/9789462650077
2 https://journals.sagepub.com/doi/10.1177/2053951716679679
3 https://journals.sagepub.com/doi/10.1177/0003122417725865
4 https://dl.acm.org/doi/10.1145/2810103.2813687
5 https://link.springer.com/article/10.1007/s11948-017-9901-7
6 https://www.profilebooks.com/work/the-age-of-surveillance-capitalism/
7 https://www.penguinrandomhouse.com/books/624395/privacy-is-power-by-carissa-vz/
8 https://www.sciencedirect.com/science/article/pii/S1877042815036350
9 https://www.sciencedirect.com/science/article/abs/pii/S0267364918300562
10 https://futureoflife.org/ai-principles/

****

AI in Corporate Governance and Compliance

By Amol Avinash Parulekar

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.
Email: amol_0280@rediffmail.com

Introduction

Artificial Intelligence (AI) is increasingly transforming the way organizations manage corporate governance and compliance functions. In today's complex business environment, companies are required to ensure transparency, accountability, and adherence to regulatory frameworks set by authorities such as the Securities and Exchange Board of India and the Reserve Bank of India. Traditional methods of governance and compliance, which rely heavily on manual processes, are often time-consuming, prone to human error, and inefficient in handling large volumes of data.

AI offers advanced capabilities such as data analytics, machine learning, and automation, which help organizations streamline governance practices and strengthen compliance mechanisms. By analyzing vast datasets in real time, AI enables companies to identify risks, detect fraud, and ensure adherence to legal and ethical standards more effectively. It also enhances decision-making by providing predictive insights and improving the accuracy of reporting systems.

Moreover, global bodies like the Organization for Economic Co-operation and Development and the World Economic Forum emphasize the responsible use of AI to promote ethical governance and sustainable business practices.

Thus, the integration of AI into corporate governance and compliance is not just a technological advancement but a strategic necessity for modern organizations aiming to maintain integrity, efficiency, and regulatory compliance in a rapidly evolving business landscape.

Role of AI in Corporate Governance

1. **Improved Decision-Making**

   AI systems analyze large volumes of data to provide insights for better strategic decisions. Predictive analytics helps boards anticipate risks and opportunities.

2. **Risk Management**

   AI can identify patterns and anomalies, helping detect financial irregularities, fraud, or operational risks at an early stage.

3. **Enhanced Transparency**

   AI-driven dashboards and reporting tools provide real-time data visibility, improving transparency for stakeholders.

4. **Board Efficiency**

   Automation of routine tasks (report generation, meeting summaries, and document review) allows board members to focus on strategic issues.

5. **Ethical Governance**

   AI tools can monitor organizational behaviour and flag unethical practices, promoting integrity and accountability.

Role of AI in Compliance

1. **Regulatory Monitoring**

   AI systems track changes in laws and regulations and update compliance frameworks automatically.

2. **Automated Compliance Checks**

   AI can review transactions, contracts, and communications to ensure they meet regulatory standards.

3. **Fraud Detection and Prevention**

   Machine learning models identify suspicious activities in real time, reducing financial crimes.

4. **KYC and AML Processes**

   AI improves **Know Your Customer (KYC)** and **Anti-Money Laundering (AML)** procedures by verifying identities and detecting unusual patterns efficiently.

5. **Audit and Reporting**

   AI simplifies audits by continuously monitoring data and generating accurate compliance reports.

Benefits of AI in Governance and Compliance

- Increased efficiency and reduced manual workload
- Higher accuracy and fewer human errors
- Real-time monitoring and faster response
- Cost reduction in compliance operations
- Better risk identification and mitigation

Challenges and Risks

2. **Data Privacy Concerns**
   Handling sensitive data raises issues related to privacy and data protection laws.
3. **Bias in AI Algorithms**
   AI systems may produce biased outcomes if trained on biased data.
4. **Lack of Transparency (Black Box Problem)**
   Some AI decisions are difficult to interpret, affecting accountability.
5. **Regulatory Uncertainty**
   Laws governing AI are still evolving, creating compliance challenges.
6. **Cybersecurity Risks**
   Increased reliance on AI systems may expose organizations to cyber threats.

Role of Management and Board

- Ensure ethical AI usage and governance frameworks
- Establish accountability for AI-driven decisions
- Regularly audit AI systems for fairness and accuracy
- Align AI strategies with corporate values and legal requirements

Conclusion

AI is revolutionizing corporate governance and compliance by making processes more efficient, transparent, and proactive. However, its successful implementation requires strong ethical oversight, robust data protection measures, and continuous monitoring.

****

AI in Corporate Governance and Compliance

By Ketan Anil Patil

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: ketanpatil150@gmail.com

Introduction

Artificial Intelligence (AI) is increasingly transforming the way organizations manage corporate governance and compliance functions. In today's complex business environment, companies are required to ensure transparency, accountability, and adherence to regulatory frameworks set by authorities such as the Securities and Exchange Board of India and the Reserve Bank of India. Traditional methods of governance and compliance, which rely heavily on manual processes, are often time-consuming, prone to human error, and inefficient in handling large volumes of data.

AI offers advanced capabilities such as data analytics, machine learning, and automation, which help organizations streamline governance practices and strengthen compliance mechanisms. By analyzing vast datasets in real time, AI enables companies to identify risks, detect fraud, and ensure adherence to legal and ethical standards more effectively. It also enhances decision-making by providing predictive insights and improving the accuracy of reporting systems.

Moreover, global bodies like the Organization for Economic Co-operation and Development and the World Economic Forum emphasize the responsible use of AI to promote ethical governance and sustainable business practices.

Thus, the integration of AI into corporate governance and compliance is not just a technological advancement but a strategic necessity for modern organizations aiming to maintain integrity, efficiency, and regulatory compliance in a rapidly evolving business landscape.

Role of AI in Corporate Governance

(a) **Improved Decision-Making:** AI systems analyze large volumes of data to provide insights for better strategic decisions. Predictive analytics helps boards anticipate risks and opportunities.

(b) **Risk Management:** AI can identify patterns and anomalies, helping detect financial irregularities, fraud, or operational risks at an early stage.

(c) **Enhanced Transparency:** AI-driven dashboards and reporting tools provide real-time data visibility, improving transparency for stakeholders.

(d) **Board Efficiency:** Automation of routine tasks (report generation, meeting summaries, and document review) allows board members to focus on strategic issues.

(e) **Ethical Governance:** AI tools can monitor organizational behavior and flag unethical practices, promoting integrity and accountability.

Role of AI in Compliance

(a) **Regulatory Monitoring**

AI systems track changes in laws and regulations and update compliance frameworks automatically.

(b) **Automated Compliance Checks**

AI can review transactions, contracts, and communications to ensure they meet regulatory standards.

(c) **Fraud Detection and Prevention**

Machine learning models identify suspicious activities in real time, reducing financial crimes.

(d) **KYC and AML Processes**

AI improves Know Your Customer (KYC) and Anti-Money Laundering (AML) procedures by verifying identities and detecting unusual patterns efficiently.

(e) **Audit and Reporting**

AI simplifies audits by continuously monitoring data and generating accurate compliance reports.

Benefits of AI in Governance and Compliance

- Increased efficiency and reduced manual workload
- Higher accuracy and fewer human errors
- Real-time monitoring and faster response
- Cost reduction in compliance operations
- Better risk identification and mitigation

Challenges and Risks

(a) **Data Privacy Concerns**

Handling sensitive data raises issues related to privacy and data protection laws.

(b) **Bias in AI Algorithms**

AI systems may produce biased outcomes if trained on biased data.

(c) **Lack of Transparency (Black Box Problem)**

Some AI decisions are difficult to interpret, affecting accountability.

(d) **Regulatory Uncertainty**

Laws governing AI are still evolving, creating compliance challenges.

(e) **Cybersecurity Risks**

Increased reliance on AI systems may expose organizations to cyber threats.

Role of Management and Board

- Ensure ethical AI usage and governance frameworks
- Establish accountability for AI-driven decisions
- Regularly audit AI systems for fairness and accuracy
- Align AI strategies with corporate values and legal requirements

Conclusion

AI is revolutionizing corporate governance and compliance by making processes more efficient, transparent, and proactive. However, its successful implementation requires strong ethical oversight, robust data protection measures, and continuous monitoring.

BIBLIOGRAPHY

1. Deloitte, *AI Risk, Governance, and Compliance Insights*

****

Artificial Intelligence and Law: Navigating Ethics, Regulation, and Justice

By Pranali Khengle

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: pranalikhengle2000@gmail.com

Introduction

Artificial Intelligence (AI) has emerged as a transformative force across multiple sectors, including the legal system. From legal research and predictive analytics to automated decision-making, AI is reshaping how law is practiced and administered. While AI offers immense potential in improving efficiency, reducing judicial backlog, and enhancing access to justice, it also raises serious concerns regarding ethics, accountability, and regulation.

The intersection of AI and law creates a complex landscape where technological innovation must be balanced with legal principles and constitutional values. Issues such as algorithmic bias, lack of transparency, and data privacy have made it necessary to develop robust legal frameworks governing AI.

This research paper examines the ethical challenges, regulatory frameworks, and the role of judiciary in integrating AI into the legal system, with a special focus on India.

Ethical Issues in Artificial Intelligence and Law

One of the most critical aspects of AI in law is its ethical implications. AI systems rely on data and algorithms, which may carry inherent biases. This can lead to discriminatory outcomes, especially in areas like sentencing, bail decisions, and predictive policing.

Key ethical concerns include:

Bias and Discrimination: AI systems may reflect historical inequalities present in data.

- **Lack of Transparency (Black Box Problem):** Many AI systems operate without clear explainability.
- **Accountability:** Determining liability when AI systems make errors is challenging.
- **Privacy Concerns:** Use of personal data raises risks of surveillance and misuse.

Ethical principles such as fairness, accountability, transparency, and privacy are considered essential in AI governance. Thus, ethical AI is not merely a technical issue but a legal and societal

necessity.

Regulatory Framework for AI in Law

Currently, India does not have a comprehensive legislation specifically governing AI. However, several existing laws and policies indirectly regulate AI, including:

- Information Technology Act, 2000
- Digital Personal Data Protection Act, 2023
- Emerging AI governance guidelines

The absence of a dedicated AI law creates regulatory gaps, especially in ensuring algorithmic accountability and protecting fundamental rights

Globally, countries are adopting structured regulatory approaches such as the EU AI Act, emphasizing risk-based regulation. In India, there is a growing demand for:

- A dedicated AI regulatory authority
- Mandatory transparency and explainability standards
- Legal accountability mechanisms for AI systems

A balanced regulatory framework must promote innovation while safeguarding constitutional values such as equality and due process.

Impact of AI on Justice Delivery

AI has significantly influenced the administration of justice by improving efficiency and accessibility. Its applications in the legal field include:

- Legal research and document analysis
- Case prediction and analytics
- Automated case management
- Online dispute resolution

AI tools can help reduce judicial backlog and improve consistency in judgments.

However, excessive reliance on AI may undermine judicial discretion and human reasoning. Therefore, AI should function as a decision-support tool rather than a decision-maker.

Role of Judiciary

The judiciary plays a crucial role in ensuring that AI is used responsibly within the legal system. Indian courts have adopted a cautious approach toward AI integration. Recent developments show that courts allow AI for administrative purposes but prohibit its use in judicial decision-making. For instance:

- Courts emphasize human oversight in all AI-assisted processes
- AI cannot be used for interpreting facts or delivering judgments
- Judges remain the final authority in decision-making

Recent judicial policies highlight that AI should enhance efficiency without compromising fairness, transparency, or judicial independence.

The judiciary also acts as a guardian of fundamental rights, ensuring that AI does not violate principles of natural justice such as *audi alteram partem* (right to be heard).

Thus, the judiciary must strike a balance between technological advancement and protection of legal values.

Conclusion & Suggestions

Artificial Intelligence has the potential to revolutionize the legal system by making it more efficient, accessible, and data-driven. However, its integration must be approached with caution due to ethical and legal challenges.

While AI can assist in legal processes, it cannot replace human judgment, especially in matters involving justice and rights. The absence of a comprehensive legal framework in India further complicates its adoption.

Suggestions:

1. Enact a comprehensive AI legislation in India.
2. Establish an AI Ethics and Regulatory Authority.
3. Ensure transparency and explainability in AI systems.
4. Maintain human-in-the-loop control in judicial processes.
5. Promote legal awareness and training on AI among judges and lawyers.
6. Strengthen data protection and privacy laws.

In conclusion, AI should be used as a tool to support justice, not replace it. A balanced approach combining innovation with ethical safeguards is essential for the future of law.

BIBLIOGRAPHY

TEXTBOOK

1. Stuart Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach*
2. Richard Susskind, *Online Courts and the Future of Justice*
3. Mark Coeckelbergh, *AI Ethics*

JOURNAL ARTICLES

1. Aggarwal, A. & Malik, A., *Artificial Intelligence in Judicial Decision-Making: Opportunities, Risks and Ethical Implications*
2. Satarkar, G.S., *Regulating Artificial Intelligence in India: Legal Frameworks and Governance Challenges*
3. Tripathi, R., *The Legal and Ethical Implications of Artificial Intelligence in the Judiciary*

****

Transforming the Impact of Artificial Intelligence on Education System

By Shreya Ganesh Surve

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.
Email ID - shreyasurve1198@gmail.com

Abstract:

The incorporation of artificial intelligence (AI) into lifelong and adult education is changing the way learning is provided and experienced. AI enables individualized learning by tailoring instructional information to individuals' needs, pace, and learning styles. This strategy ensures that learners, regardless of age or background, may engage with information that meets their specific needs, resulting in more successful educational outcomes.

Furthermore, AI improves accessibility, removing hurdles for students in remote regions or with disabilities. AI-powered solutions, such as speech recognition or adaptive learning platforms, make education more inclusive and equal. Furthermore, AI can automate administrative activities, lower educators' workload and allowing them to focus on student engagement and assistance.

The significance of AI in lifelong learning is essential because it allows adults to constantly gain new skills and knowledge in a quickly changing world. AI-powered platforms provide a wide range of flexible, on-demand learning options, encouraging ongoing personal and professional development.

As the workforce evolves, skill development becomes more vital. AI identifies skill gaps and delivers targeted tools to fill them, ensuring that learners remain competitive in the job market. Overall, artificial intelligence is transforming adult education by making it more tailored, accessible, and relevant to today's needs.

***Keywords**: personalization, accessibility, automation, lifelong learning, skill development*

Introduction

AI is rapidly altering many parts of modern life, including education. In the context of lifelong and adult education, AI offers transformative capabilities to improve learning experiences, tailor material, and streamline administration. The rise of AI-powered platforms and tools has

made education more accessible and flexible, meeting a wide range of learning demands and allowing people to engage in lifelong learning[73].

In adult education, where students frequently mix school with employment and personal responsibilities, AI provides a distinct edge by enabling on-demand, tailored learning options. AI can track learner progress, adjust to diverse learning methods, and provide real-time feedback, allowing people to govern their own educational journeys. Furthermore, artificial intelligence plays an important role in skill development, assisting adult learners in acquiring the information and competences required to remain relevant in an ever-changing work market[74].

This introduction to AI's influence emphasizes its potential to improve the efficiency and inclusivity of adult education while also changing the future of lifelong learning. The capacity to provide personalized learning paths, overcome access hurdles, and provide learners with the skills they need to prosper in the workplace is profoundly changing adult education[75].

Historical background

The use of artificial intelligence (AI) in education is a relatively new phenomenon, but it builds on a long history of technological improvements targeted at improving learning outcomes. AI's evolution in lifelong and adult education may be traced back to several significant educational technology milestones[76].

The concept of computer-assisted instruction (CAI) first emerged in the 1960s and 1970s, with early systems meant to give programmed learning in subjects such as mathematics and language. These early systems relied on simple algorithms and were far from the adaptive, intelligent systems we use today. They lay the framework for future breakthroughs by demonstrating how computers may assist tailored learning experiences[77].

[73] https://hrmars.com/papers_submitted/21464/adult-education-in-the-age-of-artificial-intelligence-the-human-resource-development-perspective.pdf
[74] Ibid
[75] https://www.oecd.org/en/topics/sub-issues/artificial-intelligence-and-education-and-skills.html
[76] https://www.ed.gov/sites/ed/files/documents/ai-report/ai-report.pdf
[77] Ibid

Access to educational resources increased in the 1980s and 1990s with the development of multimedia learning tools and the introduction of the internet. Early online learning systems emerged, but they were mainly static, with pre-recorded content or simple quizzes. However, as AI and machine learning technology advanced in the early twenty-first century, the possibility of dynamic, data-driven educational experiences became clear[78].

In the 2000s and 2010s, more advanced AI applications in education emerged, including adaptive learning platforms, which utilize algorithms to assess learner data and alter curriculum as needed. These tools enabled a more individualized learning experience, which was especially useful in adult education, where students frequently have varying learning requirements, goals, and time limits[79].

By the late 2010s and into the 2020s, AI-driven technologies like chatbots, virtual tutors, and automated assessment systems began to play a larger role in lifelong and adult education. AI was no longer just about delivering content but was used to enhance engagement, offer real-time feedback, and support the continuous learning journey of adults navigating a rapidly changing job market[80].

Today, artificial intelligence is more than just a content delivery technology; it is thoroughly interwoven into learning management systems, making education more personalized, accessible, and efficient. The historical development of artificial intelligence in education demonstrates a developing awareness of how technology might help people learn and build skills throughout their lives. This trend continues to evolve, and AI is affecting the future of adult education and lifetime learning in unprecedented ways[81].

Aims & Objective

1. To examine how AI technologies are influencing the adult education.
2. To evaluate integration of AI driven tools in lifelong & adult education programs.
3. To understand the role of AI on professional development of adult learners

[78] Ibid
[79] Ibid
[80] https://hrmars.com/papers_submitted/21464/adult-education-in-the-age-of-artificial-intelligence-the-human-resource-development-perspective.pdf
[81] Ibid

4. To analyze how AI tools are reshaping the role of educators in lifelong & adult education

Statement of Problem

Lifelong and adult education are key components of a society's development, allowing people to learn new skills, adjust to changing labour markets, and attain personal growth. However, in India, these sectors confront substantial problems, such as low adult literacy rates, a lack of access to excellent educational resources in rural regions, and socioeconomic constraints that prohibit many people from engaging in lifelong learning. Artificial intelligence (AI) has emerged as a disruptive technology capable of addressing these difficulties. However, the impact of AI on lifelong and adult education has received little attention, especially given India's heterogeneous demographic and socioeconomic mix. This study tries to analyse how AI is influencing lifelong and adult education in India, the opportunities it brings, and the hurdles that must be solved to realize its full potential[82].

How is Artificial Intelligence (AI) transforming lifelong & adult education and what are its implications on learning outcomes?

Hypothesis

The incorporation of artificial intelligence (AI) into lifelong and adult education has the potential to greatly improve learning outcomes by increasing accessibility, personalizing educational content, and encouraging participation. AI can help to develop more inclusive and effective learning environments by overcoming hurdles such as geography, resource limits, and linguistic variety. Furthermore, AI-powered tools and platforms are intended to provide learners with relevant skills, increase retention, and allow for practical application of knowledge, ultimately leading to improved socioeconomic possibilities and personal development.

Research methodology

The researcher has relied upon doctrinal, historical & comprehensive research methodology to understand the impact of AI on lifelong and adult education including text books, journals and scholarly articles.

[82] Ibid

Understanding Lifelong Adult Education

In India, lifelong and adult education is a holistic approach to learning that lasts a person's entire life. It recognizes that education is not limited to formal schooling but rather involves gaining knowledge, skills, and competencies at any point in life. This idea has gained particular importance in a world that is changing quickly and where lifelong learning is crucial for both professional and personal development[83].

In India, the concept of lifelong learning has been promoted through a number of programs, such as skill development initiatives under the Skill India Mission, which offers training to people of all ages in areas like digital literacy, entrepreneurship, and vocational trades. For example, a retired person might enroll in a digital marketing course to launch an online business, illustrating that learning opportunities are always available. Lifelong education emphasizes the idea that learning does not stop at any particular age or milestone, such as graduation, but rather is a continuous process driven by curiosity, societal changes, and the need to adapt to new technologies and challenges[84]

Furthermore, informal learning that takes place outside of official institutions—like picking up a new language through apps, going to seminars, or participating in community events—is also included in lifelong learning. For instance, financial literacy training courses are frequently offered by self-help groups in rural India, enabling women to efficiently handle assets and savings[85].

Adult education in India specifically addresses the educational needs of those who were unable to access or complete formal education during their youth. It plays a critical role in promoting literacy, numeracy, and essential life skills among adults, particularly in marginalized communities. The National Literacy Mission (NLM) and its successor, the Saakshar Bharat Programme, are notable initiatives aimed at eradicating adult illiteracy in the country[86].

Programs for adult education frequently incorporate practical knowledge and skills that enhance employment and quality of life in addition to basic literacy. For instance, rural women are taught skills like weaving or tailoring so they may help support their families. Additionally,

[83] https://year-of-skills.europa.eu/news/impact-artificial-intelligence-adult-learning-and-skills-development-european-commission-holds-its-2023-12-11_en
[84] Ibid
[85] Ibid
[86] Ibid

through groups like the Jan Shikshan Sansthan (JSS), people who are illiterate or semiliterate can obtain vocational training in a range of fields, such as agriculture, healthcare, and mechanics[87].

High-quality education may be accessed online from anywhere, overcoming financial and geographic constraints. Karthyayani Amma, a 98-year-old Keralan woman, passed the equivalency test. Administered by the Kerala Literacy Mission, is a noteworthy illustration of adult education in India and demonstrates that age is not a barrier to education[88].

In a similar vein, professionals in metropolitan regions utilize technology for lifelong learning by enrolling in online courses to stay current with industry trends. In conclusion, adult and lifelong learning is essential to social inclusion, economic advancement, and personal growth in India. It enables people to adapt, create, and prosper in a changing environment by cultivating a culture of lifelong learning. With strong laws, public awareness initiatives, and technologically advanced solutions, India can guarantee that the advantages of education actually[89].

Analysis of Research Question and Hypothesis:

How is Artificial Intelligence (AI) transforming lifelong & adult education and what are its implications on learning outcomes?

By bringing individualized, flexible, and scalable solutions, artificial intelligence (AI) is revolutionizing education worldwide, especially adult and lifetime learning. AI is becoming a potent tool to close gaps in education's relevance, quality, and accessibility in India, a nation with a diverse population and serious educational issues[90].

AI makes lifetime learning easier by offering individualized, adaptable, and easily accessible tools and platforms. AI-powered systems evaluate a person's learning requirements, preferences, and development to produce personalized learning opportunities. For example, AI algorithms are utilized by platforms like Coursera and EdX, which are popular in India, to suggest courses based on a learner's prior behaviors and objectives. Similar to this, the well-known Indian edutech platform BYJU'S employs AI to customize content distribution so that students receive materials that are appropriate for their comprehension and speed. For instance, online courses for lifelong learners are available through the Government of India's SWAYAM platform[91].

[87] https://fuse.franklin.edu/cgi/viewcontent.cgi?article=1134&context=facstaff-pub
[88] Ibid
[89] Ibid
[90] Ibid
[91] https://hal.science/hal-04593512/document

AI improves this experience by making services like discussion boards, automated grading, and progress monitoring, which improves learning effectiveness and engagement. AI is essential for giving people the skills they need for cutting-edge fields like cyber security, data analytics, and machine learning. AI is used by platforms such as Upgrade to offer real-time feedback and industry-relevant education, preparing workers for changing job markets. This method guarantees that students stay employable and competitive in a market that is changing quickly[92].

Adults are becoming more literate thanks to AI-powered apps like Google's Read Along (previously Bolo). Vocational training is being transformed by AI-powered platforms that offer immersive and interactive learning environments. For example, iDreamCareer leverages AI to provide training programs and career counseling that are customized to each learner's needs. AI-enabled tools are being utilized in rural regions to teach skills like farming, handicrafts, and tailoring, enabling adults to earn a living and enhance their quality of life. For adult learners in India, language problems pose a serious obstacle. AI-powered tools like Duolingo and Hello English cater to this need by offering language learning courses in regional tongues[93].

This affordability ensures that even low-income learners can access quality education. For instance, the National Programme on Technology Enhanced Learning (NPTEL) uses AI to offer affordable online courses, making higher education accessible to all. AI-powered tools cater to diverse learning needs, including those of differently-abled individuals. For instance, AI applications like Kibo provide text-to-speech and speech-to-text functionalities, enabling visually impaired learners to access educational content. Similarly, AI-enabled transcription tools help hearing-impaired learners by converting spoken words into text in real time[94].

AI focuses on experiential learning, enabling learners to apply their skills in real-world scenarios, For instance, virtual reality (VR) simulations powered by AI are being used in vocational training programs to provide hands-on experience in fields like healthcare, construction, and agriculture. This practical approach ensures that learners are job-ready and confident in their

[92] Ibid
[93] Ibid
[94] https://educationaltechnologyjournal.springeropen.com/articles/10.1186/s41239-020-00237-8

abilities.AI-powered tools are being utilized in vocational training programs to give students practical experience in industries including construction, healthcare, and agriculture[95].

Hypothesis Testing: *The integration of Artificial Intelligence (AI) into lifelong and adult education has the potential to significantly enhance learning outcomes by improving accessibility, personalizing educational content, and fostering engagement. By addressing barriers such as geographic constraints, resource limitations, and linguistic diversity, AI can create more inclusive and effective learning environments. Furthermore, AI-driven tools and platforms are expected to equip learners with relevant skills, improve retention, and enable practical application of knowledge, ultimately leading to better socio-economic opportunities and personal growth.*

Examining AI's effects on important learning domains can support its ability to improve accessibility, customize educational materials, and encourage participation in adult and lifelong learning. AI-powered solutions remove obstacles that keep students from obtaining an education. AI-powered platforms that provide online courses, virtual classrooms, and digital materials help overcome geographic limitations, which are a major problem in rural and isolated parts of India. Initiatives like SWAYAM and EkStep, for example, use AI to deliver high-quality educational resources that are available to anybody with an internet connection. These platforms provide multilingual support, addressing the linguistic diversity of India and guaranteeing that all students are included[96].

Additionally, by automating processes like content delivery and assessments, AI is a vital tool for individualized education because of its capacity to evaluate data and modify curriculum to meet the needs of each learner. AI adapts content delivery to each learner's speed, preferences, and competence levels, in contrast to traditional classroom settings where a one-size-fits-all approach frequently puts some learners behind. AI algorithms, for instance, are used by platforms such as BYJU'S and Coursera to suggest courses, offer immediate feedback, and modify learning paths in response to student performance[97].

This customization increases student confidence and motivation in addition to improving learning efficacy.AI-powered simulations, gamification strategies, and real-time feedback produce engaging learning environments that sustain students' motivation. For instance, gamification is

[95] Ibid
[96] Ibid
[97] Ibid

used by language learning applications such as Duolingo and Hello English to make language learning fun and successful for adult learners[98].

AI gives students market-driven and pertinent skills in a dynamically evolving environment where skill requirements are always changing. Through industry-aligned courses, practical projects, and real-time feedback, AI-powered platforms such as UpGrad and Skillenza help learners develop employable skills. AI-powered virtual reality (VR) and augmented reality (AR) simulations provide hands-on learning opportunities and prepare people for specialized fields like technology, healthcare, and construction[99].

AI guarantees that students gain the skills necessary to succeed in their vocations in addition to academic knowledge by emphasizing practical application. The linguistic and cultural diversity of India presents serious educational obstacles. AI fills these gaps by providing voice recognition, translation, and multilingual support. People who might not be fluent in English can now access education thanks to resources like Kibo and Google's Read Along, which are designed for learners of regional languages. AI promotes equity and diversity in education by meeting a range of learning requirements[100].

AI supports the concept of lifelong learning by offering resources that adapt to an individual's evolving needs and goals. AI also gives students real-world skills, enhances retention, and permits lifelong learning, all of which support socioeconomic development and individual growth. An equal and knowledge-driven society will be shaped in large part by AI's revolutionary effects on education as it develops further[101].

Conclusion & Suggestions: -

Finally, the effects of AI on adult and lifetime learning have been significant and are still growing. AI has revolutionized traditional learning models by providing flexible, adaptive, and personalized educational solutions that are suited to the particular requirements of adult learners. AI has enormous potential for lifelong and adult education, even though there are still obstacles to

[98]https://www.researchgate.net/publication/378397767_Exploring_the_Scope_of_Artificial_Intelligence_AI_for_Lifelong_Education_through_Personalised_Adaptive_Learning
[99] Ibid
[100] Ibid
[101] Ibid

overcome, such as guaranteeing fair access to AI-driven learning resources and resolving privacy and data security issues. AI will undoubtedly play a bigger part in determining the direction of education in the future as it develops, providing creative solutions that promote diversity, flexibility, and chances for lifelong learning for everyone[102].

Suggestions: -

It is essential to give adult learners the fundamental knowledge and abilities they need to interact with AI-driven tools as AI becomes more integrated into the classroom. Providing classes on data protection, AI fundamentals, and digital literacy will guarantee that students are comfortable utilizing these tools and are aware of its ramifications. Diverse learning demands, such as those of students from underrepresented groups or those with disabilities, should be accommodated by AI tools. Developing AI-powered platforms that are universally accessible, with features like speech-to-text, multilingual support, and adaptive learning paths, will ensure that no one is left behind.

AI should support human educators rather than take their place. Teachers can use AI to pinpoint areas for development, gain a deeper understanding of students' progress, and offer tailored help. Training educators too effectively In order to provide a more powerful and individualized learning experience, educators must include AI into their teaching processes. Clear pathways for lifelong learning should be established by educational institutions, using AI tools that assist students in setting objectives, monitoring their progress, and navigating the many phases of their educational journey. In order to guarantee that students acquire skills that are applicable to changing industries, these pathways should also be in line with workforce demands. Establishing strong privacy standards and ensuring ethical information usage are essential when AI gathers and analyzes learner data. To foster confidence among students and stop the exploitation of personal data, transparent policies regarding data usage and protection should be put in place.

Ongoing study on the efficacy of AI tools in adult education is required to keep ahead in a rapidly evolving educational landscape. Educational technology will continue to advance and satisfy the demands of adult learners if innovation in AI-based learning platforms is encouraged and new applications are investigated.

AI has significant effects on learning outcomes, enhancing student engagement, memory, and ability to apply knowledge in real-world situations. Even if there are still obstacles to

[102] https://www.linkedin.com/pulse/ai-continuing-adult-education-redefining-lifelong-learning-iqgff

overcome, stakeholders working together may guarantee that AI-driven education serves as a driving force behind India's social and economic change. AI's enormous potential will enable people to prosper in a knowledge-driven society and realize the goal of universal access to high-quality education.

BIBLIOGRAPHY

1. Abdulrahman M. Al-Zahrani and Talal M. Alasmari (2024). Exploring the Impact of Artificial Intelligence on Higher Education: The Dynamics of Ethical, Social and Educational Implications, *Humanities and Social Sciences Communications*, 11(912).
2. Hyun Yong Ahn (2024). AI-Powered E-Learning for Lifelong Learners: Impact on Performance and Knowledge Application, *Sustainability*, 16(20), 9066.
3. By Tuomi Ilkka (2018) Impact of Artificial Intelligence on Learning Technique and Education Doi: 10.2760/12297.
4. Yong Azrina Ali Akbar and Azyyati Anuar and Rosliza Md Zani and Abdullah and Elixon Sunian @ Elixon sulaiman (2024) Exploring the Scholarly Landscape: AI Teaching and learning In Adult Education Doi:10.6007.
5. Deepshikha Agrawal (2023) ExploringThe Scope OF Artificial Intelligence (AI) for lifelong EducationThrough Personalized & Adaptive Learning Doi: 10.55529.
6. Karla Bayly – Castaneda and M.S Ramirez – Montoya and A. Morita-Alexander (2024) Artificial Intelligence (AI) In the Complexity of the Present and Future of Education DOI:10.3389
7. Storey,V.A. and Wagner,A.(2024). Integrating Artificial Intelligence (AI) Into Adult Education opportunities, challenges and future Direction. International journal Of Adult and Education Technology 15 (1), 1-15. Doi: 10.4018
8. Mohammad Abbas, Farooq Ahmad Jam and Tarik Iqbal khan (2024) It is harmful or helpful? Examining the causes and consequence of generative AI Usage Among University students international journal of Education technology in higher Education
9. Reiss M.J (2021) The use of AI in Education Practicalities and Ethical Considerations Doi: 10.14324.
10. Patricia Fidalgo and Joan Thormann (2024) The Future of Lifelong Learning the Role of Artificial Intelligence and Distance Education Doi: 10.5772

****

Artificial Intelligence and Law: Navigating Ethics, Regulations and Justice

By Pankaj U. Soni

F.Y. LL.M. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.

Abstract

The rapid proliferation of Artificial Intelligence (AI) across governance, legal systems, and socio-economic frameworks marks a transformative shift in the administration of justice and exercise of state power. While AI-driven technologies—such as facial recognition, predictive analytics, and automated decision-making—offer efficiency, scalability, and perceived objectivity, they simultaneously generate complex challenges to constitutional governance, fundamental rights, and established legal doctrines.

The conceptual foundations of AI may be traced to ancient philosophical narratives. The depiction of illusions in the Mahabharata—particularly in the construction of Indraprastha—symbolizes the divergence between perception and reality, analogous to modern AI systems whose outputs may appear authoritative yet lack transparency. This parallel reflects a longstanding human engagement with simulated intelligence.

Adopting a doctrinal and multidisciplinary methodology, this study integrates constitutional analysis with ethical philosophy, particularly the concept of Dharma as a framework of restraint and responsible governance. It argues that AI deployment has significantly outpaced legal regulation, resulting in a growing accountability deficit.

The paper critically examines AI within constitutional governance, focusing on its intersection with fundamental rights under Articles 14, 19, and 21 of the Constitution of India. It evaluates the constitutional validity of AI-driven state action through the principles of legality, necessity, and proportionality, as articulated in Justice K.S. Pettaway v. Union of India and PUCL v. Union of India.

Further, the study explores issues relating to criminal liability, data protection, algorithmic bias, intellectual property, and judicial processes, while undertaking a comparative analysis of regulatory approaches in India, the European Union, and the United States.

The paper advances the thesis that inadequately regulated AI risks fostering algorithmic opacity and digital authoritarianism. It advocates a rights-centric framework emphasizing transparency, explainability, human oversight, and institutional accountability. Ultimately, AI

must be treated not merely as a technological innovation but as a constitutional concern requiring proactive legal intervention to preserve justice, equality, and the rule of law.

Keywords: *artificial intelligence, constitutional law, ethics, privacy, algorithmic governance, fundamental rights, regulation, justice*

Introduction

Artificial Intelligence has emerged as a transformative force reshaping governance, legal systems, and decision-making processes. Its integration into surveillance, criminal justice, and administrative functions raises critical concerns regarding accountability, transparency, and constitutional compliance. The core challenge lies not in technological advancement itself, but in the delegation of decision-making authority to systems operating with limited explainability and oversight.

This transformation raises a fundamental question: whether law can effectively regulate AI without compromising ethics and justice.

While AI is often perceived as a modern phenomenon, its normative foundations resonate with philosophical principles such as Dharma, which emphasizes ethical restraint and balance in the exercise of power. In contrast, contemporary AI prioritizes efficiency and scalability, often at the expense of deliberative justice.

The rapid adoption of AI has outpaced legal development, creating a regulatory vacuum. In this context, the recognition of privacy as a fundamental right in *Justice K.S. Pettaway v. Union of India* provides a critical framework for evaluating AI-driven state action through legality, necessity, and proportionality.

This paper examines AI through three interconnected pillars—ethics, regulation, and justice—to assess how technological advancement can be harmonized with constitutional values.

AI and Constitutional Governance

Artificial Intelligence presents significant challenges to constitutional governance, particularly in democratic systems founded on transparency, accountability, and rule of law. While AI enhances administrative efficiency, its deployment must remain within constitutional limits to prevent arbitrariness.

In India, fundamental rights under Articles 14, 19, and 21 form the foundation of governance. AI systems directly engage these rights and must comply with constitutional

safeguards. The recognition of privacy in *Pettaway* mandates that technological interventions satisfy legality, necessity, and proportionality.

AI-driven welfare systems demonstrate both potential and risk. While improving efficiency, algorithmic errors may exclude vulnerable populations, leading to arbitrary deprivation of rights and violations of equality and dignity.

A key concern is algorithmic opacity. "Black-box" systems undermine natural justice by restricting transparency, reasoned decisions, and the right to be heard. Such opacity is incompatible with administrative law principles.

Algorithmic bias further raises concerns under Article 14. Systems trained on skewed datasets may perpetuate discrimination, necessitating safeguards ensuring fairness and accountability.

Judicial precedents reinforce these principles. In *PUCL v. Union of India*, procedural safeguards against surveillance were emphasized, while *Pettaway* reaffirmed proportionality as a constitutional standard.

Comparatively, the European Union's "trustworthy AI" model offers guidance by aligning AI governance with fundamental rights.

Thus, AI must be regulated to preserve constitutional integrity and democratic accountability.

AI in Criminal Investigation and Evidence

AI technologies such as facial recognition, predictive policing, and digital forensics have significantly transformed modern criminal investigations and enforcement mechanisms, including financial and tax-related inquiries. While these tools enhance efficiency, detection, and accuracy, they simultaneously raise serious concerns regarding due process, evidentiary reliability, and procedural fairness.

In *Selvi v. State of Karnataka*, the Supreme Court held that involuntary use of scientific techniques violates personal liberty, thereby establishing that technological tools must operate strictly within constitutional safeguards. Extending this principle, AI-assisted or AI-generated evidence must satisfy established standards of voluntariness, authenticity, reliability, and verifiability before being relied upon in judicial proceedings.

A notable illustration of AI-assisted forensic scrutiny arises in cases of alleged tax evasion involving long-term capital gains (LTCG), where document authentication has been examined

through technological tools. In certain instances, documents purportedly executed in earlier years (for example, 2002) were found to contain the "Calibri" font—a typeface introduced commercially much later. Forensic and AI-assisted document analysis enabled authorities to identify such inconsistencies, thereby casting doubt on the genuineness and timing of the documents submitted. This demonstrates the growing role of AI in detecting sophisticated financial irregularities.

However, increasing reliance on such technologies also raises critical legal concerns. Predictive and data-driven tools, if based on flawed datasets or opaque methodologies, may lead to erroneous conclusions or disproportionate targeting. Further, the "black-box" nature of AI systems may restrict the ability of the accused to challenge the methodology or accuracy of such evidence, thereby affecting the right to a fair trial.

Accordingly, courts must approach AI-assisted evidence with caution, ensuring rigorous judicial scrutiny and strict adherence to principles of natural justice. The use of advanced technologies must strengthen, rather than dilute, procedural safeguards.

Regulatory Frameworks: India and Global Perspectives

AI regulation across jurisdictions reflects diverse legal philosophies and policy priorities. India currently does not have a dedicated statutory framework specifically governing artificial intelligence; however, a combination of existing laws provides a functional regulatory structure addressing AI-related concerns.

Core criminal liability is governed by the Bharatiya Nyaya Sanhita (BNS), which deals with offences such as cheating, impersonation, and fraud. Procedural aspects are addressed under the Bharatiya Nagarik Suraksha Sanhita (BNSS), while evidentiary issues, including admissibility of electronic records, fall within the Bharatiya Sakshya Adhiniyam (BSA). Additionally, the Information Technology Act, 2000 addresses cyber offences, including unauthorized access, identity theft, and digital fraud.

The Digital Personal Data Protection Act, 2023 further strengthens the framework by introducing consent-based data processing obligations and responsibilities for data fiduciaries, thereby addressing privacy concerns associated with AI systems.

In contrast, the European Union adopts a comprehensive rights-based approach through the GDPR and the proposed AI Act, emphasizing risk classification and strict compliance. The United States, on the other hand, follows a sector-specific and innovation-driven approach, prioritizing flexibility and technological growth.

India, therefore, stands at a critical juncture, with the opportunity to evolve a balanced regulatory model that integrates constitutional safeguards with innovation-driven growth, while addressing accountability and transparency concerns.

Data Protection, Surveillance and Privacy

Artificial Intelligence fundamentally depends on large-scale data processing, often involving sensitive personal information. This reliance raises significant concerns regarding privacy, surveillance, and data misuse.

In *Carpenter v. United States*, the U.S. Supreme Court recognized that access to digital data requires constitutional safeguards. Similarly, in India, *Justice K.S. Puttaswamy v. Union of India* established the right to privacy as a fundamental right, thereby imposing constitutional limitations on state action involving data collection and processing.

The Digital Personal Data Protection Act, 2023 introduces a consent-based framework for data processing and imposes obligations on data fiduciaries. However, concerns persist regarding broad exemptions available to the State and the adequacy of enforcement mechanisms.

AI-powered surveillance systems, including facial recognition and large-scale data analytics, enable extensive monitoring and profiling of individuals. Such capabilities, if left unchecked, may lead to mass surveillance and erosion of individual autonomy.

Unchecked surveillance creates a chilling effect on freedom of speech and expression, thereby undermining democratic values. Therefore, AI systems must operate strictly within the principles of legality, necessity, and proportionality to ensure constitutional compliance

Surveillance Technologies and Fundamental Rights

AI-powered surveillance technologies have significantly enhanced the State's capacity to monitor individuals, raising important concerns regarding privacy and civil liberties. While such technologies may be justified on grounds of national security and public order, their deployment must remain within constitutional limits.

In *Carpenter v. United States*, the requirement of judicial authorization for accessing digital location data was emphasized. In the Indian context, *People's Union for Civil Liberties v. Union of India* underscored procedural safeguards against arbitrary surveillance, while *Puttaswamy* reaffirmed privacy as a fundamental right.

Although the Digital Personal Data Protection Act, 2023 represents a significant step toward regulating data processing, concerns remain regarding broad state exemptions and the absence of strong independent oversight mechanisms.

The use of facial recognition technology in public spaces raises concerns about mass surveillance, profiling, and chilling effects on free expression. Without clear legal safeguards, such technologies risk transforming governance into a surveillance regime.

Therefore, AI-driven surveillance must be strictly regulated to ensure that security objectives do not override fundamental rights and constitutional protections.

AI in Judiciary and Access to Justice

Artificial Intelligence holds significant potential to transform the judicial system by enhancing efficiency, reducing pendency, and improving access to justice. Tools such as e-courts, digital filing systems, case management platforms, and AI-assisted legal research can streamline procedural delays and enable judges to manage increasingly complex caseloads with greater effectiveness.

However, the integration of AI into judicial processes raises profound jurisprudential and ethical concerns. Law is not a purely mechanical system of rules but a dynamic and interpretative discipline shaped by human reasoning, lived realities, and evolving societal values. In *Maneka Gandhi v. Union of India*, the Supreme Court emphasized that legal procedure must be "just, fair, and reasonable," thereby underscoring the centrality of human judgment in adjudication. Similarly, in *State of Punjab v. Jagdev Singh Talwandi*, the Court highlighted the importance of judicial discretion and contextual interpretation, which cannot be adequately replicated through algorithmic processes.

AI systems function within the boundaries of predefined datasets and programmed logic. They inherently lack empathy, moral reasoning, and the capacity to appreciate the subtleties of human circumstances. As observed in *Justice K.S. Puttaswamy v. Union of India*, dignity and individual autonomy are foundational constitutional values that require nuanced human appreciation.

Therefore, AI must be positioned as an assistive mechanism rather than a substitute for judicial decision-making. The principle that justice must not only be done but must also be seen to be done, as laid down in *R v. Sussex Justices, ex parte McCarthy*, necessitates transparency, accountability, and continued human oversight in all adjudicatory functions.

Algorithmic Bias and Discrimination

Algorithmic bias remains one of the most pressing challenges in the deployment of AI systems. Such bias often originates from incomplete, skewed, or historically prejudiced datasets, leading to discriminatory outcomes in areas such as recruitment, credit evaluation, insurance, and law enforcement.

Importantly, bias is not always inadvertent; it may also be deliberately introduced or manipulated. Similar to cyber interference by malicious actors, algorithms can be designed with wrongful intent (mens rea), thereby transforming technological tools into instruments of systemic harm, including discrimination, fraud, and targeted exclusion.

In *State v. Loomis*, the use of proprietary risk assessment algorithms raised significant concerns regarding opacity and procedural fairness, particularly because the accused was unable to meaningfully challenge the basis of the algorithmic determination.

Within the Indian constitutional framework, such bias—whether structural or intentional—may violate the guarantee of equality under Article 14. Addressing these risks requires the use of diverse and representative datasets, algorithmic transparency, periodic independent audits, and robust regulatory oversight to ensure fairness and accountability.

Criminal Liability and Autonomous Systems

The rise of autonomous AI systems challenges traditional criminal law, particularly the doctrine of mens rea, which relies on a guilty mind. Since AI lacks consciousness and intent, attributing direct criminal liability to it is legally untenable.

When harm arises from autonomous technologies—such as self-driving vehicles or automated decision-making systems—liability must be distributed among stakeholders, including developers, manufacturers, programmers, and end-users. The doctrine of negligence may apply where foreseeable risks were inadequately anticipated or mitigated.

However, AI's self-learning and adaptive nature complicates foreseeability, creating gaps in accountability when harm occurs without a clearly identifiable responsible party.

To address this, a hybrid liability framework incorporating strict liability and product liability is increasingly considered appropriate, ensuring victims are compensated without the onerous burden of proving intent.

Intellectual Property Rights in AI-generated Works

AI-generated works disrupt traditional intellectual property frameworks, particularly copyright law, which presumes human authorship. Modern AI can produce creative outputs—including music, literature, and visual art—with minimal human intervention.

In *Naruto v. Slater*, the court reaffirmed that non-human entities cannot hold copyright, reinforcing the human-centric legal framework. Yet, ambiguity arises when AI-generated content lacks an identifiable human author.

Three principal approaches exist: assigning ownership to developers, granting rights to users who initiate the process, or placing such works in the public domain—each with distinct policy implications.

A balanced, forward-looking framework is therefore essential, potentially requiring legislative action to redefine authorship and originality in the AI context.

Ethical AI and Human Rights

Ethical considerations underpin responsible AI development and deployment. Without safeguards, AI risks perpetuating bias, discrimination, and violations of fundamental rights.

Core ethical principles include fairness, transparency, accountability, and human oversight. International instruments, such as UNESCO's AI ethics recommendations, emphasize a human-centric approach aligning innovation with dignity, equality, and freedoms.

Persistent concerns over biased datasets and discriminatory outcomes in sensitive sectors—like policing, employment, and finance—highlight the need for embedding ethics into system design via "ethics by design" and "privacy by design."

Ethical AI must therefore move beyond guiding principles to become an enforceable standard within legal frameworks.

AI and Infringement Challenges

AI systems rely heavily on large datasets for training, many of which include copyrighted material. This raises significant concerns regarding infringement at both the input (training) and output stages.

The unauthorized scraping and use of protected content may amount to copyright violation, while AI-generated outputs may inadvertently reproduce substantial parts of existing works.

Determining liability in such scenarios is complex, particularly where infringement occurs without direct human intention. Courts must examine the roles played by developers, data providers, and end-users.

While doctrines such as fair use and transformative use may offer limited protection, their application to AI remains uncertain, necessitating clearer legislative guidance.

Ownership of AI-generated Works

Closely related to infringement concerns is the question of ownership of AI-generated works. The absence of direct human authorship complicates traditional ownership models and creates legal ambiguity.

Users may claim ownership based on their inputs and prompts, whereas developers may assert rights based on the underlying technology. Alternatively, treating such works as part of the public domain may enhance accessibility but reduce incentives for innovation.

A nuanced approach—potentially involving shared ownership or structured licensing—may provide a balanced solution.

Facial Recognition Technology and Legality

Facial recognition technology is among the most controversial AI applications, especially in surveillance and law enforcement. It enables real-time identification and tracking, raising significant concerns about privacy and misuse.

Without strict regulatory safeguards, such technology can facilitate mass surveillance and arbitrary state action. Deployment must adhere to the principles established in *Puttaswamy*—legality, necessity, and proportionality.

Moreover, facial recognition systems have shown inaccuracy and bias, risking wrongful identification and miscarriages of justice. Legal safeguards must therefore enforce transparency, accuracy standards, and independent oversight to ensure responsible and accountable use.

Predictive Policing and Legal Implications

Predictive policing uses AI to analyze crime data and forecast potential criminal activity. While enhancing efficiency and resource allocation, it raises serious concerns about fairness and due process.

These systems often rely on historical data that may reflect existing biases in law enforcement, causing models to disproportionately target certain communities and reinforce systemic discrimination.

Such practices challenge the presumption of innocence by subjecting individuals to scrutiny based on predicted behavior rather than actual conduct. Legal frameworks must ensure transparency, accountability, and human oversight to prevent misuse and protect individual rights.

Freedom of Speech vs AI-generated Content

AI-generated content, including deepfakes and voice cloning, has transformed free speech by enabling highly realistic yet fabricated expressions.

Unlike traditional imitation, AI can replicate a person's voice or identity with near-perfect accuracy, making detection difficult and creating risks of defamation, misinformation, and wrongful implication in criminal acts.

These developments pose complex legal challenges in balancing freedom of speech with protection against harm. While AI fosters innovation, misuse can distort public discourse and compromise evidentiary reliability.

Legal responses—such as mandatory disclosure, platform accountability, and penalties for malicious use—must be carefully designed to prevent abuse while safeguarding legitimate expression.

Accountability for AI-driven Decisions

Opaque AI "black boxes" complicate accountability in high-stakes decisions, undermining natural justice principles. Individuals affected may struggle to challenge outcomes or understand decision rationales. Explainable AI, transparent auditing, and effective grievance mechanisms are essential. Legal mandates ensuring accountability and remedial pathways strengthen trust and uphold rule-of-law standards in AI deployment.

AI and the Right to Privacy

AI depends on large-scale personal and sensitive data, raising significant privacy concerns. Constitutional privacy rights necessitate lawful, transparent, and fair data handling. Principles like consent, purpose limitation, and data minimization are critical. India's Digital Personal Data Protection Act, 2023, is a key step but requires robust implementation. Complementary privacy-enhancing technologies—encryption, anonymization, and pseudonymization—further mitigate AI-related risks.

Challenges in Regulating Emerging AI Technologies

AI's rapid evolution, technical complexity, and cross-border nature challenge conventional regulation. Striking a balance between innovation and safeguards is crucial. A risk-based

regulatory model—tailoring oversight to potential impact—offers flexibility while addressing high-risk applications. International cooperation and harmonized standards are necessary to prevent regulatory gaps and promote responsible global AI deployment.

Comparative Analysis of AI Regulations

Global AI regulatory approaches vary. The EU emphasizes rights, risk classification, transparency, and compliance. The US favors decentralized, sector-specific guidance with innovation focus. India's evolving framework combines sectoral policies and emerging legislation, offering an opportunity for a balanced, context-sensitive model. Comparative study highlights the need to adapt global best practices while addressing domestic realities.

AI in Corporate Governance and Compliance

AI enhances corporate governance by improving compliance, risk assessment, and decision-making. Yet reliance on automated systems raises accountability and transparency concerns. Boards must implement robust oversight, human review, internal controls, and periodic AI audits. Regulatory disclosure and independent audits of AI deployment ensure ethical, responsible, and legally compliant corporate practices.

Conclusion and Recommendations

Artificial Intelligence presents transformative opportunities alongside complex legal challenges. Issues of liability, accountability, and protection of fundamental rights become particularly significant where AI systems operate autonomously or unpredictably.

Responsibility may extend across developers, deployers, and users, depending on control, foreseeability, and negligence. Legal principles such as strict liability and product liability may be increasingly relevant.

Compensation mechanisms must evolve to address harm caused by AI, potentially incorporating structured frameworks and mandatory insurance for high-risk systems.

BIBLIOGRAPHY

1. *Justice K.S. Puttaswamy v. Union of India*, (2017) 10 SCC 1.
2. *People's Union for Civil Liberties v. Union of India*, (1997) 1 SCC 301.
3. *Carpenter v. United States*, 585 U.S. ___ (2018).
4. *Selvi v. State of Karnataka*, (2010) 7 SCC 263.
5. *State v. Loomis*, 881 N.W.2d 749 (Wis. 2016).
6. *Naruto v. Slater*, 888 F.3d 418 (9th Cir. 2018).

7. Regulation (EU) 2016/679 (General Data Protection Regulation).
8. European Commission, *Proposal for a Regulation on Artificial Intelligence (AI Act)*, COM/2021/206 final.
9. Digital Personal Data Protection Act, 2023 (India).
10. Information Technology Act, 2000 (India).
11. NITI Aayog, *National Strategy for Artificial Intelligence* (2018).
12. OECD, *Principles on Artificial Intelligence* (2019).
13. UNESCO, *Recommendation on the Ethics of Artificial Intelligence* (2021).
14. The White House, *Blueprint for an AI Bill of Rights* (2022).
15. Frank Pasquale, *The Black Box Society* (Harvard University Press, 2015).

Books

- Russell, Stuart & Norvig, Peter. *Artificial Intelligence: A Modern Approach*. Pearson.
- Bostrom, Nick. *Superintelligence: Paths, Dangers, Strategies*. Oxford University Press.
- Susskind, Richard. *The Future of the Professions*. Oxford University Press.
- Pasquale, Frank. *The Black Box Society*. Harvard University Press.

Statutes and Regulations

- Digital Personal Data Protection Act, 2023 (India).
- Information Technology Act, 2000 (India).
- Regulation (EU) 2016/679 (GDPR).
- Proposed Artificial Intelligence Act (European Union).

Reports and Policy Documents

- NITI Aayog. *National Strategy for Artificial Intelligence* (2018).
- OECD. *Principles on Artificial Intelligence* (2019).
- UNESCO. *Recommendation on the Ethics of Artificial Intelligence* (2021).
- White House. *Blueprint for an AI Bill of Rights* (2022)

****

Artificial Intelligence and the Right to Privacy: A Legal Analysis

By Sanjeevani Deepak Shahasane

F.Y. B.A. LL.B. Sem.
Shivajirao S. Jondhle Institute of Law and Research, Asangaon.
Email: sanjeevanishahasane1123@gmail.com

Abstract:

The rapid integration of Artificial Intelligence (AI) into the fabric of modern governance and commerce has fundamentally altered the paradigm of individual privacy. While AI facilitates unprecedented efficiency through predictive analytics and automation, its operational "fuel"-massive, high-velocity datasets—often creates a conflict with the principles of data minimization and purpose limitation. Traditional legal frameworks, which rely heavily on the concept of informed consent, are increasingly strained by AI systems that learn and evolve in ways that make their data-processing outcomes unpredictable even to their creators. This "Black Box" nature of AI poses a significant risk to the right to privacy, as sensitive personal information can be harvested, cross-referenced, and repurposed without the user's awareness, leading to a state of constant, invisible surveillance that challenges the very notion of personal autonomy.

In the Indian context, the legal analysis begins with the landmark recognition of privacy as a fundamental right under Article 21of the Constitution, as established in the 2017 Puttaswamy judgment. This research paper explores how this constitutional mandate serves as the primary defense against AI-driven intrusions. The "Three-Pronged Test" of legality, necessity, and proportionality now serves as a yardstick for evaluating state-sponsored AI initiatives, such as facial recognition and predictive policing. Internationally, the paper benchmarks these protections against the General Data Protection Regulation (GDPR) analyzing how concepts like the "Right to Explanation" and protection against automated decision-making provide a more robust shield than the currently evolving standards in many developing digital economies.

A critical segment of this analysis focuses on the adequacy of the Digital Personal Data Protection (DPDP) Act, 2023 and its real-world application as of 2026. While the Act provides a structure for data fiduciaries and imposes heavy penalties for breaches, there remains a significant regulatory gap concerning "AI-specific" harms, such as algorithmic bias and the creation of synthetic deepfakes. The paper argues that current laws are often reactive rather than proactive. To ensure that technological progress does not come at the expense of human dignity, the research proposes a transition toward a "Rights-Centric AI Governance" model. This framework advocates for mandatory algorithmic transparency, strict "Privacy by Design" protocols, and a "Human-in-

the-Loop" requirement for high-stakes decisions, ensuring that AI remains a tool for human empowerment rather than a mechanism for systemic rights infringement.

Keywords- *artificial intelligence, right to privacy, data protection, GDPR, surveillance, puttaswamy judgment, algorithmic bias, digital personal data protection act, fundamental rights*

Introduction

The dawn of the 21st century has been defined by the meteoric rise of Artificial Intelligence (AI), a transformative force recalibrating the machinery of modern civilization. No longer confined to the realms of science fiction, AI systems-ranging from deep learning neural networks to predictive algorithms-have become the silent architects of contemporary decision-making. In sectors as diverse as healthcare diagnostics, algorithmic finance, and predictive policing, these technologies offer unprecedented efficiency and the promise of objective, data-driven insights. However, this "algorithmic revolution" is fueled by a resource of immense sensitivity: personal data. As AI systems become more integrated into the fabric of daily life, the boundary between technological utility and personal intrusion becomes increasingly blurred, necessitating a critical re-examination of our digital ethical standards.

The fundamental efficacy of AI is intrinsically linked to the scale and depth of the datasets it consumes. To function accurately, AI requires a process of "datafication," where human behaviours, biological traits, and social interactions are converted into quantifiable metrics. This creates a profound tension between innovation and intimacy; while these systems provide personalized services, they simultaneously require a level of access to the private sphere that was previously unimaginable. As AI technologies analyse and interpret these vast repositories, they often unearth patterns that individuals never intended to share, effectively "predicting" private details from seemingly innocuous public data. This capability transforms the digital footprint from a simple trail of past actions into a predictive map of future behaviour, often revealing intimate details about an individual's health, political leanings, or private associations without their explicit consent.

Consequently, the right to privacy—long upheld as a cornerstone of individual autonomy and human dignity—is facing an existential crisis. Unlike traditional data processing, AI enables pervasive surveillance that is often invisible to the subject, utilizing techniques like de-anonymization to re-identify individuals within "secure" datasets and behavioural nudging to influence consumer choice. While global frameworks like the General Data Protection Regulation

(GDPR) and emerging AI-specific legislations attempt to create safeguards, the pace of technological evolution consistently outstrips the speed of policy. This paper argues that the current legal and ethical landscape is ill-equipped to handle the intrusive capabilities of predictive analytics. By examining the intersection of data exploitation and human rights, this research seeks to propose a more robust framework that prioritizes "privacy-by-design," ensuring that the march of technological progress does not come at the expense of individual liberty and the fundamental right to remain private in a hyper-connected world.

Concept of the Right to Privacy

Historical Evolution: From Property to Personality

The historical trajectory of privacy is a transition from spatial privacy (the sanctity of the home) to personhood privacy (the sanctity of the mind and data).

Philosophical Roots: Early conceptions were popularized by Samuel Warren and Louis Brandeis in their 1890 Harvard Law Review article, defining privacy as "the right to be let alone." This shifted the focus from physical trespass to spiritual and emotional integrity.

International Statutory Framework:

- Article 12 of the UDHR (1948): Established that no one shall be subjected to "arbitrary interference" with their privacy, family, home, or correspondence.
- Article 17 of the ICCPR (1966): Provided a binding legal obligation for states to protect individuals against both state and private infringements.

The Digital Shift: In the 21st century, the UN High Commissioner for Human Rights has expanded these views to include "the right to encryption and anonymity," acknowledging that privacy is a prerequisite for freedom of expression in the digital age.

The Indian Jurisprudential Landscape

The recognition of privacy in India was not immediate but followed a "zigzag" path of judicial interpretation, culminating in a watershed moment in 2017.

- Pre-Puttaswamy Uncertainty

For decades, the Indian judiciary was haunted by two early rulings: M.P. Sharma v. Satish Chandra (1954) and Kharak Singh v. State of UP (1962), which suggested that the Constitution did not explicitly protect privacy. However, later benches in cases like R. Rajagopal v. State of Tamil Nadu (1994) began to weave privacy into the "Right to Life" under Article 21.

- The Landmark: Justice K.S. Puttaswamy (Retd.) v. Union of India (2017)

A nine-judge bench of the Supreme Court unanimously declared privacy a Fundamental Right. The court overruled previous restrictive precedents, grounding privacy in the "Constitutional Core" of Articles 14, 19, and 21.

- The Three Pillars of Privacy in India

In India, the right to privacy was constitutionally recognized in the landmark judgment of Justice K.S. Puttaswamy v. Union of India (2017). The Supreme Court held that privacy is a fundamental right under Article 21 of the Constitution, encompassing:

i. Bodily privacy
ii. Informational privacy
iii. Decisional autonomy

This judgment significantly reshaped Indian constitutional law, establishing privacy as intrinsic to life and liberty

Artificial Intelligence: Nature and Functioning

AI refers to the simulation of human intelligence in machines that can perform tasks such as learning, reasoning, and decision-making. AI systems function through:

- Machine learning algorithms
- Neural networks
- Big data analytics

These systems rely on continuous data input, often sourced from:

- Social media
- Biometric databases
- Surveillance systems
- Financial records

This reliance on data creates inherent privacy risks.

Surveillance and Profiling

AI-powered surveillance tools, including facial recognition and predictive policing, enable:

- Mass surveillance
- Continuous tracking of individuals
- Profiling based on behaviour or identity

These practices can lead to violations of privacy and civil liberties. Scholars have highlighted that AI surveillance poses “unprecedented challenges for constitutional privacy rights”

Algorithmic Decision-Making

AI systems increasingly make decisions affecting:

- Employment
- Creditworthiness
- Criminal justice

These decisions are often opaque ("black-box algorithms"), raising issues of transparency and accountability.

Legal Framework Governing AI and Privacy

5.1. Indian Legal Framework

5.1.1 Constitution of India

- Article 21: Right to life and personal liberty
- Expanded to include privacy

5.1.2 Information Technology Act, 2000

- Governs electronic data protection
- Limited scope in addressing AI-specific risks

5.1.3 Digital Personal Data Protection Act, 2023

- Provides framework for data protection
- Emphasizes consent and purpose limitation
- However, lacks AI-specific provisions

India currently lacks a comprehensive AI regulatory framework, creating significant legal gaps

5.2 International Legal Framework

5.2.1 General Data Protection Regulation (GDPR)

The GDPR is one of the most comprehensive data protection laws globally. It includes:

- Right to access data
- Right to erasure ("right to be forgotten")
- Data minimization principles
- Accountability requirements

The GDPR also introduces the concept of "privacy by design", requiring systems to integrate privacy protections from the outset.

5.2.2 European Union AI Act

The EU AI Act classifies AI systems based on risk levels and imposes strict obligations on high-risk systems, particularly those affecting fundamental rights.

Key Challenges to Privacy in the Age of AI

6.1 Lack of Informed Consent

AI systems often collect data without explicit or informed consent, undermining individual autonomy.

6.2 Data Misuse and Breaches

The aggregation of large datasets increases the risk of:

- Data breaches
- Unauthorized access
- Commercial exploitation

6.3 Algorithmic Bias and Discrimination

AI systems may perpetuate biases present in training data, leading to discriminatory outcomes.

6.4 Lack of Transparency

AI decision-making processes are often opaque, making it difficult to:

- Understand decisions
- Challenge outcomes

6.5 Inadequate Legal Frameworks

Existing laws are not fully equipped to address AI-specific risks, particularly in developing countries like India.

Judicial Approach to Privacy and Technology

Courts have played a crucial role in shaping privacy jurisprudence.

7.1 Puttaswamy Judgment (2017)

- Recognized privacy as a fundamental right
- Established tests of legality, necessity, and proportionality

7.2 Aadhaar Case

- Examined biometric data collection
- Highlighted concerns regarding surveillance

7.3 Right to be forgotten

Indian courts have increasingly recognized this right, particularly in digital contexts.

Comparative Analysis: India vs European Union

The comparative position of India and the European Union in relation to privacy and data protection shows both similarities and differences in their regulatory approaches. In India, the right to privacy has been recognized as a fundamental right by the Justice K. S. Puttaswamy v. Union of India judgment of the Supreme Court of India. Following this landmark decision, India introduced a comprehensive data protection legislation through the Digital Personal Data Protection Act, 2023. This Act establishes the legal framework for processing digital personal data and aims to protect individuals' privacy while allowing lawful data processing. However, India's regulatory approach to emerging technologies such as artificial intelligence is still at a relatively early stage, and dedicated AI legislation is limited. Enforcement mechanisms are also in the developmental phase, with regulatory structures and implementation practices still evolving.

In contrast, the European Union has long recognized privacy and data protection as fundamental rights under its legal framework. The EU has established one of the most comprehensive data protection regimes in the world through the General Data Protection Regulation. The GDPR sets strict standards for the collection, processing, storage, and transfer of personal data and provides strong rights to individuals, such as the right to access, rectification, and erasure of personal data. In addition to data protection, the European Union has taken proactive steps in regulating artificial intelligence through the EU Artificial Intelligence Act, which introduces a risk-based framework for AI systems. The EU also possesses well-established enforcement mechanisms through independent data protection authorities and substantial penalties for non-compliance.

Overall, while both India and the European Union recognize privacy as a fundamental right, the European Union's regulatory framework is currently more comprehensive and proactive. India, on the other hand, is gradually strengthening its legal and institutional mechanisms, indicating that its data protection and technology governance framework is still in the process of development and evolution.

Ethical Considerations

9.1 Human Dignity

AI must respect the inherent dignity of individuals.

9.2 Accountability

Developers and organizations must be held accountable for AI outcomes.

9.3 Transparency

AI systems should be explainable and understandable.

9.4 Privacy by Design

Privacy safeguards must be integrated into AI systems from inception.

Need for Regulatory Reform

10.1 AI-Specific Legislation

India must develop laws specifically addressing AI risks.

10.2 Strengthening Data Protection Laws

Enhancing enforcement mechanisms and penalties.

10.3 Independent Regulatory Authorities

Establishing bodies to oversee AI deployment.

10.4 International Cooperation

Global collaboration is essential to address cross-border data flows.

Recommendations:

1. Adopt AI-specific legislation aligned with international standards
2. Implement privacy-by-design principles in all AI systems
3. Enhance transparency and explainability of algorithms
4. Strengthen consent mechanisms
5. Establish accountability frameworks for AI developers
6. Promote public awareness about data privacy rights

CONCLUSION

The intersection of Artificial Intelligence and the right to privacy represents a profound constitutional and ethical crossroads, as the very "fuel" that powers AI—massive datasets—is often extracted from the private lives of individuals. While AI offers transformative benefits, from breakthroughs in medical diagnostics to more efficient global infrastructures, its inherent reliance on data collection, processing, and pattern recognition poses an existential threat to the traditional

concept of anonymity. The fundamental right to privacy is no longer just about preventing physical intrusion; it now involves protecting the "digital self" from sophisticated inferences that can predict a person's behaviour, health, and thoughts with unsettling accuracy, often without their explicit knowledge or meaningful consent.

The inadequacy of current legal frameworks stems from the fact that most privacy laws were drafted for a static world of data storage, rather than the dynamic, self-evolving world of algorithmic processing. Traditional protections, such as "notice and consent" or data de-identification, are increasingly ineffective against AI systems that can reconstruct identities from fragmented, public data points. This creates a regulatory "black box" where automated decisions are made behind a veil of technical complexity, making it nearly impossible for individuals to exercise their rights or for judicial systems to assign liability when privacy is breached. Consequently, a constitutional foundation alone is insufficient; it must be supported by agile, comprehensive legislation that evolves alongside the technology it seeks to govern.

Moving forward, achieving a sustainable balance requires a shift from reactive regulation to a philosophy of "Privacy by Design." This necessitates a multi-layered strategy involving robust government enforcement, independent algorithmic auditing, and the integration of ethical guardrails directly into the software development lifecycle. We must move beyond the false dichotomy that suggests we must choose between technological innovation and personal liberty. Instead, the mandate for the modern era must be the creation of an ecosystem where AI acts as a tool for human empowerment. Ultimately, the preservation of privacy is the preservation of human dignity; ensuring that as our machines become more intelligent, our fundamental freedoms remain uncompromised and our personal boundaries remain respected.

REFERENCE / BIBLIOGRAPHY

1. Bharati, R.K., The Right to Privacy in the Age of Artificial Intelligence
2. Hanspal, M.S., Privacy and Data Protection in AI-Driven Legal Services
3. Kumar, P.V., AI and Data Privacy: A Legal Perspective
4. Hawelikar, L.R., AI Surveillance and Constitutional Rights
5. Sharma, P., AI and Privacy Challenges in India
6. Agrawal, P., Right to Privacy and Technology
7. JETIR Research Paper on AI and Privacy

****

Artificial Intelligence and the Right to Privacy

By Anjali Suryakant Gaikwad

D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.

By Pinki Sunderlal Joshi

D.T.S.S. College of Law, Kurar Village, Malad (East), Mumbai – 400 097.

Abstract

The rapid development of artificial intelligence (AI) has significantly influenced modern society by transforming various sectors such as healthcare, finance, communication, and governance. While AI technologies offer enhanced efficiency, accuracy, and innovation, they also raise serious concerns regarding the protection of individual privacy. This paper examines the complex relationship between AI systems and the right to privacy, highlighting how the increasing dependence on large volumes of personal data creates potential risks for individuals.

The study explores how AI collects, processes, and analyzes sensitive information, often without the full awareness or informed consent of users. It discusses key privacy challenges, including mass surveillance, data breaches, misuse of personal information, and algorithmic bias. The paper also evaluates existing legal frameworks such as data protection laws and emphasizes their limitations in addressing the unique challenges posed by AI technologies.

In addition to legal aspects, the research considers ethical principles such as transparency, accountability, and fairness as essential components in safeguarding privacy. It further highlights the importance of balancing technological advancement with the protection of fundamental human rights. The role of public awareness, digital literacy, and technological solutions in minimizing privacy risks is also examined.

The paper concludes that ensuring the right to privacy in the age of artificial Intelligence requires a comprehensive and collaborative approach involving policymakers, organizations, and individuals. Strengthening legal mechanisms, promoting ethical AI practices, and fostering awareness are crucial steps toward building a secure and trustworthy digital environment.

Introduction

The rapid advancement of artificial intelligence (AI) has transformed nearly every aspect of modern life, from healthcare and finance to communication and entertainment. AI systems now process vast amounts of data to generate insights, automate decisions, and enhance efficiency. However, this unprecedented capability comes with significant ethical and legal challenges, particularly concerning the right to privacy. As AI becomes increasingly integrated into daily life, questions about how personal data is collected, used, and protected have become central to public discourse. The right to privacy, long recognized as a fundamental human right, faces new threats and reinterpretations in the age of intelligent machines. This essay explores the intersection of AI and privacy, examining the risks, legal frameworks, ethical considerations, and potential pathways for safeguarding individual rights in a data-driven world.

In recent decades, the growth of artificial intelligence has significantly reshaped the way individuals live, work, and interact with technology. From sectors such as medicine and banking to communication platforms and digital entertainment, AI-driven systems are now deeply embedded in everyday activities. These systems are capable of analyzing enormous volumes of information, making predictions, automating processes, and improving overall efficiency. While these advancements have brought remarkable convenience and innovation, they have also introduced serious ethical and legal concerns, particularly in relation to the protection of personal privacy.

As AI continues to expand its reach, the issue of how personal data is gathered, processed, and safeguarded has become increasingly important. Privacy, which has long been regarded as a basic human entitlement, is now being challenged and redefined in the context of intelligent technologies. The emergence of AI has created situations where personal information is constantly being monitored, collected, and interpreted, often without full awareness or understanding on the part of individuals.

This paper aims to explore the relationship between artificial intelligence and the right to privacy. It will analyze the risks associated with AI technologies, examine existing legal frameworks, discuss ethical concerns and suggest possible measures to ensure that individual rights are protected in an increasingly data-driven society.

Understanding AI and Data Dependency

Artificial intelligence systems, particularly those based on machine learning, rely heavily on large datasets to function effectively. These datasets often include personal information such as browsing history, location data, biometric identifiers, and social interactions. The more data AI systems have access to, the more accurate and efficient they become. However, this dependence on data creates a paradox: while individuals benefit from personalized services and improved technologies, they also risk losing control over their personal information.

AI systems operate by identifying patterns within data, which often requires continuous data collection and analysis. For instance, recommendation algorithms on streaming platforms analyze viewing habits, while navigation apps track real-time location data. Similarly, facial recognition systems rely on biometric data to identify individuals. These applications demonstrate how deeply embedded data collection is in AI functionality, raising concerns about the extent to which personal information is monitored and stored.

Artificial intelligence, especially systems based on machine learning, depends heavily on access to large quantities of data in order to function effectively. These data sets frequently include sensitive and personal details such as online behavior, geographic location, biometric identifiers, preferences, and social interactions. The performance and accuracy of AI systems improve as the amount of available data increases.

This reliance on data creates a complex situation. On one hand, individuals benefit from personalized services, faster processes, and smarter technologies. On the other hand, they risk losing control over their own personal information. The more data that is collected, the greater the possibility that it may be misused, mishandled, or exposed.

AI technologies work by identifying patterns and trends within collected information. This often requires continuous monitoring and analysis. For example, streaming services recommend content based on viewing history, navigation

Applications track real-time locations to provide directions, and voice assistant's process speech data to respond accurately. Similarly, facial recognition technologies depend on biometric data to identify individuals. These examples highlight how deeply data collection is integrated into AI operations. As a result, concerns arise regarding the extent to which individuals are being observed, recorded and analyzed in their daily lives.

Privacy in the Modern Digital Environment

Traditionally, privacy has been understood as the right of individuals to be free from unwanted interference or intrusion. It also includes the ability to control personal information and decide how it is shared. However, in the digital age, this concept has evolved into what is often referred to as informational privacy.

Informational privacy emphasizes an individual's authority over the collection, use, and distribution of their personal data. Artificial intelligence challenges this concept by enabling large-scale data collection and analysis, often without explicit knowledge or consent.

One of the major concerns in this context is the lack of transparency in AI systems. Many algorithms operate as "black boxes," meaning their internal processes are not easily understood, even by their creators. This makes it difficult for individuals to know how decisions affecting them are made.

For instance, automated systems used in banking or employment may make decisions based on data patterns. However, individuals may not have access to the reasoning behind these decisions, nor the opportunity to correct inaccurate data.

Another important issue is the nature of consent. In many cases, users agree to data collection by accepting lengthy and complex terms and conditions. These agreements are often not fully read or understood, raising doubts about whether such consent is genuinely informed.

The Concept of Privacy in the Digital Age

Privacy has traditionally been understood as the right to be left alone or the ability to control one's personal information. In the digital age, this concept has evolved to include informational privacy, which refers to the ability of individuals to determine how their data is collected, used, and shared. AI challenges this notion by enabling large-scale data aggregation and analysis that often occurs without explicit user awareness.

One of the key issues is the opacity of AI systems. Many algorithms function as "black boxes," meaning that even their developers may not fully understand how decisions are made. This lack of transparency makes it difficult for individuals to know how their data is being used or to challenge decisions that affect them. For example, AI-driven credit scoring systems may deny loans based on patterns in data, but individuals may not be able to access or correct the underlying information.

Furthermore, the concept of consent becomes problematic in AI-driven environments. Users often agree to data collection through lengthy and complex terms of service agreements without fully understanding the implications. This raises questions about whether such consent is truly informed or voluntary.

Privacy Risks Associated with AI

The integration of AI into various sectors has introduced several privacy risks. One major concern is surveillance. Governments and corporations can use AI-powered tools to monitor individuals on an unprecedented scale. Facial recognition technology, for example, can identify individuals in public spaces, potentially enabling mass surveillance. While such systems may enhance security, they also pose risks to civil liberties and freedom of expression.

Another significant risk is data breaches. As organizations collect and store vast amounts of personal data, they become attractive targets for cyberattacks. AI can exacerbate this risk by centralizing data and increasing its value. A breach involving AI systems can expose sensitive information, leading to identity theft, financial loss, and reputational damage.

AI also raises concerns about data misuse. Personal data collected for one purpose may be used for another without the individual's knowledge. For instance, data gathered for improving user experience may be sold to third parties for targeted advertising. This secondary use of data often occurs without explicit consent, undermining trust in digital systems.

Bias and discrimination are additional concerns. AI systems trained on biased data can produce discriminatory outcomes, affecting decisions related to hiring, law enforcement, and healthcare. While this issue is primarily ethical, it also intersects with privacy, as biased outcomes may result from the misuse or misinterpretation of personal data.

The widespread use of artificial intelligence has introduced several risks to personal privacy. One of the most significant concerns is surveillance. Governments and private organizations can use AI-powered tools to monitor individuals on a large scale. Technologies such as facial recognition can identify people in public spaces, making continuous tracking possible.

While such systems may improve security and law enforcement, they also pose threats to civil liberties, including freedom of expression and movement. Excessive surveillance can create a sense of constant observation, limiting individual autonomy.

Another major concern is the risk of data breaches. As organizations collect and store vast amounts of personal information, they become targets for cyberattacks. A breach can result in the exposure of sensitive data, leading to identity theft, financial loss, and damage to reputation.

AI also increases the possibility of data misuse. Information collected for one purpose may be used for another without the individual's consent. For example, user data gathered to enhance service quality may later be sold to third parties for advertising or other commercial purposes. Additionally, AI systems may produce biased or discriminatory outcomes if they are trained on flawed or unrepresentative data. This can affect decisions in areas such as hiring, healthcare and law enforcement. Although bias is primarily an ethical issue, it is closely connected to privacy, as it often involves the improper use or interpretation of personal data.

Legal Measures and Regulatory Frameworks

In response to growing concerns about privacy, governments around the world have introduced legal frameworks to regulate data collection and use. One of the most prominent examples is the General Data Protection Regulation (GDPR) in the European Union. GDPR establishes strict guidelines for data processing, including requirements for consent, data minimization, and the right to access and erase personal data. It also imposes significant penalties for non-compliance, encouraging organizations to prioritize privacy.

Other countries have followed suit with their own regulations. For example, India has introduced the Digital Personal Data Protection Act, which aims to protect individuals' data while enabling innovation. Similarly, the California Consumer Privacy Act (CCPA) in the United States provides residents with rights over their personal information, including the ability to opt out of data sales.

Despite these efforts, regulating AI presents unique challenges. Traditional privacy laws may not adequately address the complexities of AI systems, such as automated decision-making and cross-border data flows. Additionally, enforcement can be difficult, particularly when dealing with multinational corporations that operate across jurisdictions.

In response to growing concerns about data privacy, various governments have introduced laws and regulations to control the use of personal information. One of the most well-known frameworks is the General Data Protection Regulation (GDPR) implemented by

the European Union. This regulation sets strict standards for data processing, including requirements for obtaining consent, minimizing data collection, and providing individuals with the right to access and delete their data.

Other countries have developed similar laws. In India, the Digital Personal Data Protection Act aims to protect individuals' data while supporting technological growth. In the United States, the California Consumer Privacy Act (CCPA) grants individuals' rights over their personal information, including the option to prevent the sale of their data.

Despite these efforts, regulating AI remains challenging. Traditional privacy laws may not fully address the complexities of AI technologies, such as automated decision-making and international data transfers. Furthermore, enforcing these laws can be difficult when dealing with global corporations operating across multiple jurisdictions.

Ethical Issues in AI and Privacy

Legal regulations alone are not sufficient to address privacy concerns. Ethical considerations are equally important in ensuring that AI systems respect individual rights. Organizations must adopt responsible practices that prioritize transparency, fairness, and accountability.

Transparency involves informing users about how their data is being used and how AI systems function. Efforts to develop explainable AI aim to make these systems more understandable and trustworthy.

Accountability requires organizations to take responsibility for the outcomes of their AI systems. This includes addressing any harm caused by misuse of data or biased algorithms. Measures such as regular audits, monitoring, and oversight can help ensure responsible use. Fairness is another key principle. AI systems should be designed to avoid discrimination and ensure equal treatment for all individuals. This requires careful selection and management of training data.

Beyond legal frameworks, ethical considerations play a crucial role in addressing privacy concerns related to AI. Organizations must adopt principles such as transparency, accountability, and fairness to ensure that AI systems respect individual rights. Ethical AI design involves minimizing data collection, anonymizing data where possible, and ensuring that algorithms are free from bias.

Transparency is particularly important. Users should be informed about how their data is being used and how AI systems make decisions. Explainable AI (XAI) is an emerging field that seeks to make AI systems more interpretable, enabling users to understand and trust their outputs.

Accountability is another key principle. Organizations should be held responsible for the actions of their AI systems, including any harm caused by data misuse or algorithmic bias. This may involve establishing oversight mechanisms, conducting regular audits and implementing safeguards to prevent misuse.

Balancing Technological Progress and Privacy

One of the most important challenges in the modern era is finding a balance between innovation and the protection of privacy. Artificial intelligence has the potential to drive economic development, improve public services, and solve complex global problems. However, these benefits should not come at the cost of fundamental human rights.

Achieving this balance requires cooperation among governments, businesses, and society. Policymakers must create flexible laws that encourage innovation while protecting individuals. Companies should adopt privacy-focused approaches during the design and development of AI systems.

Technological solutions can also contribute to privacy protection. Techniques such as data encryption, anonymization, and decentralized learning methods can help reduce risks while maintaining functionality.

One of the central challenges in the AI era is balancing innovation with privacy protection. AI has the potential to drive economic growth, improve public services, and address complex global challenges. However, these benefits must not come at the expense of fundamental rights.

Achieving this balance requires a multi-stakeholder approach involving governments, businesses, and civil society. Policymakers must create flexible regulations that encourage innovation while safeguarding privacy. Businesses must adopt privacy-by-design principles, integrating privacy considerations into every stage of AI development. Meanwhile, individuals must be empowered with knowledge and tools to protect their data.

Technological solutions can also play a role. Techniques such as differential privacy, federated learning and encryption can enhance data protection while enabling AI functionality.

These approaches allow data to be analyzed without exposing individual identities, reducing privacy risks.

Importance of Public Awareness and Education

Raising public awareness is essential in addressing privacy challenges. Many individuals are unaware of how their data is collected and used. Educating people about their rights and the risks associated with AI can help them make informed decisions.

Digital literacy programs should include information about data protection, privacy settings, and responsible technology use. An informed public can hold organizations accountable and demand better privacy practices.

Public awareness is essential for addressing privacy challenges in the AI era. Many individuals are unaware of the extent to which their data is collected and used. Education initiatives can help users understand their rights and make informed decisions about data sharing.

Digital literacy programs should include information about privacy settings, data protection practices and the implications of AI technologies. By empowering individuals, society can create a culture of accountability where organizations are pressured to respect.

Future Perspectives

As artificial intelligence continues to evolve, new challenges related to privacy will emerge. Advanced technologies such as biometric systems, predictive analytics, and brain-computer interfaces may further blur the boundaries between public and private life.

Addressing these challenges will require continuous updates to legal and ethical frameworks. International cooperation will also be necessary, as data flows across borders and inconsistent regulations can create gaps in protection.

A human-centered approach to AI development is essential. Privacy should be recognized not only as a legal requirement but also as a fundamental value that supports trust and dignity.

As AI continues to evolve, new privacy challenges will emerge. Technologies such as brain-computer interfaces, advanced biometrics, and predictive analytics may further blur the boundaries between public and private life. Addressing these challenges will require ongoing adaptation of legal and ethical frameworks.

International cooperation will also be crucial. Data flows across borders, and inconsistent regulations can create gaps in protection. Global standards for AI and privacy can help ensure that individuals' rights are respected regardless of where data is processed.

Moreover, the development of AI should be guided by a human-centric approach that prioritizes dignity and autonomy. This involves recognizing privacy not merely as a legal requirement but as a fundamental value that underpins trust in technology.

Conclusion and Suggestions

The intersection of AI and the right to privacy represents one of the most significant challenges of the modern era. While AI offers immense benefits, its reliance on data raises serious concerns about surveillance, data misuse, and loss of control over personal information. Protecting privacy in the age of AI requires a comprehensive approach that includes robust legal frameworks, ethical design principles, technological innovations, and public awareness.

Ultimately, the goal is not to hinder technological progress but to ensure that it aligns with human values. By prioritizing privacy and fostering trust, society can harness the potential of AI while safeguarding the rights and freedoms of individuals. The future of AI depends not only on technological advancements but also on our ability to navigate the ethical and legal complexities it presents. Ensuring the right to privacy in this context is not just a challenge—it is a necessity for building a fair and equitable digital world.

The relationship between artificial intelligence and the right to privacy represents one of the most critical issues of the modern digital era. While AI offers numerous advantages, its dependence on data raises serious concerns about surveillance, misuse of information, and loss of personal control.

Protecting privacy requires a comprehensive strategy that includes strong legal frameworks, ethical practices, technological safeguards, and increased public awareness. The goal is not to limit innovation but to ensure that technological progress aligns with human values.

By prioritizing privacy and building trust, society can fully benefit from AI while safeguarding individual freedoms. The future of artificial intelligence depends not only on technological advancements but also on our ability to address the ethical and legal challenges it presents.

BIBLIOGRAPHY

Textbooks

1. Stuart Russell & Peter Norvig, *Artificial Intelligence: A Modern Approach*, 4th ed., Pearson Education (2021).
2. Neil M. Richards & Woodrow Hartzog, *Privacy's Blueprint: The Battle to Control the Design of New Technologies*, Harvard University Press (2019). 3.Daniel J. Solove, *Understanding Privacy*, Harvard University Press (2008).

Journal Articles

1. Samuel D. Warren & Louis D. Brandeis, "The Right to Privacy," *Harvard Law Review*, Vol. 4, No. 5 (1890), pp. 193–220.
2. Sandra Wachter, Brent Mittelstadt & Luciano Floridi, "Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation," *International Data Privacy Law*, Vol. 7, Issue 2 (2017), pp. 76–99.

****

Artificial Intelligence in Judiciary and Access to Justice

By Mamta R. Shukla

S.Y. B.A. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon, Thane.

Abstract

Artificial Intelligence has become one of the most influential technological developments in modern governance and legal administration. In recent years, judicial systems across the world have begun exploring artificial intelligence as a tool for improving efficiency, reducing delay, and strengthening public access to legal institutions. Courts traditionally function through human reasoning, interpretation of law, and procedural fairness, but the growing burden of pending litigation has created a need for technological support. The concept of access to justice means that every person should have a fair and practical opportunity to seek legal remedies without unreasonable delay, cost, or procedural difficulty. However, many judicial systems continue to face structural limitations that prevent effective delivery of justice.

The use of AI in judiciary introduces new possibilities such as digital case management, legal research automation, predictive analytics, virtual hearings, language translation, and online dispute resolution. These developments have become particularly important in countries where courts face heavy pendency and administrative pressure. At the same time, important concerns arise regarding algorithmic bias, transparency, judicial independence, privacy, and ethical responsibility.

This research paper examines the role of AI in judicial institutions and evaluates whether technological intervention can genuinely improve access to justice while preserving constitutional principles. The study concludes that AI can significantly strengthen judicial administration if used as a supportive mechanism under human supervision rather than as a substitute for judicial reasoning.

Introduction

The judiciary is one of the most important pillars of a democratic legal system because it protects rights, resolves disputes, and maintains public confidence in the rule of law. Courts are expected to provide justice that is fair, accessible, affordable, and timely. However, in reality, many judicial systems struggle with serious challenges such as excessive delay, shortage of judges, rising litigation costs, procedural complexity, and increasing case backlog. These problems directly affect access to justice because citizens often experience difficulty in obtaining timely legal remedies.

In modern times, technological advancement has opened new possibilities for judicial reform. Artificial intelligence refers to systems capable of performing tasks that normally require human intelligence, such as pattern recognition, learning from data, classification, prediction, and automated analysis. When applied to law, AI can process legal information rapidly, assist judges in research, organize court records, and support administrative decision-making.

India provides an important example because its judicial system handles one of the largest volumes of litigation in the world. The large number of pending cases has created pressure to modernize courts through digital tools. Under the supervision of the Supreme Court of India, technological reforms such as e-filing, virtual hearings, and translation software have already begun to transform court functioning.

AI in judiciary therefore represents both an opportunity and a challenge: an opportunity to improve efficiency and a challenge to preserve fairness, accountability, and human judgment.

Research Objectives

1. To understand the meaning and legal scope of AI in judiciary.
2. To examine the relationship between AI and Access to justice.
3. To identify practical judicial applications of AI.
4. To analyze benefits and limitations of AI in Courts.
5. To evaluate Constitutional and ethical concerns in AI-based justice system.

Research Methodology

This research paper is based on doctrinal and analytical research methodology. It uses secondary sources such as legal articles, judicial reports, academic books, technological studies, and comparative legal developments. The paper follows descriptive analysis to explain AI applications and critical evaluation to assess their legal consequences.

Research Gap

Although AI is widely discussed in legal scholarship, there remains limited practical analysis of how it affects real access to justice in developing judicial systems, especially in India. Most studies focus on efficiency, but fewer critically examine digital inequality, legal literacy, and constitutional safeguards.

Meaning of AI in Judiciary

Artificial intelligence in judiciary means the use of computational systems and machine learning tools to assist courts in performing legal and administrative functions. It is important to

understand that AI does not necessarily mean replacing judges. In most practical situations, AI acts as a supporting instrument that helps judicial officers manage information more efficiently.

AI systems can examine large amounts of legal data within seconds. For example, software can identify similar judgments, search precedents, classify petitions, and organize case files more quickly than manual methods. Judicial work traditionally depends heavily on reading, comparison, and structured legal analysis, and AI can reduce this burden significantly.

However, legal decision-making is not merely technical. Judicial reasoning requires interpretation, balancing of rights, and understanding of social realities. Therefore, AI may assist judicial work, but final legal authority must remain with human judges.

Major Functions of AI in Judiciary

- Legal research assistance
- Judgment database analysis
- Document classification
- Scheduling and case prioritization
- Automated legal translation
- Digital record management

Concept of Access to Justice

Access to justice is a foundational principle of legal democracy. It means that every individual, regardless of social or economic condition, must be able to approach legal institutions and receive fair remedies. Justice is meaningful only when it is practically available.

Many barriers affect access to justice:

- High legal expenses
- Delay in court proceedings
- Lack of legal awareness
- Language barriers
- Distance from judicial institutions

In many cases, poor and rural populations face difficulty even in understanding legal procedures. Therefore, justice is often available formally but inaccessible practically.

AI becomes important because digital systems can reduce many procedural obstacles. Legal information can be made available through online platforms, automated assistance, and simplified communication systems.

AI Applications in Judicial Systems

Legal Research and Precedent Identification

One of the strongest uses of AI is legal research. Judges and lawyers often need to examine hundreds of previous decisions before deciding a matter. AI-based databases can identify relevant judgments instantly. This reduces time spent on repetitive searching and allows deeper focus on legal reasoning.

Case Management and Backlog Reduction

AI can improve internal court administration by:

- identifying urgent matters
- grouping similar cases
- tracking adjournments
- managing hearing schedules

This directly helps reduce pendency.

Predictive Analytics

Some legal systems use predictive tools to estimate possible outcomes based on past decisions. These tools help lawyers understand litigation risks and may encourage settlements. However, predictions should never replace judicial discretion.

Virtual Courts and Online Hearings

Digital hearings became highly important during emergencies. Virtual systems increased continuity of justice delivery.

Language Translation

AI-based translation systems help citizens understand legal documents in multiple languages.

AI in Indian Judiciary

Supreme Court of India has actively encouraged judicial digitization.

Important reforms include:

- e-filing systems
- virtual court hearings
- digital records
- online case tracking

A major development is SUVAS (Supreme Court Vidhik Anuvaad Software), which helps translate judgments into regional languages. This is highly important in a multilingual country because language often becomes a barrier to justice. During the pandemic period, virtual hearings proved that digital infrastructure can preserve judicial continuity even during national disruption.

Comparative International Experience

United States: United States uses algorithmic systems in criminal justice, especially risk assessment. COMPAS became a major example because it estimated reoffending risk. However, criticism emerged because bias was found in predictive outcomes.

China: China has developed smart courts where AI supports filing, evidence review, and online proceedings.

Europe: European legal systems focus strongly on privacy, transparency, and human oversight.

These comparative examples show that AI must always reflect constitutional culture.

Benefits of AI in Judiciary

1. *Faster Judicial Process*: AI reduces administrative burden and speeds up procedural stages.
2. *Lower Litigation Costs:* Research and documentation become cheaper.
3. *Better Public Accessibility:* Digital legal services help ordinary citizens access information.
4. *Improved Transparency:* Electronic systems create traceable records.
5. *Efficient Resource Use:* Judges can focus more on complex reasoning rather than repetitive work.
6. *Efficient Resource Use:* Judges can focus more on complex reasoning rather than repetitive work.

Key Benefits Summary

- Speed
- Accuracy
- Administrative efficiency
- Wider reach
- Better monitoring

Challenges and Risks

- *Algorithmic Bias*: AI learns from past data. If historical judgments contain social bias, AI may reproduce unfair outcomes.
- *Lack of Explainability*: Some AI systems produce results without clear reasoning.
- Threat to Judicial Independence: Judges may unconsciously rely too heavily on machine recommendations.
- *Privacy Concerns*: Judicial records often contain sensitive personal information.
- *Digital Divide*: Not all citizens have equal digital access.

Ethical Concerns

Justice requires more than efficiency. It requires moral understanding.

Machines cannot fully understand:

- emotional suffering
- social vulnerability
- personal circumstances

A human judge can interpret silence, conduct, and context. AI cannot fully replicate such sensitivity. Therefore, AI must remain advisory, not decisive.

Constitutional Perspective

Constitutional justice depends on:

- fair hearing
- equality before law
- reasoned decisions
- accountability

If AI influences judicial outcomes without transparency, constitutional legitimacy becomes weak. Therefore, every AI system used in courts must remain reviewable and accountable.

Suggestions and Recommendations

- *AI should remain under judicial supervision*: Human judges must retain final authority.
- *Transparent algorithms are necessary*: AI systems used in courts must be explainable.
- *Judicial training is essential*: Judges and lawyers need technical literacy.
- *Rural digital legal access must improve*: Technology should reach marginalized communities.

- *Strong legal regulation is required*: Clear rules must govern judicial AI use.

Critical Analysis

AI can strengthen courts, but justice cannot be reduced to computation. Judicial decisions involve law, facts, values, and human consequences. A machine identifies patterns; a judge interprets life circumstances. The best future model is not automated justice but assisted justice, where technology supports human reasoning.

Conclusion

Artificial intelligence has the potential to transform judicial administration by reducing delay, improving efficiency, and expanding legal accessibility. It can support legal research, case management, translation, and public legal awareness. At the same time, justice remains a deeply human constitutional responsibility that requires fairness, interpretation, empathy, and accountability.

AI should therefore be used carefully as a supportive legal instrument rather than as a substitute for judicial authority. With ethical safeguards, transparency, and human oversight, AI can contribute meaningfully to stronger access to justice in modern legal systems.

BIBLIOGRAPHY

Russell and Norvig, *Artificial Intelligence: A Modern Approach*

- Judicial reform reports of Supreme Court of India
- Legal technology journals
- Comparative studies on digital courts
- AI ethics and law research articles

****

Artificial Intelligence in Judiciary and Access to Justice

By Ashok Kumar Yadav

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: dr.ashok.yadav.79@gmail.com

Abstract

The integration of Artificial Intelligence (AI) into judicial systems represents one of the most transformative developments in modern legal frameworks. Across the globe, courts and legal institutions are increasingly adopting AI-driven tools to enhance efficiency, reduce case backlogs, and improve access to justice. This paper critically examines the role of AI in the judiciary, focusing on its potential to democratize legal services while addressing inherent challenges such as algorithmic bias, transparency, and ethical concerns. Drawing upon global practices, including developments in India, Singapore, and China, the paper evaluates whether AI can bridge the justice gap or risks exacerbating existing inequalities. It concludes with recommendations for responsible implementation to ensure that technological advancement aligns with the core principles of justice.

1. Introduction

Access to justice is a cornerstone of democratic societies, ensuring that individuals can seek and obtain remedies through formal or informal institutions of justice. However, traditional judicial systems worldwide face persistent challenges, including delays, high costs, procedural complexity, and limited accessibility.

Artificial Intelligence (AI), defined broadly as computational systems capable of performing tasks requiring human intelligence, has emerged as a powerful tool to address these challenges. From legal research automation to predictive analytics, AI is transforming the functioning of courts and legal professionals.

Recent global reports highlight that AI has the potential to improve efficiency, fairness, and accessibility in justice systems, though its adoption remains uneven across jurisdictions ([OECD][1]). This paper explores the intersection of AI and access to justice, analyzing both its transformative promise and the risks it posesthe perspective of the sociology of the future, which investigates how present practices and discourses influence different possibilities for the future, Halford and Southerton (2023) argue that the construction of the future should not be seen as a simple temporal sequence or linear causality, in which the past determines the present and, by extension, projects the future. They point out that this linear approach can restrict the ability to

imagine and create scenarios, suggesting instead the exploration of futures that go beyond current patterns and open up space for new ways of thinking and acting.

From this perspective, building a path for the proper application of AI in the judiciary must be oriented towards the future, not as it probably will be, but as it could or should be. Projecting expectations and identifying fundamental principles can help to create alternative scenarios that guide actions in the present and direct the construction of futures aligned with the objectives of judicial provision. To do this, it is necessary to adopt a critical approach that analyzes and considers the impacts of these innovations.

Understanding these implications involves questioning the underlying assumptions and assessing the wider social and ethical effects, as discussed by Foucault, Marx and the first-generation thinkers of the Frankfurt School. This approach must recognize that the impact of AI on the judiciary is not limited to its institutional boundaries, but affects society as a whole, considering the role of this power in protecting fundamental rights and freedoms. In this context, critical theory provides a framework for examining the complexities and risks associated with AI, allowing for reflections that question established truths.

According to Horkheinier and Adorno (1973), this critical perspective helps to broaden the understanding of reality and promote a dialectic that challenges and reconsiders assumptions, including those that are widely accepted. Thus, given the ethical, social and conceptual challenges that AI imposes on the justice system and society in general, it is imperative to deepen theoretical analysis in order to better understand these complexities. In this context, this theoretical essay discusses the practical implications of AI in the judiciary, culminating in three research proposals that seek to explore and foster debate about the challenges of this scenario.

To achieve this goal, the essay interacts with critical theory and the challenges of applying AI systems in the judiciary. Considering AI's ability to shape reality and influence future ways of life and social structures (Lindgren, 2023), this text proposes a space for reflection that aims to build new forms of knowledge and perspectives on the future. It begins with an overview of what critique is, subsequently focusing on critical theory and, more specifically, the critical theory of technology, providing the necessary theoretical context to discuss the implications of AI in the Judiciary.

2. Conceptual Framework: AI and Access to Justice:

A) Understanding Access to Justice -

Access to justice encompasses the ability of individuals to obtain fair outcomes through legal processes. It includes:

- Legal awareness
- Availability of legal services
- Affordability
- Timely resolution of disputes

Despite being a fundamental right, access to justice remains elusive for many, especially in developing countries like India, due to systemic inefficiencies and socio-economic barriers ([Lex Localis][2]).

B) Artificial Intelligence in Legal Context -

AI in the judiciary involves technologies such as:

- Machine learning algorithms
- Natural language processing (NLP)
- Predictive analytics
- Automated decision-support systems

These technologies enable automation of repetitive legal tasks, thereby increasing productivity and reducing human error ([ResearchGate][3]).

3. Applications of AI in Judiciary:

A) Legal Research and Document Analysis-

AI-powered platforms can analyze vast legal databases, identify precedents, and summarize judgments in seconds. This significantly reduces the time required for legal research.

For example: AI tools assist in identifying relevant case laws, Automated summarization helps judges and lawyers process information efficiently.

B) Case Management and Court Administration

AI systems streamline case management by:

- Automating scheduling
- Tracking case progress
- Prioritizing urgent cases

Such applications help address the issue of judicial backlog, which is a major concern in countries like India.

C) Predictive Analytics -

AI can predict:

- Case outcomes
- Litigation risks
- Sentencing patterns

While controversial, predictive analytics can assist legal professionals in decision-making.

D) Virtual Courts and Online Dispute Resolution -

The COVID-19 pandemic accelerated the adoption of virtual courts, where AI tools support:

- Video hearings
- E-filing systems
- Digital evidence analysis

These innovations enhance accessibility, particularly for remote populations.

E) Assistance to Self-Represented Litigants -

AI-driven chatbots and legal assistants provide:

- Basic legal advice
- Document drafting support
- Guidance on court procedures

This is particularly important for individuals who cannot afford legal representation.

4. Global Perspectives on AI in Judiciary:

A) India - India has taken significant steps toward integrating AI in the judiciary:

- The Supreme Court's "SUPACE (Supreme Court Portal for Assistance in Courts Efficiency)" assists judges in legal research.
- AI tools are being used in various High Courts for case management.

AI has shown potential to address systemic issues such as delays and lack of infrastructure ([Lex Localis][2]).

B) **Singapore -** Singapore is a global leader in judicial innovation. AI is used primarily as an assistive tool rather than a decision-maker:

- Case summarization
- Evidence analysis

- Tools for self-represented litigants

This approach emphasizes augmentation rather than replacement of human judgment ([SSRN][4]).

C) China - China has implemented advanced AI systems in criminal justice, such as the "206 system":

- Assists judges and prosecutors.
- Automates aspects of case handling.

However, concerns exist regarding transparency and potential bias ([ScienceDirect][5]).

D) United States and Europe - Recent studies show increasing adoption of AI by judges, primarily for research and document review, though concerns about misuse persist ([Reuters][6]).

5. AI and Enhancement of Access to Justice:

A) Reduction in Costs - AI reduces legal costs by:

- Automating routine tasks.
- Minimizing reliance on expensive legal professionals.

This makes legal services more affordable.

B) Increased Efficiency - AI accelerates:

- Case processing,
- Legal research,
- Document review,

This leads to faster resolution of disputes.

C) Democratization of Legal Knowledge -

AI tools provide legal information to the public, empowering individuals to:

- Understand their rights,
- Navigate legal procedures.

D) Bridging the Justice Gap -

AI can significantly reduce the "justice gap" — the disparity between legal needs and available services — especially for marginalized communities.

6. Challenges and Risks:

A) Algorithmic Bias- AI systems may reflect biases present in training data, leading to:

- Discriminatory outcomes,
- Unfair judgments.

This undermines the principle of equality before the law.

B) Lack of Transparency - Many AI systems operate as "black boxes," making it difficult to:

- Understand decision-making processes,
- Ensure accountability.

C) Ethical Concerns - Key ethical issues include:

- Delegation of judicial decision-making to machines,
- Erosion of human judgment,
- Privacy concerns.

D) Risk of Over-Reliance - Excessive reliance on AI can lead to:

- Reduced critical thinking among legal professionals,
- Blind acceptance of AI-generated outputs.

E) Data Privacy and Security - Judicial systems handle sensitive information, making data protection crucial.

7. Legal and Regulatory Framework:

A) Need for Regulation - The integration of AI in judiciary requires:

- Clear legal frameworks,
- Ethical guidelines,
- Accountability mechanisms.

B) International Standards - Organizations like the OECD emphasize:

- Human-centric AI,
- Transparency,
- Fairness.

C) Indian Scenario - India is still in the early stages of regulating AI in the judiciary. A cautious approach is being adopted to ensure judicial integrity ([The Times of India][7]).

8. Ethical Considerations:

A) Human Oversight - AI should assist, not replace, human judges.

B) Fairness and Equality - Systems must be designed to avoid discrimination.

C) Accountability - Clear responsibility must be established for AI-generated decisions.

D) Transparency - AI processes should be explainable and auditable.

9. Future Prospects:

A) Advanced Legal AI Systems - Future developments may include:

- Fully automated legal reasoning systems,

- Integration with blockchain for secure records.

B) Personalized Legal Assistance - AI could provide tailored legal advice based on individual circumstances.

C) Expansion of Online Dispute Resolution - AI-driven platforms may handle:

- Small claims disputes,
- Consumer grievances.

D) Collaboration between Law and Technology - Interdisciplinary collaboration will be essential for responsible innovation.

10. Recommendations:

To ensure effective implementation of AI in judiciary:

1. Develop Comprehensive Legal Frameworks,
2. Ensure Human Oversight in Decision-Making,
3. Promote Transparency and Explainability,
4. Invest in Training for Legal Professionals,
5. Address Bias through Diverse Data Sets,
6. Strengthen Data Protection Measures,
7. Encourage Public Awareness and Accessibility.

11. Conclusion:

Artificial Intelligence has the potential to revolutionize judicial systems and significantly enhance access to justice. By improving efficiency, reducing costs, and democratizing legal knowledge, AI can help bridge longstanding gaps in justice delivery.

However, its adoption must be approached with caution. Issues such as bias, lack of transparency, and ethical concerns cannot be ignored. The challenge lies in balancing technological innovation with the fundamental principles of justice.

Ultimately, AI should serve as a tool to augment human judgment, not replace it. With appropriate safeguards, policies, and ethical frameworks, AI can play a pivotal role in creating a more accessible, efficient, and equitable justice system.

REFERENCES

1. OECD, AI in Justice Administration and Access to Justice (2025) ([OECD][1])
2. Khatana & Choudhary, Role of AI in Enhancing Access to Justice in India ([Lex Localis][2])
3. Srivastava & Srivastava, AI in Judicial Processes ([ResearchGate][3])

4. Remolina, AI in Singapore Judiciary ([SSRN][4])

5. Laptev & Feyzrakhmanova, AI in Justice Systems ([Springer][8])

6. Reuters, AI Adoption by Judges ([Reuters][6])

7. ScienceDirect, China's AI Criminal Justice System ([ScienceDirect][5])

****

Artificial Intelligence in Corporate Governance and Compliance

By Mohini Khushal Paliwal

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: mohinipaliwal93@gmail.com

Introduction

Corporate governance is no longer just about quarterly meetings and dusty physical binders; it is entering a transformative phase. As a Company Secretary and law student, I find it fascinating that Artificial Intelligence is now acting as a "Digital Trustee."

In the Indian corporate landscape, AI is shifting the boardroom from reactive oversight where we look at what went wrong to predictive systems that tell us what *might* go wrong.

This research examines how "Thinking Compliance" can prevent the next corporate scandal before it even begins.

Augmented Intelligence: The Board's New Co-Pilot

AI is not replacing our Board of Directors but acting as a high-speed "Co-Pilot."

- **Strategic Scenario Modelling:** Boards are now using AI to stress-test decisions, simulating thousands of market variables in real-time something impossible for a human brain alone.
- **Predictive Risk Oversight:** Instead of waiting for annual audits (which often feel like an autopsy of past mistakes), AI flags "early warning signals" in milliseconds.

RegTech: The Death of the Compliance Checklist

We are seeing the end of the "checkbox exercise."

- Automated Monitoring: Platforms like Compliance.ai now track global law changes and map them to company policies automatically.
- Real-time Anomaly Detection: In India, our leading banks are already using AI risk engines to catch suspicious activity and insider trading as it happens.

The "Black Box" & The Burden of Liability

This is where the law gets complicated. The "Accountability Void" created by opaque algorithms is a major concern for future legal professionals.

- *Director Liability:* Under Section 166 of the Companies Act, directors must show "reasonable care." If a "Black Box" AI makes a biased decision, can a director simply say, "The machine did it"? My research suggests the answer is no.
- *Algorithmic Bias:* Skewed data can lead to gender or credit bias, exposing companies to massive fines and ethical crises.

Role of Judiciary: Policing the Corporate Machine

- The Indian Judiciary and SEBI are stepping up. Courts are making it clear: directors cannot "blindly rely" on automated reports. Human oversight must remain the final check. We are essentially entering a "Machine-vs-Machine" regulatory environment.

Conclusion & Suggestion: Ethical by Design

The future lies in Explainable AI (XAI) —where the logic is transparent to everyone. Indian corporations should establish an AI Risk and Ethics Committee (AIREC). Much like an Audit Committee, this body would ensure every AI model used by the company is logged and risk assessed. In this AI-driven era, the most successful companies won't just be the ones with the best tech, but the ones with the strongest Digital Integrity.

Bibliography

Textbooks

1. Jha, Aruna and Bhatia, Anuj, Taxmann's Corporate Governance (2nd ed., Taxmann Publications 2026).

2. Ryder, Rodney D., Artificial Intelligence and Law (Challenges Demystified) (2nd ed., Law & Justice Publishing Co. 2024).

Journal Articles

1. Institute of Company Secretaries of India (ICSI), "Artificial Intelligence (AI) in Corporate Governance," Chartered Secretary Journal (August 2024).

"AI-Powered Decision-Making in Corporations," International Journal of Law Management & Humanities (August 2025).

****

Artificial Intelligence and Information Technology Act, 2000

By Nishant Vishnu Parulekar

S.Y. LL.M. Sem. 3
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: parulekarnv@gmail.com

Introduction:

Artificial Intelligence (AI) is the study of the nature of human intelligence and the creation of intelligent artifacts that can do jobs that need intellect when executed by humans. Any significant technological innovation brings with it a variety of problems and possibilities. While AI is expected to promote significant economic growth, it is also expected to result in the loss of employment. As a result, the requisite policy and infrastructure must be in place.

Even though AI has been a subject of research because the concept was created in 1956, it has only lately led to the widespread implementation of intelligent applications for various disciplines and jobs. The work in the late 1950s and early 1960s was focused on the creation of broad procedures that could be used in a variety of fields. The findings were not reassuring, prompting the field's first winter, which began in the late 1960s and lasted into the late 1970s.

Cyber Law in 2026 is no longer just about "unauthorized access"; it is about Algorithmic Governance. AI impacts Cyber Law by shifting the burden of proof. Traditionally, a prosecutor had to prove a human sent a malicious packet. Today, the law must determine if the training data of an AI was inherently biased toward criminal output. The "Electronic Personhood" Debate Under Section 2(1)(t) of the IT Act, "electronic record" is defined broadly. LLM scholars argue that if an AI generates an autonomous record leading to a crime, the AI acts as a "de-facto agent."

Artificial intelligence is a man-made innovation

It might alternatively be defined as any type of man-made organism capable of using the functioning capacity to perform cognitive activities such as abstract reasoning and logical deduction, as well as learning new information on its own. Using these cognitive powers, this organism would also be able to develop long-term plans for the future. Of fact, until we get to the point when the programs we construct have true intelligence, this term won't fully explain AI. Current AI is well below this criterion; most algorithms can only work independently in a very limited domain, severely limiting their utility. Artificial intelligence platforms have subsequently acquired tremendous traction in this incredibly innovative society over the last decade, with highly technical and sophisticated technology being applied to construct inventive, intelligent, and

intellectual AI systems. As a result, the day is not far away when these intelligent bots will begin to create useful and amazing inventions without the assistance of human brains.

Some AI researchers believe that anything that replicates human intellect in any manner is "artificial intelligence," while others believe that the only "artificially intelligent" systems are those which replicate how individuals understand. Many "artificially intelligent" algorithms are classified as complicated informational networks by those in the domain of information networks with "real" artificial intelligence designated for meta-level strategic thinking that is frequently referred to as "wisdom."

Artificial intelligence (AI) has advanced and become more widely used in recent years. Just about every industry is hurrying to take advantage of AI's capabilities, investing vast sums of money in the process. The potential for technology to promote productivity and creativity across a business is enormous. However, as the use of this technology grows, so do its drawbacks. Most programmers are often unaware of how an AI learns, adapts to new situations, and makes decisions. It would be difficult to decide who should be held responsible if something went wrong in this manner.

Self-driving system innovation in AI (artificial intelligence)

Human decision-making will undoubtedly drift into the context when AI develops at a quicker rate. In this setting, it is unavoidable that specific AI systems may fail to complete tasks. We will see an escalation in disagreements as a result of AI shortcomings in this area. An automated vehicle has murdered a woman in an Arizona roadway. When the first autonomous vehicles appeared on public roads in 2013, the main objective of automakers was to develop a self-driving car system that is plainly and demonstrably safer than a typical human-controlled vehicle. Artificial intelligence and legal liability We can draw our legal rights and responsibilities from the law. Following the law entails carrying out responsibilities and receiving benefits. As a result, legal conception for AI raises the topic of whether AI should have legal rights and responsibilities. Although the answer may seem progressive and advanced, a thorough examination should include a consideration of AI's legal personality, as this would hold AI responsible for its actions

Role of Information Technology Act, 2000 in AI

To assess the offence and the penalty for abettors, the IPC's principle of probable cause responsibility or abetment is adequate. The IT Act, 2000 broadened the concept of abetment to also include acts or omissions through the use of encryption or any electronic methodology, to

keep up with the schedule of technological advancement. IT ACT 2000 (hereinafter referred to as the IT Act), which attempts to govern all elements of modern-day technology, describes the computer and relevant terms such as software. However, the Internet of Things, data analytics, and AI are not covered by the IT Act, nor are the liabilities that may be committed by humans using these IT systems (specifically AI software). Given that the primary goal of the Act was to give a legal character to digital signatures and electronic records, the Indian legislature did not place a strong emphasis on the scope of responsibility deriving from AI acts and countermeasures

Effects on Legal Practice

Shift in Liability: From "Intent-based" to "Risk-based" liability.

Predictive Policing: Law enforcement using AI to predict "Crime Hotspots," raising significant human rights concerns under Article 21 of the Constitution.

Criminal liability: Criminal liability for AI will necessitate the AI's legal personhood and will be equivalent to the commercial criminal liability which some legal regimes recognize. Corporate responsibility is seen as a fabrication; it is an interpreted type of liability in which the company is held liable for the actions of its individuals. Unlike businesses, AI would be made responsible for its actions rather than being responsible for the actions of others. Even while it appears to be a straightforward answer that does not violate the rule of law, it demands a more thorough examination.

Why do criminal laws carry a different approach for artificial intelligence?

When a person or individual executes a crime towards any other individual, he or she will undoubtedly be liable to the criminal laws that have been established in that country. Whenever it concerns artificial intelligence, therefore, any criminal activity perpetrated towards humanity by it may not be classified as a traditional crime, even though it has been committed with the help of a software or a robot that is not related to the person who created the software, program, or machine. Consequently, to identify the criminal liability of crimes perpetrated by artificial intelligence, we must first evaluate whether artificial intelligence is a legal entity in and of as a whole as well as what the major obstacle has been in establishing and identifying the actus reus and mens rea, or the act and mental (intention) component, respectively.

There is no particular Indian legislation dealing with the criminal or civil liability of such acts perpetrated with AI in the Indian regulatory system. As a result, it is important to note that India is one of the countries that is heading towards its implementation of the policies that will

allow AI to be integrated into the entire government system, but at the same time, the legal system is neglecting the potential negative consequences of future cybercrimes committed using these highly technological and advanced AI systems.

Artificial intelligence controversies TESLA

"Every coin has 2 sides", the adoption of AI in the workplace causes certain problems that are regarded as the largest scandals in humanity. Everybody can acquire complete information about controversial scandals at a certain moment, thanks to the Internet and its data storage potential.

Tesla settled two lawsuits with the U.S securities and exchange commission (SEC) Elon Musk, the CEO of Tesla, is among the greatest well-known hi-tech businesses in the AI and Big Data fields. With his whimsical tweet suggesting the privatization of Tesla at $420 per share in August 2018, Elon Musk had to face a lawsuit from the US Securities and Exchange Commission (SEC). It was one of the most widely publicized scams, with millions of people following it throughout the world. Elon Musk claimed that a shareholder's vote will be conducted before Tesla became a private corporation and that the decision was taken because the strain of being a public firm caused numerous diversions, which are not beneficial to future profitability.

The SEC has brought a lawsuit over Musk, charging that he made false and deceptive representations in a tweet in which he did not check with the stakeholders before naming certain verified identities. The lawsuit was settled in September, and while Elon Musk did not accept or deny the charges, he was forced to stand down as CEO and become chairman of Tesla's board of directors for three years.

Elon was hit with a huge $20 million fine, while Tesla was hit with a $20 million fine but no charges of fraud. In December 2018, he stated that the SEC is doing an excellent job as the short seller Enrichment Commission. In February 2019, the SEC filed a complaint alleging that he was in contempt of federal court for blatantly violating the conditions of his Tesla agreements. The lawsuit is still ongoing, and the ultimate decision is still pending.

Judiciary's role in determining responsibility

The Indian judiciary is the only sign of hope left in the Indian legal system for dealing with these instances due to the legislative vacuum, the formulation of final penalty, and the criminal/civil liability of such acts perpetrated by AI systems, software, and robots against other humans. Even though there has yet to be a substantial landmark ruling on the guidelines for the

use of artificial intelligence software or robots to prevent the commission of any criminal or civil violation against others, the judiciary is expected to do so with the rapid advancement of artificial intelligence to transfer such regulations and judicial precedents from which the use of artificial intelligence could be changed immediately by identifying the criminal and civil liability of such artificial intelligence systems that may trigger harm or damage to other individuals through numerous unethical practices such as phishing, hacking and data theft, etc.

Conclusion

A future filled with competent AI-powered robots and technologies may appear frightening at first, but some believe that our future is bright, and the possibilities are far more than we can now grasp. Rather than discussing the potential benefits of AI and how we might utilize it to better ourselves, create an ideal society, and even explore other worlds, I've recently seen experts explaining the perils of AI and painting a picture of a Terminator-style doomsday scenario. This negative perspective is counterproductive and it should not allow it to stifle AI growth. Today, AI is not recognized as a separate entity under both national and international law, which means it cannot be held liable for the devastation it causes. As a result, the principle guaranteed by Article 12 of the United Nations Convention on the Use of Electronic Communications in International Contracts, which states that the person at whose behest the system was configured must ultimately be held liable for any act done or message generated by that system, may be extended to AI liability

Suggestions

- To be vigilant and take action against Cybercrime and report the incident of cyber fraud to cyber police by written complaint to cyber cell in your region.
- To avoid or block unattended or spurious and vague calls starting with international code number other than Indian code +91 and avoid unknown numbers especially for senior citizens.

****

Artificial Intelligence in Judiciary and Access to Justice

By Shivani Shantaram Tiware

F.Y. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon.
Email: shivanitiware3@gmail.com

Abstract

The Artificial Intelligence (AI) is playing a transformative role in modern judicial systems by enhancing the efficiency, transparency, and accessibility of legal processes. In the context of access to justice, AI –powered technologies such as legal research tools, case management systems, virtual courts, and online dispute resolution platforms are helping to reduce delays, lower costs, and make legal services more widely available. These innovations are particularly beneficial for marginalized and underprivileged communities who often face barriers in accessing traditional legal systems. At the same time, the integration of AI in the judiciary raises important concerns related to data protection, algorithmic bias, accountability, and ethical decision – making. The risk of over-reliance on automated systems may also impact judicial independence and fairness. Therefore, it is essential to ensure that AI is used as a supportive tool rather than a replacement for human judgment.

Keywords*: artificial intelligence, modern judicial, algorithmic bias, replacement human judgement, ethical decision making, forensic technology*

Introduction

The integration of Artificial Intelligence (AI) into the judicial system represents a transformative shift in the administration of justice. Traditionally, courts across the world have struggled with issues such as case backlogs, delays, high litigation costs, and limited accessibility for marginalized communities. In this context, AI emerges as a powerful technological tool capable of enhancing efficiency, transparency, and inclusivity in the legal system. AI refers to the simulation of human intelligence in machines, that are programmed to think, learn, and make decisions. Within the judiciary, AI can assist in various functions such as legal research, case management, predictive analysis, document review, and even supporting judicial decision – making. Technologies like machine learning, natural language processing, and data analytics are increasingly being used to streamline judicial processes and reduce human workload.

In India, initiatives like the e-Courts Project and the use of AI tools such as SUPACE and SUVAS demonstrate the growing judiciary. These tools assist in case management, translation of legal documents, and improving overall court efficiency.

However, while AI offers numerous benefits, its use in the judiciary also raises important concerns. Issues related to data privacy, algorithmic bias, lack of transparency, and the potential erosion of judicial discretion must be carefully addressed. The human element in judicial decision-making such as empathy, ethical reasoning, and contextual understanding cannot be fully replaced by machines.

In conclusion, AI has the potential to revolutionize the judiciary by making it faster, more efficient, and more accessible. However, its implementation must be balanced with safeguards to ensure fairness, accountability, and the protection of fundamental rights. The future of justice lies not in replacing human judges with machines, but in creating a collaborative system where AI supports and enhances human decision making, thereby strengthening access to justice for all.

Applications of AI in Judiciary and Access to Justice

AI Applications in the Judiciary

Judicial systems worldwide are using AI to manage the bottleneck of voluminous case files and procedural delays. Automated filing and scrutiny AI tools (such as those developed by IIT Madras for the Indian Supreme Court) now flag defects in e-filing automatically, reducing the time registry staff spend on manual checks. Algorithms predict case duration and optimize court calendars to minimize adjournments and judge- shopping.

Transcription and Translation: Real time ASR tools like ASR SHRUTI provide near real time voice to text transcription of oral arguments, which are released publicly for transparency. Judgment Translation AI bridges linguistic barriers by translating complex legal judgments into regional languages, making the law understandable to a wider population.

LegRAA and Case Mapping Assistants like legal research analysis assistant (LegRAA) and case mine help judges navigate decades of case law, mapping relationships between precedents and extracting relevant legal points without replacing the judge final analysis.

Access to Justice

For the average citizen, the legal wall is often too high due to cost and complexity. AI is lowering this wall. Legal Aid Chatbots public – facing bots assist litigants with basic procedural questions- how to file a claim, where to go, and what documents are needed reducing the need for

expensive initial consultations. ODR (Online Dispute Resolution) AI driven platforms handle small claims or 'Trival' cases through automated simulation, helping parties reach settlements without a physical court date. Predictive Insights Tools like Digilawyer or Bharatlaw provide risk analysis, helping small firms and solo practitioners offer more historical data.

AI Powered Legal Research

AI tools can analyze vast database of case laws, statutes, and legal precedents within seconds. Lawyers and judges can quickly find relevant judgments. It reduces time and cost involved in manual research. It also improves accuracy and consistency in legal arguments. E.g. Platforms like SUPACE assist judges by identifying relevant case materials.

Case Management Systems

- AI helps courts manage cases efficiently.
- Automates scheduling, tracking, and document handling.
- Prioritizes urgent cases.
- Reduces delays and backlog.
- In India, the e-Courts Project uses digital tools to streamline court processes

Predictive Analytics

- AI can predict possible case outcomes based on past data.
- Helps lawyers prepare better strategies.
- Assists judges in understanding trends.
- Promotes consistency in decisions.
- However, it should only assist not replace judicial reasoning.

The 2026 Legal Landscape

In 2026, the consensus among legal experts is that AI is an assistive rather than decisive force. The American Bar Association (ABA) and other global bodies have established that while AI can draft, research, and organize, human supervision (the human –in-the-loop) is a mandatory ethical requirement.

Challenges of AI in Judiciary and Access to Justice

Bias and Discrimination:

- AI systems depend on historical data. If past judicial data contains bias (based on caste, gender, class, or race), AI may reproduce or even amplify these biases.

- Risk of unfair decisions.
- Discrimination against marginalized groups.
- Lack of neutrality in outcomes
- E.g. If previous judgments show bias against certain communities, AI tools may recommend similar outcomes.

Lack of Transparency (Black Box Problem)

- Many AI systems, especially machine learning models, function as "black boxes", meaning their decision-making process is not easily understandable.
- Judges and lawyers may not know how AI reaches a conclusion.
- Difficult to challenge AI-based decisions.
- Reduces trust in the judicial system.

Accountability Issues

- When AI makes an error, it is unclear who is responsible:
- Judge using the AI?
- Developer of the AI system?
- Government or institution?
- This creates legal uncertainty and complicates liability.

Data Privacy and Security

- AI requires large amounts of sensitive legal data.
- Risk of data breaches.
- Misuse of personal or confidential information.
- Violation of privacy rights.
- In judicial systems, data often includes personal, financial, and criminal records.

Digital Divide

- Not everyone has equal access to technology.
- Rural and poor populations may lack internet or digital literacy.
- Over-reliance on AI may exclude vulnerable groups.
- Creates inequality instead of improving access.

Key Benefits of AI in Judicial System and Access to Justice

Faster Case Disposal

- AI helps reduce delays in courts by automating routine tasks.
- Quick legal research and case analysis.
- Faster drafting of orders and judgments.
- Reduces case backlog.
- This is especially important in countries like India, where courts face huge pendency.

Improved Access to Justice

- AI makes legal services more accessible to people.
- Online legal assistance and chatbots.
- 24/7 availability of legal information.
- Helps people who cannot afford lawyers.
- People in rural or remote areas can access justice through digital platforms.

Cost Reduction

- AI reduces the cost of legal services.
- Automation lowers legal fees.
- Reduces administrative expenses.
- Affordable legal help for weaker sections.

Better Case Management

- AI helps courts manage cases more effectively.
- Automated Scheduling of hearings.
- Tracking case progress.
- Predicting case timelines.

Support for Judges (Decision Assistance)

- AI acts as a support system for judges.
- Provides relevant precedents.
- Suggests legal reasoning.
- Saves time in complex cases.

- Important: AI assists but does not replace judges.

Comparative Legal Perspectives

A Comparative perspective on the judiciary and access to justice reveals how different legal traditions and nations are navigating the tension between technological efficiency and human rights. While the goal of reducing case backlog is universal, the regulatory approaches vary significantly by jurisdiction.

Civil Law VS Common Law Approaches

In Civil Law jurisdictions (such as france or Germany), the integration of AI is often more centrally regulated, focusing on the preservation of the "inquisitorial" role of the judge. These systems prioritize strict compliance with pre-defined codes; thus, AI is used primarily to ensure evidence meets high statutory threshold. Conversely, Common Law jurisdictions (like the Us, UK and India) leverage AI to navigate the vast sea of "precedents".

The Global Regulatory Shift (EU and Beyond)

The EU AI Act has set a global benchmark by classifying AI used in the "administration of justice" as High-Risk. These comparative legal standard forces developers to prove their algorithms are free from bias before they can be used in a courtroom. While developing nations often prioritize AI for efficiency to solve chronic delays, Western jurisdictions are currently more focused on accountability and the "Right to a Human Judge", ensuring that the "Black Box" of an algorithm never replaces the reasoned explanation required by constitutional law.

Future Outlook

The future of AI in the judiciary is moving away from "Futuristic Speculation" and toward becoming a standard operational layer. By 2026, the focus has shifted from whether AI should be used to how it can be integrated responsibly to clear massive backlog and bridge the gap between citizens and the law.

Administrative Efficiency and Case Management

AI is becoming the primary engine for tackling judicial delays through "smart" case management. Modern systems now use predictive analytics to prioritize urgent cases, automate court scheduling, and flag procedural defects in filings before they ever reach a clerk's desk. This automation reduces the "friction of litigation," allowing judges to focus on substantive legal reasoning rather than administrative bottlenecks.

Real Time Transcription and Language Accessibility

One of the most significant leaps in access to justice is the deployment of AI-powered translation and transcription tools. In multilingual legal system, AI now provides near real-time translation of court proceedings and legal documents into regional languages. This ensures that litigants who do not speak the court's primary language can understand their own hearings, effectively democratizing legal information that was previously lacked behind linguistic barriers.

AI-Augmented Legal Research

For legal professionals, the "search and find" era of research has evolved into an law, identifying subtle patterns in judicial precedents that human researchers might miss. This levels the playing field for smaller law firms and self- represented litigants who may not have the resources of a large legal team but can now access high-level legal insights through AI assistants.

Conclusion

Artificial Intelligence is reshaping the judicial system by making it faster, more efficient, and more accessible. In countries like India, where court face heavy case backlog and delays, AI offers practical solutions such as e-courts, legal research tools, and online dispute resolution systems. These innovations help reduce costs, improve transparency, and extend legal services to underserved and remote populations.

Therefore, the future of AI in the judiciary lies in responsible and balanced adoption. AL should function only as an assistive tool, while human judges retain final authority. Strong legal framework, ethical guidelines, and data protection measures- supported by institutions such as the European Commission and national bodies-are essential to ensure accountability and trust.

In conclusion, AI has the potential to transform access to justice, but it must be used carefully to uphold the rule of law. The ultimate goal is not to replace human judgment, but to enhance the delivery of fair, inclusive, and timely justice for all.

REFERENCES

1. Tomorrow's Lawyers – by Richard Susskind, Discusses the future of legal profession with AI and automation.
2. Niti Aayog – National Strategy for Artificial Intelligence (2018). Covers AI applications in governance, including judiciary.
3. Supreme Court of India – SUPACE (AI initiative). AI Tool to assist judges in legal research.

4. European Commission – Ethics Guidelines for Trustworthy AI (2019). Focus on fairness, accountability, and transparency.
5. World Bank – Justice for all Report (2019). Discusses Access to justice and role of technology.
6. "Artificial Intelligence and the law: An Overview" – Harvard Journal of Law & Technology.
7. AI in the Courtroom: A Comparative Analysis" – Legal Studies Journal.
8. State V. Loomis (2016, USA). Use of COMPAS AI tool in sentencing raised fairness concerns.
9. OECD – Ai Policy Observatory. Global AI governance frameworks.
10. "According to NITI Aayog (2018), AI can improve judicial efficiency in India".
11. World Bank- Justice for All Report (2019). Discusses access to justice and role of technology.
12. Information Technology Act 2000. Governs Digital Infrastructure relevant to AI.
13. Draft AI regulations and policy papers in India (MeitY initiatives).
14. A, S., & Choudhary, G. (2023). Exploring the use of AI in legal decision making: Benefits and ethical implications Scheel Connect. https://doi.org/10.57029/scheel14
15. Stahl, B. C. (2021). Ethical issues of AI. Springer Briefs in Research and Innovation Governance, 35-53.

****

Ownership of Artificial Intelligence Generated Works

By Neha Waghmare

F.Y. B.A. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon.
Email: nehawaghmare481@gmail.com

Abstract

Artificial intelligence has entered almost every creative domain today. Music, literature, artwork and even legal documents are now being generated partly or entirely by AI systems. This development has created a serious challenge for intellectual property law which was designed keeping human creators in mind. The question of who owns a work created by AI is one of the most pressing legal issues of our time. This paper examines the current state of copyright and intellectual property law in relation to AI-generated works, looks at how different countries are approaching the issue, and discusses possible frameworks that could be adopted going forward. The discussion also touches on ethical dimensions of the problem.

Keywords: *artificial intelligence, copyright, intellectual property, ai-generated works, authorship, ownership*

1. Introduction

We are living in a period of rapid technological change. Artificial intelligence tools such as ChatGPT, DALL-E, Midjourney, and Suno have made it possible for anyone to create sophisticated written content, visual art, and music within seconds. These tools do not simply copy existing work. They learn from enormous datasets and generate entirely new outputs that can be strikingly original. This has opened a fascinating but deeply complicated legal question. When a machine creates something, who does it belong to?

Traditional copyright law across the world is built on the idea that a human being creates something using their intellect, skill, and effort, and therefore deserves protection for that creation. The very concept of authorship assumes a thinking, feeling, intentional human mind behind a creative work. When an AI system produces a painting or writes a novel, none of these conditions seem to be fulfilled in the traditional sense. The AI has no intentions. It has no feelings. It does not seek recognition or financial reward. Yet its outputs can be commercially valuable, and someone is clearly benefiting from them.

This paper looks at this problem from multiple angles. It begins by explaining what AI-generated works actually are and how they differ from works created with AI assistance. It then examines the existing legal frameworks in India and other countries. It explores different theories of ownership that have been proposed, including granting rights to developers, users, or treating such works as being in the public domain. It also discusses the ethical concerns that arise and suggests what a suitable framework might look like.

2. Understanding AI-Generated Works

Before examining legal ownership, it is important to understand what exactly we mean by AI-generated works. There is actually a spectrum here rather than a simple binary. At one end, we have works where a human artist uses an AI tool as a minor aid, such as using software to auto-correct colors in a photograph or grammar in a document. In such cases, the human is clearly the primary creator and ownership is straightforward.

At the other end of the spectrum, we have works that are entirely generated by AI with minimal human input. A user might type a few words into an image generator and receive a fully rendered painting. The human has provided the prompt but the AI has made all the creative decisions regarding composition, color, style, and detail. Between these two extremes lie countless variations where humans and AI collaborate in different proportions.

The legal difficulty primarily arises in cases where the AI contribution is dominant. Large language models and generative AI systems are trained on massive amounts of human-created content. They learn statistical patterns from this data and use these patterns to generate new content. Technically speaking, they are not copying any single original work but creating something new based on patterns learned from many works. This process is sophisticated enough that the outputs can be genuinely surprising even to the developers of the AI system.

Modern AI systems like generative adversarial networks (GANs) and transformer-based language models produce content that passes many traditional tests for creativity and originality. This makes it harder to dismiss them as mere mechanical tools and raises genuine questions about how the law should treat their outputs.

3. Existing Legal Framework

3.1 The Position in India

In India, copyright is governed primarily by the Copyright Act, 1957. Section 13 of the Act grants copyright protection to original literary, dramatic, musical, and artistic works. The Act defines an author in Section 2(d) in different ways depending on the type of work. For literary or dramatic works the author is the person who creates the work. For computer-generated works, the Act specifically provides in Section 2(d)(vi) that the author shall be the person who causes the work to be created.

This provision is actually quite significant. India is one of the few countries that has expressly dealt with computer-generated works in its copyright legislation. Section 2(o) defines literary work to include computer programmes and databases. Reading these provisions together, it seems that Indian law would attribute the authorship of an AI-generated work to the person who causes it to be created, which could mean the user, the developer, or both. However, the Act was drafted long before modern AI systems existed and the courts have not yet definitively addressed this question in the context of generative AI.

The requirement of originality under Indian copyright law, as interpreted by the Supreme Court in Eastern Book Company v. D.B. Modak (2008), requires that the work must be an expression of the author's intellect and skill. Whether a prompt entered by a user constitutes sufficient intellectual contribution to satisfy this requirement is an open question. Some commentators argue that crafting a detailed and specific prompt involves genuine creative skill. Others argue that it falls far short of what copyright law requires.

3.2 Position in the United States

The United States Copyright Office has been quite clear in its position that copyright protection requires human authorship. In 2023, the Office issued guidance stating that it will not register works produced entirely by machines without creative input from a human author. However, it also clarified that works containing both AI-generated and human-authored content may be eligible for protection as to the human-authored elements.

A notable case in this regard is Thaler v. Perlmutter where Stephen Thaler, the creator of an AI system called DABUS, tried to register a work created entirely by the AI. The court upheld

the Copyright Office's refusal, firmly stating that human authorship is a fundamental requirement of copyright law. This ruling reflects the general position in American law but it leaves open many practical questions, such as how much human input is enough and how courts should evaluate the human contribution in cases of AI-human collaboration.

3.3 Position in the United Kingdom

The United Kingdom has taken a somewhat different approach. Section 9(3) of the Copyright, Designs and Patents Act 1988 provides that in the case of a computer-generated work, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work were undertaken. This is similar to the Indian provision and shows a willingness to extend protection to computer-generated works. Under UK law, such works receive a shorter protection period of 50 years rather than the standard life plus 70 years.

The UK Intellectual Property Office has been reviewing this area of law in recent years and has been consulting on whether changes are needed in light of advances in AI. There is ongoing debate in the UK about whether the existing framework is adequate or whether more fundamental changes are needed.

3.4 Position in the European Union

The European Union's approach to copyright strongly emphasizes the need for human creative choices. The Court of Justice of the European Union has held in several cases that copyright protection applies to works that reflect the personality of their author through free and creative choices. This requirement makes it difficult to extend copyright to purely AI-generated works. The EU has been focusing more on liability and transparency in AI through the AI Act of 2024 rather than directly resolving copyright ownership questions, leaving that to member states and ongoing legislative processes.

4. Theories of Ownership

Legal scholars and policymakers have put forward several different theories about how ownership of AI-generated works should be determined. Each of these theories has its own strengths and weaknesses.

4.1 Ownership by the Developer or Company

One argument is that the company or individual who develops and trains the AI system should own the outputs. The reasoning here is that it takes enormous investment of time, money, and expertise to build an AI capable of generating creative content. The developers are the ones who designed the system, gathered the training data, and fine-tuned the model. It seems fair to reward this investment by giving them ownership rights. This is somewhat analogous to the work-for-hire doctrine where an employer owns the copyright in works created by employees during the course of their employment.

The problem with this approach is that it would give companies like OpenAI or Google enormous power over vast amounts of creative content. It would also ignore the contribution of the user who interacted with the AI to generate a specific output. Furthermore, the developer had no specific creative input into any particular work and may not even know what specific outputs their AI is generating at any given moment.

4.2 Ownership by the User

Another view is that the user who prompts the AI and directs its output should own the resulting work. The user defines the purpose, provides the instructions, and makes choices about how to use the output. In some cases, users invest significant effort in crafting detailed prompts, selecting outputs from many generated options, and post-processing the results. This creative investment, it is argued, should attract copyright protection.

The counter argument is that if the user simply types a few words and receives a sophisticated output, the creative contribution of the user is so minimal that it does not justify intellectual property protection. A brief instruction cannot reasonably be considered an original creative expression deserving of copyright.

4.3 No Ownership and Public Domain

A third view holds that AI-generated works should not attract any copyright protection and should immediately enter the public domain. This position is grounded in the traditional justification for copyright law. Copyright exists to incentivize human creativity by rewarding creators. AI systems do not need financial incentives to create content. Granting copyright to AI-

generated works would therefore not serve the underlying purpose of copyright law but would instead give unnecessary monopoly rights to whoever happens to control or use the AI.

The public domain approach would ensure that AI-generated content is freely available to everyone and would encourage its widest possible use. However, it could also discourage investment in AI development and deployment if companies cannot recoup their costs through ownership of outputs. It also does not address practical questions about how to deal with AI-generated works that are incorporated into larger human-created works.

4.4 A Sui Generis Right

Some scholars propose creating an entirely new category of intellectual property right specifically designed for AI-generated works. This sui generis right would not be based on traditional copyright principles but would be tailored to the specific characteristics of AI creation. It could provide a shorter protection period, different ownership rules, and different requirements for registration and enforcement. The database right in European law is one example of a sui generis intellectual property right that was created to address a situation that did not fit neatly into existing categories.

This approach has the advantage of flexibility but comes with its own challenges. Creating a new category of intellectual property requires significant legislative effort and international coordination. It could also create confusion if different countries adopt different sui generis systems.

5. The Training Data Problem

Any discussion of AI-generated works cannot ignore the question of training data. Modern AI systems are trained on vast amounts of existing human-created content. This content was often scraped from the internet without the explicit consent of the original creators. Writers, artists, photographers, and musicians are now discovering that their life's work has been used to train AI systems that compete directly with them. This raises serious copyright concerns that are separate from but related to the question of ownership of AI outputs.

Several lawsuits have been filed against AI companies on this basis. Authors including Sarah Silverman and other writers filed suits against companies like OpenAI and Meta, alleging that these companies reproduced copyrighted books without authorization to train their AI models.

Visual artists have similarly challenged image-generating AI systems. These cases are still working their way through the courts and will likely result in important judicial clarifications in the coming years.

The training data issue also complicates the ownership question. If an AI's outputs are heavily influenced by specific copyrighted works in its training data, can the original authors claim any rights in those outputs? At what point does inspiration derived from training data become something more actionable legally? These are difficult questions that existing doctrine struggles to answer satisfactorily.

6. Ethical Dimensions

Beyond the strictly legal questions, the issue of ownership of AI-generated works raises important ethical considerations. First, there is the question of fairness to human creators. If AI-generated works can flood the market without any of the investment that human creators make, it could undermine the economic viability of creative professions. Musicians, writers, and visual artists may find it increasingly difficult to earn a living from their work if AI-generated alternatives are freely available at near-zero cost.

Second, there is a concern about the concentration of power. If copyright in AI-generated works is vested in technology companies, it could give those companies an alarming degree of control over culture and creative expression. A small number of corporations could effectively own large portions of the creative output of society. This concentration would be inconsistent with the democratic and distributional goals that underlie intellectual property law.

Third, there is the question of transparency and attribution. When people consume creative content, they often care about who created it and why. A novel written by a human author carries with it a sense of personal expression and lived experience. If AI-generated works are presented without disclosure of their origins, consumers may be misled. This is not only an ethical issue but also a practical one as it affects how works are perceived and valued.

Fourth, from a societal perspective, we must ask what kind of creative culture we want to foster. Copyright law is not just about economic incentives. It also reflects values about the importance of human creativity, artistic expression, and cultural contribution. Any framework for AI-generated works needs to be consistent with these broader values.

7. Suggested Framework Going Forward

Based on the foregoing analysis, this paper suggests a few principles that could guide the development of a legal framework for AI-generated works. These suggestions are offered tentatively given how rapidly the technology and the law in this area are both evolving.

First, the focus should be on meaningful human contribution. Rather than setting a binary test of human versus AI creation, the law should evaluate whether there has been sufficient human creative input to justify copyright protection. This requires looking at the nature and extent of the human contribution, not just its presence. Simple prompts should not be enough. More substantial creative direction and selection should attract protection for the human-authored elements at least.

Second, India should update its copyright law to expressly address AI-generated works rather than relying on provisions designed for earlier computer programs. The Copyright Act, 1957 needs amendments that clearly define what constitutes a computer-generated work in the modern sense, what level of human involvement is required for copyright, and how ownership should be allocated between developers and users. This legislative clarity would benefit creators, businesses, and consumers alike.

Third, mandatory disclosure requirements should be introduced. Any content generated primarily by AI should be labeled as such. This would allow consumers to make informed decisions and would help protect the market for genuinely human-created works. Disclosure would also assist courts in evaluating ownership claims.

Fourth, the training data question needs to be addressed through a combination of licensing requirements and fair compensation mechanisms for original human creators whose works were used to train AI systems. Compulsory licensing or collective licensing schemes, similar to those used in music for radio broadcasting, could be explored as potential solutions.

Fifth, international coordination is essential. AI-generated works do not respect national borders. A work generated in one country can be used across the world instantly. If different countries adopt radically different approaches, it will create arbitrage opportunities and legal uncertainty. WIPO and other international bodies should take a more active role in developing harmonized standards.

8. Conclusion

The ownership of AI-generated works is one of the most challenging and fascinating legal questions of the current era. The existing intellectual property framework, built around human creativity, does not map neatly onto works produced by autonomous AI systems. Different countries are taking different approaches and the law remains unsettled in most jurisdictions including India.

What is clear is that leaving the law in its current state will not serve anyone well in the long run. Technology companies need legal certainty to plan their businesses. Human creators need protection from unfair competition that relies on their work without compensation. Consumers and society as a whole need to ensure that cultural diversity and genuine human creativity are preserved even as AI tools become more powerful.

The right approach lies in carefully crafting rules that recognize the unique nature of AI creation while staying true to the deeper purposes that copyright law is meant to serve. These purposes are promoting creativity, rewarding investment, and ensuring the free flow of knowledge and culture in society. Law must evolve with technology and this is one area where that evolution is urgently needed.

As law students, it is important for us to engage with these questions early and to participate in the ongoing public conversation about how law should respond to artificial intelligence. The decisions made in courts and legislatures over the next few years will shape the creative landscape for decades to come.

REFERENCES

1. The Copyright Act, 1957 (India), Sections 2(d), 2(o), 13.

2. Copyright, Designs and Patents Act 1988 (UK), Section 9(3).

3. Eastern Book Company v. D.B. Modak, (2008) 1 SCC 1 (Supreme Court of India).

4. Thaler v. Perlmutter, Case No. 1:22-cv-01564 (D.D.C. 2023).

5. United States Copyright Office, Copyright and Artificial Intelligence, Part 1: Digital Replicas (2023).

6. World Intellectual Property Organization (WIPO), Conversation on Intellectual Property and Artificial Intelligence, WIPO/IP/AI/2/GE/20.

7. Andres Guadamuz, 'Do Androids Dream of Electric Copyright?' WIPO Magazine, No. 1, 2017.

8. Russ Pearlman, 'Recognizing Artificial Intelligence (AI) as Authors and Inventors Under US Intellectual Property Law' (2018) 24 Richmond Journal of Law and Technology 2.

9. Jane C. Ginsburg and Luke A. Budiardjo, 'Authors and Machines' (2019) 34 Berkeley Technology Law Journal 343.

10. Andres Guadamuz, 'Artificial Intelligence and Copyright' (2017) WIPO Magazine.

11. Ministry of Commerce and Industry, Government of India, National IPR Policy 2016.

12. European Parliament, EU Artificial Intelligence Act, 2024.

13. Ryan Abbott, The Reasonable Robot: Artificial Intelligence and the Law (Cambridge University Press, 2020).

14. Tim Wu, 'Machine Speech' (2013) 161 University of Pennsylvania Law Review 1495.

15. Shyamkrishna Balganesh, Intellectual Property Law in India (2nd ed., LexisNexis, 2019).

****

Artificial Intelligence in Judiciary and Access to Justice

By Ragini Birbal Yadav

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: raginibyadav999@gmail.com

Abstract

The judicial system of India, currently serving billions, is vast and complex. To simplify the processes and enhance the efficiency of the judiciary, emerging technologies are being integrated into the system. Artificial technology has the potential to expedite judicial proceedings by handling repetitive and time-consuming tasks. However, technology infusion presents significant challenges, such as digital disparities, inadequate infrastructure, and the absence of a robust ethical and legal framework. This article examines the opportunities and challenges of technology infusion in relation to government initiatives to foster digitalization and enhance the efficiency of the judicial system.

Keywords*: artificial intelligence (AI), judicial system, digitalization, India, digital disparity*

Introduction

The judiciary is one of the most vital and independent organs of the state, responsible for administering justice in India. Every day, hundreds or thousands of people in India approach courts to resolve their issues, be it the Supreme Court, High Court, or District and Sessions Court, because the judiciary is entrusted to deliver just outcomes for everyone who seeks justice. To ensure justice, the system of access to justice must be accessible, swift, unambiguous, transparent, and responsive to the needs of the people. The efficiency of a judicial system is affected by factors such as the complexity of judicial procedures, the lack of information technology initiatives, the high complexity of cases, the limited number of judicial staff, and procedural ambiguities.[1] The Constitution of India contains justice and equality in its soul, promoting that all are equal before the law,[3] providing legal assistance for economically weaker sections,[4] and encouraging justice and equality throughout the system. The Indian judiciary upholds these principles by delivering justice for the benefit of all.

The judiciary in India faces various challenges, such as large backlogs of cases, language barriers, and an urgent need for infusion of technology into the judicial system.[5] As of May 2025, there were approximately 54 million cases pending across India's courts, of which a significant proportion had been pending for over five years.[6] Long delays in judicial proceedings frequently

result in significant financial burdens, and they also negatively affect litigants emotionally and psychologically as they await justice, thereby eroding their trust in the system.

A victim is a sufferer who approaches the court for justice and appropriate action against the wrongdoer, but a delay in the proceedings leads to their revictimization by the system. The denial of prompt justice undermines confidence in the rule of law and deters individuals from pursuing legal recourse, because "justice delayed is justice denied."[7]

India's large population and expanding civil, commercial, and social practices pose challenges for the court system and impose heavy workloads on judges to handle cases and disputes arising from dynamic societal dynamics. It is pertinent to note that even with the huge pendency of cases, the number of judges remains insufficient. As of January 2024, there are 34 Supreme Court judges functioning at full strength, 783 High Court judges are working against the sanctioned strength of 1114 judges, and 22,677 judges are functioning in the subordinate courts.[8] The significant backlog of cases, insufficient number of judges, and complex procedures are the main drivers of delays in the administration of justice.

Although the integration of technology into the justice system may be complex, it can be helpful to address serious issues, such as pending cases and delays in the delivery of justice that hinder the Indian justice system and the socio-legal framework. However, even though the use of technology may potentially bring radical, positive changes to the whole justice system of India, the judicious use of technology is very much essential, as the usage of poorly trained AI systems has led to biased outcomes and translation inaccuracies.[9]

Research Objectives:

This research article analyzes the integration of artificial intelligence (AI) and other emerging technologies within the Indian judiciary. It also evaluates the effects of the integration on judicial efficiency, examines the challenges posed by AI-driven tools, and proposes strategies for future mitigation, supported by evidence-based conclusions and recommendations.

Advantages of Digitalization, AI and Other Technologies in the Justice System of India

In the wake of the recent COVID-19 pandemic, the adoption of technology in courts accelerated. To continue functioning during this significant health crisis, Indian courts adopted virtual hearings via videoconferencing, which not only reduced physical contact but also saved time and other resources associated with in-person hearings.[10] The shift toward a digitally

advanced system underscores the steps taken by the Indian judiciary toward transformation and modernization, as well as the need to further strengthen the digitalization of courts.

The introduction of technology saves time and energy by reducing paper use in courtrooms, which can significantly reduce the environmental costs of the judicial and legal system, as files and documents are easier to transfer with less time and cost from one court to another.[11] Excessive physical compilation of records makes it difficult to make information readily available, and even worse, sometimes documents related to one case are not available to another court in a related case. Voluminous case files make it difficult for judges to locate relevant information promptly, and storage costs impose an additional burden on the system. With the help of AI-driven technologies, a large volume of case files can be digitized and quickly summarized. As a result, a large volume of data, cases, or statutes can be analyzed, and relevant information can be retrieved promptly by lawyers and judges.[12]

In addition, AI and digitization technologies can also improve case workflow management. Furthermore, the implementation of artificial intelligence-driven tools and technologies, including chatbots, has the potential to enhance the efficiency of legal research and document preparation processes. The implementation of digital systems in judicial processes offers numerous advantages, including the automation of case management and the facilitation of virtual hearings. These technologies enhance the accessibility of case information for both parties and legal representatives, while also streamlining the management of court information from beginning to disposal. Furthermore, the implementation simplifies documentation processes related to filing, appealing, scheduling, and tracking cases. Additionally, automated compliance monitoring ensures that parties adhere to specified timelines effectively.

AI technologies can be used to predict case outcomes and, thus, help legal teams develop more effective strategies for settling or pursuing a case. These technologies can also be used to analyze contracts, documents submitted as evidence, and police investigation reports.

A digital workflow can make the navigation of the court process smoother, for instance, for trivial cases related to the Motor Vehicle Act of 1988[13] and related claims can be simulated through the use of transformative technology because such cases primarily involve the calculation of compensation and are more likely to settle. A technology-driven process can help lawyers and

litigants determine compensation rationally, thereby reducing disputes.[14] Furthermore, the seamless filing of documents, service of summons, and prior notice to the parties through electronic means can be highly resource-efficient for the judicial system.[15] The ability of the Indian judicial system to fulfill the object of imparting justice can be sufficiently enhanced by leveraging technologies like AI and its digital brains.

Interface between technology and the Indian Justice System

To expand access to justice through a technology-driven approach, the Government of India introduced the e-Courts project in 2005 with the primary goal of improving judicial efficiency. It focused on making the system more affordable, transparent, cost-effective, and accessible. It has initiated the process of digitized judicial administration. The project has already completed its initial two phases, during which networking infrastructure has been installed and updated across India. Phase I focused on establishing digital infrastructure by installing hardware, providing network connectivity, and digitizing case records, with limited online services. Phase II focused on shifting toward litigant-centric "*monolithic systems*" by establishing a linkage between the judiciary and other institutions.[16] The case information system, National Judicial Data Grid (hereinafter NJDG),[17] is such a service portal that emerged out of Phase II and offered a single window access to the entire body of information relating to cases and courts starting from the Taluka-level courts (lowest court in hierarchy) to the Supreme Court of India in a searchable manner; similarly, e-filing and e-payment systems were introduced to make the judicial process expeditious. However, many limitations were identified during implementation, such as the need to revise systems to accommodate evolving user needs and to scale to enable data sharing across courts and institutions within the justice delivery system.[18]

In 2023, with the aim of accelerating digitization and AI integration, phase III of the e-Courts project was launched. It focuses on enhancing the collaboration and cooperation of courts and investigating agencies, such as the police and the Central Bureau of Investigation, to work together effectively. Thus, this collaborative approach can break down barriers between the judiciary and other entities by reducing duplication of work and facilitating seamless data sharing through the exchange of police investigation reports and other details of the case among the agencies and the judiciary. Phase III envisions a digitalized, tech-driven, and AI-empowered justice system. It aims at shifting from monolithic systems to a modular microservices

architecture,[19] which designs technology in a modular way, creating several pieces that are interchangeable and replaceable without necessitating a redesign of the infrastructure as a whole. This allows for the design of services initiated by the courts to evolve, and a scale based on both feedback from users and changes in technology, such as improved encryption and identity verification. It includes creation of judicial digital repositories (JDRs)[20] to enable seamless data sharing, case tracking, and service integration; intelligent scheduling of cases by using AI to improve efficiency and reduce adjournments; an Interoperable Criminal Justice System (ICJS) to process data sharing among institutions involved in imparting justice such as police, prisons, courts, and so on; making documents machine readable to improve accessibility and efficiency; and unified payment platforms for streamlining the process of submitting court fees and payment of fines.[21]

Moreover, Phase III aims at improving digital case management systems for quick court document access and coherent sharing of data within the justice system. Virtual hearings are promoted to reduce travel, cost, and time. Moreover, e-filing is promoted to reduce paperwork and other delays. A technology-oriented transcription of court proceedings system is introduced to improve transparency, and a help desk service is established to provide digital assistance, ensure equitable access to services, and bridge the digital divide.

The e-Courts project is challenging, given the unique demands of India, including the large number of courts with limited staff, the interests of diverse stakeholders, and digital disparities between urban and rural populations. Given the challenges and its significance, the E-Committee of the Supreme Court has been empowered to oversee the execution of the e-Courts project, as set out in the "National Policy and Action Plan for Implementation of Information and Communication Technology in the Indian Judiciary—2005".[22] This project not only aims to increase the transparent flow of information to stakeholders involved in the court process by automating the process of seeking information, but also aims to develop, install, and execute the decision support system in courts wherein the adjudication pattern and its impact are analyzed by policymakers to enhance judicial performance.[23] This project can ultimately enhance judicial productivity by making the justice system affordable, accessible, cost-effective, predictable, reliable, and transparent.[24]

Today, technology is a powerful tool. AI is anticipated to expedite the delivery of justice. Its integration into the legal system is a significant step in the right direction.[25] The Supreme Court of India has established an Artificial Intelligence Committee to examine the use of AI in the judiciary. The committee has primarily identified the application of AI technologies in the translation of judicial documents, legal research assistance, and process automation.[26]

The AI Committee has been the supervising authority for the development of an AI tool called SUVAS (Supreme Court Vidhik Anuvad Software), which is designed to translate judicial documents from English to various other vernacular languages used in India,[27] to remove the difficulty and to provide accessibility of the judgments or other judicial documents to non-English speakers.[28] Use of such tools increases legal literacy and helps people access justice by removing language barriers and enhancing access to judicial decisions. Thus, it fosters trust in the legal system. Another AI tool, SUPACE (Supreme Court Portal for Assistance in Court Efficiency),[29] was created to support legal research. This tool helps judges to retrieve essential case information quickly by summarizing bulky documents.[30]

The Honorable Chief Justice of Delhi High Court, during the IBA International Conference in Mexico City, 2024, announced that the Supreme Court of India was going to introduce an AI tool known as AI Saransh.[31] It was developed by the National Informatics Centre (NIC) to generate concise summaries of pleadings and to simplify the identification of a case's contentious issues.[32]

The Indian judiciary is undergoing digitization to incorporate the benefits of AI and a tech-driven justice system through the extensive implementation of AI technologies such as SUVAS and SUPACE. However, these tools must be used with due caution to address inevitable challenges, such as accuracy and bias.

Challenges and Considerations in Integrating AI and Technology in the Indian Justice System

The development and integration of AI and other technologies have undoubtedly reduced human labour to a considerable extent; however, the challenges of effective implementation are numerous. Among various critical issues, digital disparity remains a substantial challenge. As per the Indian Inequality Report of 2022 on the digital divide, there is a lack of access to information and communication technology, which is a major cause of the digital divide. Approximately 70

percent of the population has no digital connectivity. The report highlights the social, political, and environmental factors that determined the time period of being digitally connected. It states that only 38 percent of households are digitally literate, and only 31 percent of the rural population uses the Internet, as compared to 67 percent of the urban population.[33]

As per another recent report, the State of India's Digital Economy (SIDE) Report of 2024, while India has the largest number of users, it also has the largest number of unconnected people. Nearly 48 percent of Indians do not access the Internet, and the quality of fixed-line Internet services does not match up to those of other G20 countries. The unconnected are those on the margins (women, rural population, disabled, the aged, and children). The gaps in Internet access between rural and urban areas, and between men and women, continue to exist.

This digital divide can exacerbate inequalities, especially for people who lack Internet access and are not tech friendly. This can limit people's ability to engage with a digitized, AI-driven judicial system, thereby making justice more inaccessible. Moreover, the absence of technical knowledge among residents makes it more difficult for courts in rural areas to adopt cutting-edge technologies and tools, as residents are often the litigants in these forums. While these digital divides are large, they are declining. An increase in Internet users among rural women between 2020 and 2022 narrowed the gender divide.[34]

To overcome this problem, courts can leverage a vast network of Common Service Centres (CSCs) to enable web-based e-governance in rural areas, which will ultimately bridge the gap of the digital and geographical divide. "Most of these CSCs are run and managed by the Information Technology Departments of each state and are already equipped with internet connectivity, computers, printers, scanners and cameras. Through a partnership with the Department, the services at the CSCs can be expanded to include e-filing, payment of court fees, fines, penalties and other kinds of costs online, provisions of notary services, machine-readable audio content of judgments and orders, translation and video conferencing."[35]

Ensuring compatibility and seamless functioning through technology usage and AI infusion requires significant investment in training and technology. The integration of AI technologies requires training for judges, court staff, and lawyers in the short and long term. It can be achieved through live classes, training videos, modules, and guides to familiarize users with the

functionality of the new software and technologies. Training materials and curricula should be updated frequently and provided to judges and court staff as necessary to keep pace with technological developments.[36]

By investing in training for judicial staff and public education, the benefits of technology in the justice system can be made accessible to all sectors of society.

AI-oriented technologies pose a high risk of cyber threats. To address emerging threats, India must bolster its cybersecurity and regulatory frameworks to minimize the risk of data breaches and ensure data integrity. Currently, India lacks a comprehensive legal framework governing the use of AI systems. Composing such an overarching legal framework is crucial and is the need of the hour for the responsible management of artificial intelligence.

Another concern regarding AI technology in the justice system concerns bias and accountability. AI systems based on biased data-fed algorithms, biased metadata, and false information can lead to biased decisions through the system. It is imperative to oversee the development of AI tools and ensure that their continuous upgrade is conducted ethically and with greater transparency. Deploying AI-driven technology on a large scale may give a high frequency of decisions that ultimately amplify the potential of unfair bias and lead to a lack of trust in such emerging technological tools. Different stakeholders of the AI ecosystem have the potential to shape the future dynamics of AI, and therefore, it is important to create uniform principles that can effectively guide all stakeholder groups, such as the government, judiciary, citizens, private sectors, research community, regulators, and so on, toward the responsible use of AI.[37]

The foundation of digital and technological solutions should be on established and reliable systems. The Indian justice system should draw inspiration from other nations, such as the United States and the United Kingdom. In the United States, there is the Correctional Offender Management Profiling for Alternative Sanction (COMPAS),[38] an algorithm assessing recidivism risk via questionnaires on criminal history, employment, and family factors, scoring low/medium/high for pretrial/sentencing decisions, but criticized for racial bias. In the United Kingdom, the Offender Assessment System (OAS)[39] is used by probation services to predict reconviction likelihood and identify criminogenic needs via structured interviews on static/dynamic factors like offence history and attitudes, linking to sentence plans, but is also

criticized for gender/age disparities, and overprediction of reoffending for specific groups. These systems are improving efficiency and reducing backlogs through AI-powered solutions in the court system, yielding promising results despite limitations that warrant serious evaluation.

It is also crucial to remain well informed about how courts and tribunals in other regions are using technology and to learn from their experiences. However, caution is always advised while considering the development of unique systems to simplify our judicial system, and such efforts are to be pursued for compelling reasons. India should learn from these systems by avoiding opaque, biased algorithms while upholding fundamental and other rights enshrined in the Indian Constitution and laws.

Ethical Consideration

The administration of justice is primarily a human process, though its efficiency can be supported and enhanced by the prudent use of technology. The use of AI-driven technologies raises ethical concerns regarding data privacy, security, bias, and many other potential liability issues. It is undeniable that AI lacks human understanding; certain judgments, involving complex facts such as prevailing customs, demand subjective evaluations or consideration of moral and ethical dimensions, where AI may struggle to accurately replace human judgment.[40] For example, it is essential to train AI systems by feeding more data, including diverse case facts and other information, to reduce the risk of biased and unfair results.

Technology must support the delivery of justice in a manner that upholds the rule of law, prioritizes human dignity, and reinforces the core values of the legal system. In this way, the digital transformation of the Indian justice system through emerging technologies must be consistent with the core values of imparting fair and speedy justice.[41] The infusion of modern technologies into the judiciary should align with the judiciary's constitutional responsibility to uphold the principles of fairness, transparency, and accountability.[42] Moreover, the technological design should be people-centric, so that it can meet the needs of all users, and so users can participate in the digital court system, as technology should be used to reduce barriers to accessing justice. It is also important that AI technologies utilized in the judiciary are able to secure sensitive data and are sufficiently reliable to handle evolving demands.

Another concern is information security, because any unauthorized access to data, phishing attacks, or any other server network threats could harm the integrity of data and lead to information

loss and thereby infringe on privacy. Therefore, appropriate protection of privacy, which became a fundamental right that came from the apex court's decision in *Justice K.S Puttaswamy v. Union of India*,[43] by appropriate guidelines regulating technological advancements taking place, is crucial at this stage. Furthermore, it is imperative to collect user feedback to evaluate the extent to which the project objectives are being executed and to identify other areas for potential improvement.

Conclusion

In India, the AI market is flourishing due to the country's substantial talent pool in the technology sector, with around 600,000 AI professionals and 700 million Internet users,[44] and due to the government's emphasis on fostering AI integration. Furthermore, India's diverse population and distinctive cultural and linguistic fabric provide a valuable data source for AI training and development.[45]

India is swiftly constructing a robust artificial intelligence computing and semiconductor infrastructure to bolster its expanding digital economy. Following the 2024 IndiaAI Mission[46] endorsement, the government has allocated $1.2 billion over a five-year period to enhance artificial intelligence capabilities. A principal component of this initiative is the establishment of a highly shared performance common computing facility equipped with 18,693 graphics processing units (GPUs), making it one of the most comprehensive AI computing infrastructures worldwide. These GPUs provide massive parallel processing power needed for complex computational demands, such as cash flow management, data analysis, data processing, and research and forecasting. The facility's capacity is nearly nine times greater than that of the open-source AI model DeepSeek and approximately two-thirds of the operational capacity of ChatGPT.[47]

Artificial intelligence and other digital technologies have immense potential to revolutionize the justice system in India. Undoubtedly, digitization initiatives represent a remarkable leap in transforming the system. The commencement of the journey toward implementing technology in the justice system and using AI tools has indeed posed challenges, such as digital literacy, data privacy, and digital infrastructure. Yet the penultimate aim behind such transformation, to increase efficiency, accessibility, and transparency in the justice system, is undeniable. From remote access to judicial services to digital management of cases and paperless

structured digital data, integration of AI and other technologies has not only standardized the system but is also working to minimize human error, which is very much essential for AI driven operations. However, specific issues like automated judgment and judicial independence, as well as concerns linked to privacy and data protection, are critical for upcoming developments. It is evident that, in just a few years of digitalization, AI-driven technologies have pervaded all aspects of life, and this trend continues to accelerate. Today, the challenge is not just about technology infusion, but also to create a safe, accountable, and efficient system so that AI technologies do not impede the rule of law, fundamental rights, and democratic principles. Indian justice systems have started implementing the technology by embracing various innovative AI-driven tools to impart justice in a transforming way to billions of people and their evolving needs.

BIBLIOGRAPHY

1) Maansi Gupta & Nomesh B. Bolia, *Factors Affecting Efficient Discharge of Judicial Functions: Insights from Indian Courts*, 91 SOCIO-ECONO. PLAN. SCI. 1 (2024).
2) India Const. Preamble. "WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC and to secure to all its citizens: JUSTICE, social, economic and political; LIBERTY of thought, expression, belief, faith and worship; EQUALITY of status and of opportunity; and to promote among them all FRATERNITY assuring the dignity of the individual and the unity and integrity of the Nation; IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949, do HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.
3) India Const. art.14.
4) India Const. art.39A.
5) Press Information Bureau, Government of India, *Digital Transformation of Justice: Integrating AI in India's Judiciary and Law Enforcement*, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2106239 (Feb. 25, 2025).
6) National Judicial Data Grid, https://scdg.sci.gov.in/scnjdg; see also E-Courts Services, https://ecourts.gov.in/ecourts_home (last visited July 20, 2025).
7) Naomi Burstyner & Tania Sourdin, *Justice Delayed Is Justice Denied*, 4 VICT. U. L. & JUST. J. 49, 49 (2014).

8) Government of India, Ministry of Law and Justice, Department of Justice, Lok Sabha Unstarred Question No. 5, *Sanctioned Strength of Supreme Court and High Court Judges*, https://sansad.in/getFile/loksabhaquestions/annex/1715/AU5.pdf?source=pqals(last visited July 20, 2025).

9) Government of India, Ministry of Law and Justice, Department of Justice, Rajya Sabha Unstarred Question-1714, *AI in Judicial System*, https://sansad.in/getFile/annex/267/AU1714_IqwkF6.pdf?source=pqars#:~:text=(a):%20According%20to%20the,details%20are%20at%20Annexure%20I.&text=(c)%20&%20(d):,and%2Dawareness%2Dprogrammes (last visited Dec. 15, 2025).

10) Department of Justice, *Video Conferencing*, https://doj.gov.in/video-conferencing (last visited Dec. 12, 2025).

11) E-Committee, Supreme Court of India, *Digital Courts, Vision & Roadmap, Phase III of the E-Courts Project*, 37-38 (2022), https://cdnbbsr.s3waas.gov.in/s388ef51f0bf911e452e8dbb1d807a81ab/uploads/2023/04/2023042088.pdf (last visited July 22, 2025).

12) Dr Hemachandran Kannan, *Decoding the Future: How AI is Reshaping Decision-Making in the Judiciary*, INDIAAI (Jan. 29, 2024) https://indiaai.gov.in/article/decoding-the-future-how-ai-is-reshaping-decision-making-in-the-judiciary.

13) The Motor Vehicles Act, 1988, No. 59, Acts of Parliament, 1988 (India).

14) E- Committee, Supreme Court of India, *supra* note 11 at 42.

15) *Id.* at 36.

16) *Id.* at 21.

17) National Judicial Data Grid, https://njdg.ecourts.gov.in/njdg_v3//?p = home&app_token= (last visited Dec. 15, 2025).

18) Ministry of Law and Justice, Government of India, *e-Court Mission Mode Project*, https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1848737 (last visited July 22, 2025).

19) Think of microservices/modular architecture as a house. It is built using bricks, steel, windows, doors, and a host of other inputs independently created that can be assembled together as per our unique requirements. In the case of windowpane that shatters, this is replaceable without having to take down the entire house to its constituent elements. This

is the essence of modularity. *For more discussion, see* E- Committee, Supreme Court of India, *supra* note 11 at 44.

20) India Department of Justice, *Digitisation of Records*, https://doj.gov.in/digitisation-of-records (last visited Dec. 15, 2025).

21) Ministry, *supra* note 18.

22) *Id.*

23) E-Committee, Supreme Court Of India, *E-Courts Mission Mode Project*, https://ecommitteesci.gov.in/project/brief-overview-of-e-courts-project(last visited July 25, 2025).

24) *Id.*

25) Hasan Mohammed Jinnah, *AI-Powered Courts Can Rewrite Future of Judiciary*, (Nov. 3, 2023) https://www.newindianexpress.com/opinions/2023/Nov/02/ai-powered-courts-can-rewrite-future-of-judiciary-2629474.html.

26) Government of India, Ministry of Law and Justice, Department of Justice, Lok Sabha Unstarred Question No. 147, Use of Artificial Intelligence Tools in Judicial System, https://sansad.in/getFile/loksabhaquestions/annex/1710/AS147.pdf?source=pqals#:~:text=Under%20the%20supervision%20of%20the,High%20Courts%20and%20District%20Courts(last visited July 25, 2025).

27) Under SUVAS, the artificial intelligence (AI), and machine learning (ML) based tools are being deployed in case management. They are being used in transcribing of oral arguments in Constitution Bench matters. The AI assisted transcribed arguments can be accessed from the website of the Supreme Court. It is also used in translation of judgments from English language to 18 Indian languages, viz., Assamese, Bengali, Garo, Gujarati, Hindi, Kannada, Kashmiri, Khasi, Konkani, Malayali, Marathi, Nepali, Odia, Punjabi, Santali, Tamil, Telugu, and Urdu. See *Use of AI in Supreme Court Case Management*, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2113224&reg=3&lang=2 (last visited Dec. 10, 2025).

28) Centre for Research and Planning Initiative, Supreme Court of India, *Unlocking the Docket*, 98 (2025), https://cdnbbsr.s3waas.gov.in/s3ec0490f1f4972d133619a60c30f3559e/uploads/2025/05/2025051431.pdf (last visited July 22, 2025).

29) Ministry of Law and Justice, *Use of AI in Supreme Court Case Management*, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2113224&reg=3&lang=2 (last visited Dec. 9, 2025).

30) Centre for Research Planning, *supra* note 24.

31) Vasudha Mukherjee, *Supreme Court to Use AI to Generate Summaries for Pleadings: ACJ Manmohan* (Sept. 20, 2024), https://www.business-standard.com/india-news/supreme-court-to-use-ai-to-generate-summaries-for-pleads-justice-manmohan-124092000644_1.html.

32) NIC, National Cloud, *AI-Saransh*, https://cloud.gov.in/user/services_ai_saransh.php (last visited July 27, 2025).

33) India Development Review, *India's Digital Divide: From Bad to Worse*, IDR ONLINE, (Feb. 16, 2023), https://idronline.org/article/inequality/indias-digital-divide-from-bad-to-worse .

34) ICRIER, *The State of India's Digital Economy Report 2024* 28 (2025), https://icrier.org/pdf/State_of_India_Digital_Economy_Report_2024.pdf.

35) E- Committee, Supreme Court of India, *supra* note 11, at 106.

36) E- Committee, Supreme Court of India, *supra* note 11, at 105.

37) NITI Aayog, *Responsible AI: Approach Document for India Part 1—Principles for Responsible AI*, https://www.niti.gov.in/sites/default/files/2021-02/Responsible-AI-22022021.pdf .

38) Medium, *COMPAS—An AI Tool Sending or Keeping People in Jail*, https://edblogs.medium.com/compas-an-ai-tool-sending-or-keeping-people-in-jail-d9228df3a2c6 (last visited Dec. 30, 2025).

39) Parliament of UK, *Offender Assessment System*, https://questions-statements.parliament.uk/written-questions/detail/2022-03-31/151243, (last visited Dec. 30, 2025).

40) Dr. N Prabhavathi, Kavitha Durai, *Role of Artificial Intelligence in Access to Justice and Justice Delivery in India*, 44 BPAS J. LIBR. SCI. 12335 (2024).

41) INDIA CONST. art. 39A, Hussainara Khatoon & Ors vs Home Secretary, State of Bihar, 1979 AIR 1369 (India).

42) INDIA CONST. art. 21.

43) *Justice K.S. Puttaswamy vs. Union of India* (2017) 10 SCC 1 (India).

44) IBEF, *India's artificial intelligence (AI) market set to triple, may cross Rs. 1,45,384 crore (US$ 17 billion) by 2027: Report*, https://www.ibef.org/news/india-s-artificial-intelligence-ai-market-set-to-triple-may-cross-rs-1-45-384-crore-us-17-billion-by-2027-report#:~:text=Indian%20Economy%20News%20With%20over%206%2C00%2C000%20AI,Technology%2C%20Engineering%2C%20and%20Mathematics%20(STEM)%20education%20system (last visited Dec. 30, 2025).

45) Statista, *Artificial Intelligence—India*, https://www.statista.com/outlook/tmo/artificial-intelligence/india (last visited July 30, 2025).

46) INDIAai, https://indiaai.gov.in (last visited Dec. 30, 2025).

47) Ministry of Electronics & IT, Government of India, *India's AI Revolution, A Roadmap to Viksit Bharat*, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2108810 (last visited July 30, 2025)

****

Ethical Artificial Intelligence and Human Rights

By Swati Kowe

F.Y. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon.
Email: swatikowe58@gmail.com

Abstract

The rapid advancement of Artificial Intelligence technology has created an urgent need to examine its relationship with fundamental human rights. AI systems are increasingly shaping decisions that directly affect individuals' lives, from employment and healthcare to criminal justice and financial services. While AI holds the promise of enhancing human welfare and driving social progress, it also carries serious risks for core human rights values such as privacy, equality, dignity, and freedom of expression. This paper examines the ethical dimensions of AI in relation to human rights, exploring the tensions and challenges that arise when intelligent machines make consequential decisions about people. It looks at international human rights frameworks, explores specific areas where AI poses risks to rights, discusses the growing global movement toward ethical AI governance, and considers what a rights-respecting approach to AI development might look like in practice.

Keywords: *artificial intelligence, human rights, ethics, privacy, algorithmic bias, dignity, ai governance, accountability, transparency, equality*

I. Introduction

We are living in a period of extraordinary technological transformation. Artificial Intelligence, once the subject of science fiction, is now an integral part of daily life. It powers the algorithms that determine what we see on social media, the software that screens job applications, the systems that assess creditworthiness, the tools that assist doctors in making diagnoses, and the platforms that shape what news and information we consume. The scale and speed of AI deployment across virtually every sector of society is unprecedented.

This transformation is not neutral. As AI systems grow more powerful and more pervasive, they bring with them questions that are fundamentally ethical and legal in nature. Who bears responsibility when an AI system makes a harmful decision? How do we ensure that the benefits of AI are distributed fairly rather than concentrated in the hands of a few? How do we protect the privacy of individuals in a world of ubiquitous data collection and analysis? What happens to

human dignity and autonomy when machines make decisions that were once the exclusive province of human judgment?

These questions lie at the intersection of technology and human rights. Human rights are the foundational guarantees of human dignity and freedom that societies recognize as owed to every person, not as a matter of charity or policy preference, but as a matter of moral and legal obligation. The Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, and countless national constitutions articulate these rights in terms that do not become obsolete in the face of technological change. Yet the frameworks built to protect human rights were designed for a world in which the agents of potential violation were primarily human, and adapting these frameworks to address the challenges posed by AI is among the most pressing tasks facing legal scholars, policymakers, and technologists today.

This paper explores the relationship between ethical AI and human rights. It begins by examining what ethical AI means and what human rights principles are relevant to AI governance. It then surveys the specific areas where AI poses the greatest threats to human rights and considers the emerging legal and policy frameworks being developed to address those threats. Finally, it offers some reflections on the principles that should guide the development and deployment of AI in a manner consistent with respect for human dignity and rights.

II. What Is Ethical AI?

The term "ethical AI" has become widely used but is not always precisely defined. At its core, ethical AI refers to the development, deployment, and governance of artificial intelligence systems in a manner that is consistent with moral principles and that respects the rights and interests of the people affected by those systems.

Various organizations and bodies have attempted to articulate the principles that define ethical AI. The European Commission's High-Level Expert Group on Artificial Intelligence published its Guidelines for Trustworthy AI in 2019, identifying seven key requirements: human agency and oversight, technical robustness and safety, privacy and data governance, transparency, diversity and non-discrimination, societal and environmental well-being, and accountability. UNESCO adopted its Recommendation on the Ethics of Artificial Intelligence in 2021, which covers values including respect for human dignity, freedom, equality, and the rule of law. The

OECD Principles on AI, endorsed by dozens of countries including India, emphasize inclusive growth, human-centered values, transparency, robustness, and accountability.

While different frameworks use different language, certain themes recur consistently. These include the importance of human oversight and control over AI systems, the need for transparency and explainability in AI decision-making, the imperative to prevent discrimination and ensure fairness, the requirement to protect privacy, and the principle that responsibility for AI-caused harm must be clearly assigned. Together, these themes represent a consensus among ethicists, policymakers, and technologists that AI cannot simply be allowed to develop and deploy unchecked, but must be guided by values that reflect the interests of all members of society.

III. Human Rights Framework and AI

The Right to Privacy

Privacy is arguably the human right most directly threatened by the development of AI. Modern AI systems are data-hungry, requiring vast quantities of personal information to train, refine, and operate. Every time a person uses a smartphone, browses the internet, makes a purchase, visits a doctor, or interacts with a government service, they generate data that can be collected, aggregated, and analyzed by AI systems. The result is an unprecedented capacity for surveillance and profiling that individuals have little ability to understand, much less control.

The right to privacy is recognized in Article 12 of the Universal Declaration of Human Rights, Article 17 of the International Covenant on Civil and Political Rights, and Article 21 of the Constitution of India as interpreted in the landmark Supreme Court judgment in Justice K.S. Puttaswamy v. Union of India (2017). This right encompasses not only freedom from physical intrusion but also what has been called "informational privacy": the right of individuals to control information about themselves and to be protected from unauthorized collection and use of personal data.

AI-powered facial recognition systems, behavioral tracking tools, predictive profiling algorithms, and social media monitoring platforms all represent serious challenges to informational privacy. When an AI system can identify a person from a photograph taken in a public space, track their movements across a city, and predict their behavior or preferences from their online activity, the practical space of privacy shrinks dramatically. Governments and

corporations with access to these tools hold an enormous informational advantage over individuals, one that can easily be abused.

The Right to Equality and Non-Discrimination

Among the most serious human rights concerns raised by AI is the risk of discrimination. AI systems learn from historical data, and historical data reflects the inequalities and biases of the societies that produced it. When an AI system trained on such data is used to make decisions about hiring, lending, insurance, criminal justice, or healthcare, it may systematically disadvantage groups that have historically faced discrimination.

Research has documented numerous instances of algorithmic discrimination. A study by researchers at MIT and Stanford found that commercial facial recognition systems had significantly higher error rates for darker-skinned women compared to lighter-skinned men. A widely cited investigation in the United States found that an algorithm used to assess the risk of recidivism among criminal defendants assigned higher risk scores to Black defendants than to white defendants with similar profiles. Hiring algorithms trained on historical data have been found to penalize resumes that include words associated with women, such as references to women's colleges or women's sports teams.

The right to equality and freedom from discrimination is protected by Article 7 of the Universal Declaration of Human Rights, by Articles 2 and 26 of the ICCPR, and by Articles 14 and 15 of the Indian Constitution. When AI systems are used to make or assist decisions that affect people's access to employment, credit, housing, healthcare, or justice, and those systems produce discriminatory outcomes, they potentially violate these foundational guarantees.

The Right to Dignity and Autonomy

Human dignity is the philosophical foundation on which the entire edifice of human rights is built. It encompasses the idea that every person has inherent worth that must be respected, and that people must be treated as ends in themselves rather than merely as means to the ends of others. Closely related is the concept of autonomy, the right of individuals to make meaningful choices about their own lives.

AI threatens dignity and autonomy in several ways. When consequential decisions about a person's life are made by an algorithm that the person cannot understand or challenge, their ability

to participate in and contest those decisions is undermined. When AI systems reduce a person to a data point or a risk score, stripping away the context and complexity of individual human experience, they fail to treat that person as a full moral subject worthy of respect. When AI-powered manipulation techniques are used to influence people's beliefs, preferences, or behavior without their awareness or consent, they violate the conditions necessary for genuinely autonomous choice.

Freedom of Expression and Access to Information

AI systems play a major role in shaping the information environment in which people form their opinions and exercise their right to freedom of expression. Recommendation algorithms on social media platforms determine which content users see, with consequences for what information is available to them and what perspectives they are exposed to. Content moderation systems, increasingly powered by AI, make decisions about what speech is permitted and what is removed, with direct implications for freedom of expression.

Research has shown that recommendation algorithms tend to amplify emotionally charged and divisive content because it generates higher engagement, contributing to political polarization and the spread of misinformation. Automated content moderation systems have been found to inconsistently apply community standards, disproportionately removing content from marginalized communities and political minorities. These dynamics have significant implications for the quality of democratic discourse and for individuals' ability to access information and express themselves freely.

IV. Key Ethical Challenges

Transparency and Explainability

One of the most fundamental requirements of ethical AI is that the people affected by AI decisions should be able to understand how those decisions are made. This principle of transparency is rooted in basic norms of fairness: if a decision affects your life, you should know why it was made and on what basis. In the context of human rights, transparency is also linked to the right to an effective remedy; you cannot challenge a decision you do not understand.

Many advanced AI systems, however, are opaque by design. Deep learning models, which underlie many of the most powerful AI applications, process information through layers of

mathematical transformations in ways that are genuinely difficult to interpret, even for the engineers who built them. This "black box" problem is not merely a technical inconvenience; it is a serious obstacle to accountability and to the exercise of rights by individuals affected by AI decisions.

The response to this problem has included both technical research into explainable AI (XAI), aimed at developing methods for making AI systems' reasoning more interpretable, and legal requirements for explanation. The European Union's General Data Protection Regulation (GDPR) includes a right to an explanation of automated decisions that significantly affect individuals. India's Digital Personal Data Protection Act, 2023, while less specific on this point, establishes principles of transparency that will need to be applied to AI-assisted decisions.

Accountability and Responsibility

When a human being makes a decision that harms another person, the legal and moral framework of accountability is relatively clear. The decision-maker can be identified, their reasoning can be examined, and responsibility can be assigned. When an AI system makes a harmful decision, the question of accountability becomes considerably more complicated.

The developers who created the AI system may argue that they could not predict or control the specific decision it would make in a particular situation. The organization that deployed the system may argue that it relied in good faith on the technology provider's representations about the system's capabilities and limitations. The data providers whose data was used to train the system may argue that they were not responsible for how the data was used. The result can be a diffusion of responsibility in which no one is clearly accountable, and the injured party is left without a meaningful remedy.

Addressing this accountability gap requires both legal innovation and institutional design. Regulators in several jurisdictions are developing frameworks that assign clear responsibility to deployers of high-risk AI systems, require mandatory impact assessments before deployment, and establish liability regimes for AI-caused harm. International human rights bodies have emphasized that states have positive obligations to regulate private actors, including technology companies, to protect individuals from AI-related rights violations.

The Digital Divide and Unequal Access

A frequently overlooked dimension of the relationship between AI and human rights is the question of who benefits from AI and who bears its costs. AI development is concentrated in a small number of wealthy countries and corporations, while the data used to train AI systems is often extracted from populations in the global south who receive little of the benefit. The digital divide means that many people lack access to the skills, devices, and connectivity necessary to participate in or benefit from the AI-driven economy, even as AI systems shape decisions that affect them.

This raises questions of justice and equity that are human rights questions. The right to development and to the benefits of scientific progress, recognized in international human rights instruments, implies that the gains from AI should be broadly distributed rather than concentrated. Ensuring inclusive AI governance requires that the voices of affected communities, including marginalized and historically excluded groups, are included in decisions about how AI is developed and deployed.

V. Emerging Governance Frameworks

The recognition that AI poses significant risks to human rights has spurred a growing movement toward AI governance across different levels of the international system. At the international level, the United Nations Secretary-General's Roadmap for Digital Cooperation and the work of the UNESCO and OECD on AI ethics principles represent efforts to articulate shared values and norms. The UN High Commissioner for Human Rights has called for a moratorium on AI systems that pose an unacceptable risk to human rights until adequate safeguards are in place.

At the regional level, the European Union has been the most active in developing binding legal requirements for AI. The EU AI Act, finalized in 2024, establishes a risk-based framework that prohibits certain AI applications deemed to pose unacceptable risks, such as social scoring by governments and most forms of real-time biometric surveillance in public spaces, and subjects' high-risk applications in areas like healthcare, employment, and critical infrastructure to strict requirements for transparency, human oversight, and accuracy testing.

Several countries have developed or are developing national AI strategies and regulatory frameworks. The United Kingdom has taken a sector-specific, principles-based approach, relying

on existing regulators to apply AI governance principles within their domains. The United States has issued executive orders on AI safety and is developing sector-specific guidance, though comprehensive federal AI legislation remains under discussion. Canada has enacted the Artificial Intelligence and Data Act as part of broader digital governance legislation.

In India, the regulatory landscape for AI is still developing. The Ministry of Electronics and Information Technology has released advisory notes on AI governance and responsible use, but comprehensive AI legislation has not yet been enacted. The Digital Personal Data Protection Act, 2023 provides a foundation for data protection that is relevant to AI governance, and the forthcoming Digital India Act is expected to address AI-related issues more directly. Civil society organizations, academics, and the legal community have been increasingly vocal about the need for robust, rights-based AI regulation in India.

VI. Principles for Rights-Respecting AI

Drawing on the human rights analysis and governance frameworks discussed above, several principles emerge as essential to a rights-respecting approach to AI development and deployment.

The principle of human centeredness holds that AI systems should be designed and deployed to serve human needs and to enhance human capabilities, rather than to replace human judgment in ways that diminish individual dignity and agency. Humans should remain meaningfully in control of consequential decisions, and AI should be understood as a tool in service of human ends rather than an autonomous agent with its own authority.

The principle of transparency requires that the people affected by AI decisions should be able to understand, in terms accessible to them, how those decisions were made. This does not require technical documentation that only experts can interpret; it requires meaningful explanation that gives affected individuals a genuine understanding of the basis for decisions and an opportunity to contest them.

The principle of accountability holds that there must always be a clearly identified human or institutional actor responsible for the decisions and impacts of AI systems. Responsibility cannot be dissolved in the complexity of algorithmic processes. Legal and regulatory frameworks must assign clear liability for AI-caused harm and create effective mechanisms for redress.

The principle of fairness requires that AI systems must not discriminate on the basis of protected characteristics such as race, gender, religion, or caste. This requires not only the removal of explicitly discriminatory features from AI systems, but ongoing monitoring and auditing of AI outputs for discriminatory effects, and the development of technical methods for identifying and mitigating bias in AI systems and training data.

The principle of privacy requires that AI systems must collect and process personal data only to the extent necessary for their legitimate purpose, must not enable surveillance that is disproportionate to that purpose, and must respect individuals' rights to control information about themselves.

Finally, the principle of inclusion requires that the development and governance of AI should involve the participation of all members of society, not only the technically expert or the economically powerful. The people most at risk from AI-related rights violations are often those whose voices are least heard in policy processes, and deliberate effort is needed to ensure that their interests and perspectives shape AI governance.

VII. Conclusion

The relationship between AI and human rights is one of the defining challenges of our time. Artificial Intelligence offers genuine possibilities for human flourishing, in healthcare, education, scientific research, and countless other domains. It also poses serious and documented risks to privacy, equality, dignity, and the other values that human rights law exists to protect.

Managing this tension requires more than good intentions on the part of AI developers or voluntary self-regulation by technology companies. It requires robust legal frameworks that hold AI developers and deployers accountable for the rights impacts of their systems. It requires technical research and innovation aimed at making AI systems fairer, more transparent, and more controllable. It requires institutional capacity in governments and civil society to monitor and evaluate AI systems and to advocate for the rights of those affected by them. And it requires a cultural shift in the AI community toward genuine acceptance of the responsibility that comes with building systems that affect billions of people's lives.

The development of ethical AI is not a constraint on innovation; it is a condition for sustainable innovation that retains the trust and consent of the people it affects. Societies that

succeed in building AI governance frameworks that are genuinely protective of human rights will be better positioned to realize the genuine benefits of AI than those that allow powerful interests to deploy AI without accountability. For India, a country with a rich constitutional tradition of rights protection and a rapidly growing AI sector, the challenge and the opportunity are both significant.

Human rights are not obstacles to technological progress. They are the framework within which progress must occur if it is to benefit all of humanity rather than a privileged few.

REFERENCES

1. Universal Declaration of Human Rights, United Nations General Assembly Resolution 217 A (III), 10 December 1948.
2. International Covenant on Civil and Political Rights, United Nations, 1966.
3. Justice K.S. Puttaswamy v. Union of India, (2017) 10 SCC 1.
4. Constitution of India, 1950, Articles 12-35 (Fundamental Rights).
5. Digital Personal Data Protection Act, 2023 (Act No. 22 of 2023), India.
6. European Commission High-Level Expert Group on Artificial Intelligence, "Ethics Guidelines for Trustworthy AI," Brussels, 2019.
7. UNESCO Recommendation on the Ethics of Artificial Intelligence, Paris, 2021.
8. OECD Principles on Artificial Intelligence, OECD/LEGAL/0449, 2019.
9. European Union Artificial Intelligence Act, Regulation (EU) 2024/1689.
10. European Parliament, General Data Protection Regulation (GDPR), Regulation (EU) 2016/679.
11. Buolamwini, J. and Gebru, T., "Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification," Proceedings of Machine Learning Research, 2018.
12. Angwin, J. et al., "Machine Bias," ProPublica, May 2016.
13. United Nations Office of the High Commissioner for Human Rights, "Bachelet Urges States to Impose Moratorium on Sale and Use of AI Systems that Pose Human Rights Risks," 2021.

14. Floridi, L. et al., "An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles and Recommendations," Minds and Machines, Vol. 28, 2018.

15. Jobin, A., Ienca, M. and Vayena, E., "The Global Landscape of AI Ethics Guidelines," Nature Machine Intelligence, Vol. 1, 2019.

16. Ministry of Electronics and Information Technology, Government of India, "Principles for Responsible AI," NITI Aayog Discussion Paper, 2021.

17. Doshi-Velez, F. and Kim, B., "Towards a Rigorous Science of Interpretable Machine Learning," arXiv preprint, 2017.

****

Artificial Intelligence in Judiciary and Access to Justice

By Asmita Antani

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction

In today's digital era, Artificial Intelligence (AI) is no longer limited to technical and commercial domains. It is rapidly entering the fields of judiciary and law enforcement. Technologies like Machine Learning (ML), Natural Language Processing (NLP), Optical Character Recognition (OCR), and Predictive Analytics are being used for judicial processes, legal research, and law enforcement. AI can make the functioning of the judiciary more transparent, faster, and effective. Similarly, in law enforcement, AI assists in crime prevention, identifying criminals, and making investigation processes more scientific and accurate.

Importance:

- Modernization of the Judiciary
- AI enhances the efficiency of judicial work.
- It accelerates the adoption of digital technologies and reduces the burden on human resources.

In the third phase of e-Courts, extensive use of AI is observed, such as:

Automated Case Management: Prioritizing cases and monitoring pending cases.

Legal Research: Analyzing Supreme Court and High Court judgments.

Prediction of Delays/Postponements: Estimating possible obstacles and reasons for pending cases.

Case Analysis: Studying preliminary case documents and identifying potential outcomes.

Example: The SUPACE (Supreme Court Portal for Assistance in Courts Efficiency) portal helps judicial officers in decision-making by analyzing case filings and related data in the Supreme Court.

Translation of Legal Subjects and Digital Access

AI-based translation software is used to ensure public access to all judicial documents and judgments.

- *SUVAS (Supreme Court Legal Translation Software):* Translates over 31,000 Supreme Court judgments into 16 languages.
- *e-SCR Portal:* Provides digital access to AI-translated judgments.

Thus, AI not only modernizes the judiciary but also makes access to justice easier for the public.

Law Enforcement and Crime Prevention

Predictive Policing

- AI helps law enforcement agencies predict crimes.
- By analyzing crime patterns, it can identify high-crime areas and potential offenders.
- This enables the police to prepare strategies based on forecasts.

AI-Powered Surveillance

- Drones and CCTV Monitoring – Real-time monitoring of crime scenes.
- Facial Recognition Systems – Applications like NAFRS (National Automated Facial Recognition System) developed by NCRB and ABHED (AI Based Human Face Detection) are used by Rajasthan and Punjab Police.

Digital Evidence and Forensic Analysis

AI-based forensic tools collect and analyze digital evidence from crime scenes.

- Voice Recognition Systems – Assist in filing FIRs.
- Augmented Reality (AR) – Digital reconstruction of crime scenes.
- Integration with National Systems – Systems like CCTNS, e-Jail, and e-Forensics integrate with AI to improve crime tracking and coordination among investigative agencies.

This way, AI makes law enforcement more scientific, faster, and efficient in less time.

Challenges in Adopting AI in Judiciary and Law Enforcement

Data Quality and Algorithmic Bias

AI models are only as good as the data they are trained on. Poor-quality or biased data can lead to unfair and unexpected outcomes. In Western countries, AI models have shown bias against Black people and women. In India, the digital divide may create barriers for remote and underprivileged communities in accessing justice.

Transparency and Black-Box Models

AI algorithms are often "black boxes," meaning the reasoning behind their decisions is unclear. This can create legal challenges in judicial and policing decisions. Lack of transparency can reduce public trust.

Ethics, Law, and Privacy

AI usage raises questions about privacy rights and ethics. There is lack of accountability. Risks are high due to unclear laws and decisions are based on incorrect data or models that can lead to delays in justice and wrongful judgments.

Capacity and Resistance

Adopting AI also faces challenges due to technical expertise and funding constraints. There is fear of job loss among officials and staff. There is also distrust of new technology. So there is a need for investment in training and skill development.

Positive Impacts and Future of AI

Judicial Transparency and Effective Law Enforcement

AI not only enhances efficiency but also strengthens transparency and accountability in the justice system.

- Use of block chain technology to securely maintain case records.
- Forecasting of pending cases and judgments through AI analytics.
- Prevention of digital crimes by enhancing cybersecurity.

Improvement in Legal Research

- Faster and more accurate access to case law and judgments for judges and lawyers.
- Rapid analysis of decisions across different languages and jurisdictions.

Crime Prevention and Predictive Analytics

- Effective policing through identification of criminals and crime-prone areas.
- Swift crime response using AI-based digital surveillance, forensic tools, and facial recognition systems.

Education and Training

AI can enhance efficiency by providing digital and technical training to judicial and law enforcement personnel.

Conclusion

The future of AI in the judiciary and law enforcement is extremely promising, but challenges exist. Ensuring data security, algorithmic transparency, ethics, and compliance with legal and social norms is critical.

Adopting AI can bring the following positive changes to India's justice system:

Increased Judicial Efficiency – Reduction in pending cases and faster case disposal.

Equal Access to Justice – Multilingual translation of judgments for broader reach.

Effectiveness in Law Enforcement – Crime prediction, faster investigation, and digital monitoring.

Transparency and Accountability – Improvement in judicial decisions through AI analytics.

Cybersecurity and Digital Evidence – Digital forensics and secure record-keeping.

AI has the potential to make judicial and law enforcement processes more transparent, fair, and timely. However, addressing challenges related to data security, ethics, transparency, and technical capability is essential. Overcoming these barriers could allow AI to revolutionize the Indian justice system and law enforcement.

****

Artificial Intelligence in Criminal Investigation and Evidence

By Prerana Sangle

F.Y. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon.
Email: preranasanglelaw@gmail.com

Abstract

Artificial Intelligence (AI) has emerged as a transformative tool in the field of criminal investigation and evidence, significantly enhancing the efficiency, accuracy, and speed of law enforcement processes. This study examines the role of AI in modern criminal justice, focusing on its applications in predictive policing, facial recognition, digital forensics, surveillance, and evidence analysis. AI enables investigators to process vast amounts of data, identify patterns, and uncover hidden connections, thereby improving crime detection and prevention. It also plays a crucial role in the collection, organization, and presentation of digital evidence, including emails, CCTV footage, and social media data.

The paper further explores the legal framework governing AI-based evidence in India, particularly under the Indian Evidence Act, 1872, with special reference to Section 65B, which mandates certification for electronic records. The landmark case of Anvar P.V. v. P.K. Basheer is analyzed to highlight the admissibility requirements of electronic evidence. Additionally, the study addresses constitutional concerns, especially the right to privacy as recognized in Justice K.S. Puttaswamy v. Union of India, which has significant implications for AI-based surveillance and data collection.

While AI offers numerous advantages such as faster investigations, improved accuracy, and effective handling of complex cases, it also presents challenges including bias, lack of transparency, risk of manipulation, and issues of accountability. The "black box" nature of AI systems and the potential for misuse raise serious legal and ethical concerns. Therefore, the paper emphasizes the need for robust legal regulations, transparency in AI systems, judicial oversight, and strong data protection measures.

In conclusion, AI has the potential to revolutionize the criminal justice system, but its use must be carefully balanced with legal safeguards to ensure fairness, protect fundamental rights, and uphold the principles of justice.

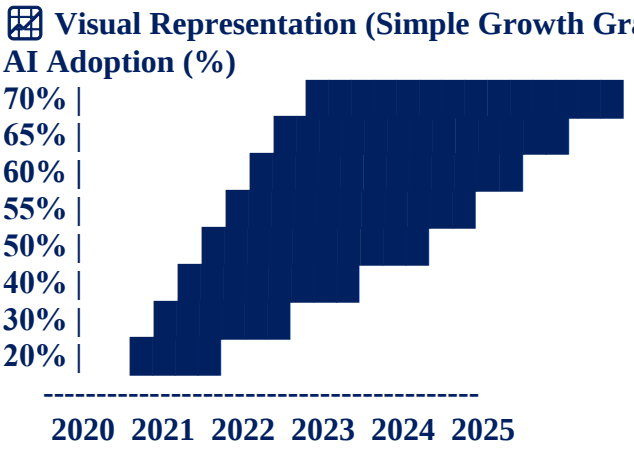
Introduction

Artificial Intelligence (AI) refers to the simulation of human intelligence in machines that are programmed to think, learn, and make decisions like humans. In recent years, AI has emerged as a transformative force across multiple sectors, including healthcare, finance, education, and particularly the criminal justice system. In the context of criminal investigation, AI plays a vital role in improving the efficiency, speed, and accuracy of investigative processes. Traditionally, criminal investigations relied heavily on manual efforts, human judgment, and limited technological tools. However, with the integration of AI, law enforcement agencies can now process vast amounts of data in a short time and uncover patterns that would otherwise remain hidden.

AI is used in various aspects of criminal justice such as surveillance, crime prediction, facial recognition, and digital forensics. It not only assists in detecting crimes but also helps in preventing them. Despite its advantages, the use of AI raises important concerns related to privacy, bias, transparency, and legal admissibility. In India, the legal framework governing evidence, particularly under the Indian Evidence Act, 1872, is gradually adapting to accommodate electronic and AI-generated evidence. Thus, AI has become both an opportunity and a challenge in modern criminal investigation.

Growth Chart: AI in Criminal Investigation & Evidence (Last 5 Years)

Visual Representation (Simple Growth Graph)



Explanation of Growth

1. Initial Stage (2020–2021)

During this period, AI in criminal investigation was in its early phase. Law enforcement agencies mainly used AI for basic surveillance and data storage. The adoption rate remained low due to lack of infrastructure, high costs, and limited awareness. However, the COVID-19 pandemic indirectly accelerated digital transformation, encouraging governments to explore AI-based monitoring systems.

2. Expansion Stage (2021–2022)

Between 2021 and 2022, AI technologies such as facial recognition, crime mapping, and digital forensics gained wider acceptance. Police departments began using AI to analyze crime patterns and manage large datasets. This period marked a shift from traditional investigation methods to data-driven policing.

3. Rapid Growth Phase (2022–2023)

This stage witnessed significant expansion in AI adoption. Facial recognition systems saw a major rise (around 45% growth between 2018–2023). AI tools were increasingly used for identifying suspects, tracking criminal activities, and improving response time. Governments and law enforcement agencies invested heavily in AI technologies, especially in urban areas.

4. Investment and Market Growth (2023–2024)

AI became a central tool in criminal investigation. The predictive policing market grew rapidly, reaching approximately $3.84 billion in 2024. AI systems were integrated into smart city projects, surveillance networks, and forensic analysis tools. This phase also saw increased use of AI in evidence management and courtroom presentations.

5. Advanced Adoption Stage (2024–2025/26)

In recent years, AI adoption has crossed 70% in advanced law enforcement systems (estimated trend). The market expanded to $5.77 billion in 2025, showing massive growth. AI is now used for:

- Automated evidence analysis
- Real-time surveillance
- Crime prediction
- Report writing and case management

Additionally, new technologies such as generative AI and agentic AI are being introduced, further enhancing investigation capabilities. The sector is expected to grow at a very high rate (over 50% CAGR in predictive policing).

The last five years have shown rapid and continuous growth in the use of AI in criminal investigation and evidence. What started as a limited tool for surveillance has now become an essential component of modern policing. The growth trend indicates that AI will continue to expand in the future, with increased reliance on automation, data analytics, and smart technologies. However, this growth must be balanced with legal safeguards, privacy protection, and ethical considerations to ensure justice and fairness.

1. Role and Usefulness of AI in Criminal Investigation

AI significantly enhances the effectiveness of criminal investigations by enabling law enforcement agencies to work smarter and faster. One of the most important applications of AI is predictive policing, where AI systems analyze historical crime data to predict future criminal activities. By identifying patterns related to time, location, and type of crime, AI helps police allocate resources efficiently and take preventive measures. This proactive approach reduces crime rates and improves public safety.

Another crucial application is facial recognition technology, which allows authorities to identify suspects by comparing images from CCTV footage with criminal databases. This technology is particularly useful in crowded public places such as airports, railway stations, and marketplaces. Similarly, AI-powered surveillance systems can detect suspicious behavior in real time, enabling immediate response to potential threats. For instance, if an unattended object is detected in a sensitive area, the system can alert authorities instantly.

AI also plays a vital role in digital forensics by analyzing data from electronic devices such as mobile phones, computers, and social media platforms. In cybercrime cases, AI helps trace the origin of fraudulent activities and identify perpetrators. Additionally, AI assists in identifying crime patterns by linking similar cases, which is especially useful in tracking serial offenders. Voice recognition technology further aids investigations by analyzing audio recordings and matching them with known voice samples.

Another major advantage of AI is its ability to enhance images and videos. Poor-quality CCTV footage can be improved using AI tools, making it easier to identify suspects. AI also helps track criminal activities by analyzing financial transactions, GPS data, and communication

records. Overall, AI reduces investigation time, minimizes human error, and increases the chances of solving complex cases.

2. AI in Evidence Collection and Analysis

AI has revolutionized the way evidence is collected, analyzed, and presented in criminal cases. In modern investigations, most evidence is digital in nature, including emails, call records, CCTV footage, and social media data. AI tools can efficiently extract and process such data from multiple sources. For example, in cybercrime cases, AI can recover deleted files, messages, and hidden information from electronic devices, which can serve as crucial evidence.

One of the key benefits of AI is its ability to analyze large volumes of data quickly and accurately. In cases involving financial fraud or large-scale conspiracies, AI can identify suspicious patterns and highlight relevant information. This not only saves time but also reduces the chances of human error. AI also helps in organizing evidence by categorizing and arranging it in a systematic manner, making it easier for investigators, lawyers, and judges to understand complex cases.

AI is particularly useful in analyzing visual and audio evidence. It can enhance blurry images, detect tampering in videos, and verify the authenticity of digital content. With the rise of deepfake technology, AI plays a crucial role in identifying manipulated media and preventing the use of false evidence in court. Furthermore, AI can link different pieces of evidence, such as phone records, location data, and financial transactions, to establish connections between suspects and criminal activities.

Another important application is the reconstruction of crime scenes. By analyzing data from various sources, AI can recreate the sequence of events, providing a clear picture of how a crime occurred. This helps courts understand the case better and make informed decisions. Additionally, AI assists in presenting evidence through visual tools such as charts, timelines, and simulations, making complex information more accessible.

3. **Legal Recognition of AI-Based Evidence**

The admissibility of AI-generated and electronic evidence is governed by the Indian Evidence Act, 1872. Section 65B of the Act deals specifically with electronic evidence and requires that such evidence must be accompanied by a proper certificate to ensure its authenticity. This provision is crucial in maintaining the reliability of digital evidence and preventing misuse.

A landmark judgment in this context is Anvar P.V. v. P.K. Basheer, where the Supreme Court clarified that electronic records can only be admitted as evidence if they comply with the requirements of Section 65B. The Court emphasized that a certificate under Section 65B (4) is mandatory, and failure to provide such certification would render the evidence inadmissible. This judgment has had a significant impact on the use of AI and digital evidence in Indian courts.

In addition to the Evidence Act, the Information Technology Act, 2000 provides legal recognition to electronic records and digital signatures. Together, these laws form the foundation for the admissibility of AI-based evidence in India. However, courts remain cautious in accepting such evidence, ensuring that it meets the standards of authenticity, reliability, and transparency.

4. Advantages of AI in Criminal Investigation and Evidence

The use of AI in criminal justice offers numerous advantages. Firstly, it saves time and effort by automating complex tasks and processing large amounts of data. This leads to faster investigations and quicker delivery of justice. Secondly, AI improves accuracy by minimizing human errors and providing precise analysis. Thirdly, it helps solve complex cases by identifying hidden patterns and connections that may not be visible to human investigators.

AI also plays a preventive role by predicting potential crimes and enabling proactive measures. Additionally, it enhances the presentation of evidence, making it easier for courts to understand and evaluate cases. Overall, AI acts as a powerful tool that supports law enforcement agencies and strengthens the criminal justice system.

7. Limitations and Challenges of AI in Evidence

Despite its benefits, AI has several limitations that must be addressed. One of the major concerns is the lack of accuracy, as AI systems are not always reliable. Errors in facial or voice recognition can lead to wrongful identification and unjust outcomes. Another significant issue is bias in AI systems, which arises from biased training data. This can result in discrimination against certain groups and undermine the fairness of the justice system.

The “black box” nature of AI is another challenge, as it is often difficult to understand how AI systems arrive at their conclusions. This lack of transparency makes it difficult for courts to trust AI-generated evidence. Additionally, digital evidence is vulnerable to tampering and manipulation, raising concerns about its authenticity.

Privacy is another critical issue, as AI relies on extensive data collection and surveillance. This may violate individuals’ fundamental rights, particularly the right to privacy. The Supreme

Court, in Justice K.S. Puttaswamy v. Union of India, recognized privacy as a fundamental right under Article 21 of the Constitution, thereby placing limits on the use of AI in surveillance.

Other challenges include high costs, technical complexity, and lack of accountability. It is often unclear who is responsible for errors made by AI systems, whether it is the developer, law enforcement agency, or government. These issues highlight the need for careful regulation and oversight.

6. Legal Framework Governing AI in India

The legal framework governing AI in criminal justice primarily consists of the Indian Evidence Act, 1872, and the Information Technology Act, 2000. Section 65B of the Evidence Act ensures that electronic evidence is admissible only when it meets specific requirements, thereby maintaining its reliability. The IT Act further supports the legal recognition of digital records and electronic transactions.

Constitutional safeguards also play an important role in regulating the use of AI. The right to privacy, as established in the Puttaswamy case, imposes restrictions on data collection and surveillance. Indian courts have adopted a cautious approach towards AI-based evidence, emphasizing the need for authenticity, reliability, and transparency.

7. Future of AI in Criminal Justice

The future of AI in criminal investigation is promising, with advancements in machine learning, big data analytics, and forensic technologies. AI is expected to become more accurate, efficient, and widely used in law enforcement. Predictive policing, automated surveillance, and advanced forensic tools will further enhance the capabilities of investigators.

However, the increasing use of AI will also require stronger legal regulations and ethical guidelines. Governments and legal institutions must ensure that AI is used responsibly and does not violate fundamental rights. Transparency and accountability will be key factors in building trust in AI systems.

8. Suggestions and Reforms

To ensure the responsible use of AI, several reforms are necessary. Firstly, there should be specific laws regulating the use of AI in criminal justice. Secondly, AI systems should be transparent and explainable, allowing courts to understand their functioning. Thirdly, strong data protection laws must be implemented to safeguard privacy.

Judicial oversight is essential to ensure that AI-based evidence is used appropriately. Law enforcement agencies should also receive proper training to effectively use AI tools. These measures will help balance technological advancement with legal and ethical considerations.

Conclusion

In conclusion, AI has revolutionized criminal investigation and evidence by making processes faster, more efficient, and data-driven. It plays a crucial role in crime detection, prevention, and evidence analysis. However, its use must be carefully regulated to address issues such as bias, privacy, and reliability.

Legal frameworks such as the Indian Evidence Act, 1872, along with judicial decisions like Anvar P.V. v. P.K. Basheer and Justice K.S. Puttaswamy v. Union of India, highlight the importance of authenticity and privacy in the use of AI. Ultimately, AI should be viewed as a supportive tool that enhances human judgment rather than replacing it. With proper safeguards and ethical use, AI has the potential to significantly strengthen the criminal justice system while ensuring fairness and justice.

****

Freedom of Speech Versus Artificial Intelligence Generated Content: Navigating Rights, Responsibility and Regulation

By Shivam Kumar

T.Y. B.A. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon.
Email: shivamkr88095@gmail.com

Abstract

The rapid proliferation of artificial intelligence in the domain of content creation has raised fundamental questions about the scope and limits of freedom of speech as guaranteed under constitutional frameworks around the world. In India, Article 19(1)(a) of the Constitution guarantees every citizen the right to freedom of speech and expression, a right that has been consistently interpreted by courts to be broad yet subject to reasonable restrictions. This research paper examines the tension between the constitutional guarantee of free speech and the unprecedented challenges posed by AI generated content. It explores whether AI systems can be said to exercise speech rights, whether content produced by machines enjoys the same constitutional protection as that produced by human beings, and how existing legal frameworks in India and globally are responding to the threats of deepfakes, automated misinformation, and synthetic media. The paper further proposes a framework for thoughtful regulation that balances the imperatives of free expression with the legitimate needs of accountability, transparency, and harm prevention.

Keywords: *freedom of speech, artificial intelligence, ai generated content, article 19(1)(a), deepfakes, misinformation, regulation, digital rights, constitutional law, shreya singhal, EU AI act.*

Introduction

Artificial intelligence has fundamentally transformed the way content is created, distributed, and consumed in contemporary society. From large language models generating legal memoranda to deep learning systems producing photorealistic images of people who do not exist, AI is no longer a futuristic concept confined to research laboratories but a present and pervasive reality that intersects deeply with law, governance, and civil liberties. The question of how existing legal frameworks, particularly those governing freedom of speech and expression, should respond to this unprecedented phenomenon has emerged as one of the most pressing jurisprudential debates of our time.

Freedom of speech has historically been conceived as a bulwark against state censorship, a right exercised by human beings to communicate ideas, criticize power, and participate in democratic discourse. However, the emergence of AI generated content challenges the foundational assumptions of this right. When a machine generates a political speech, fabricates a photograph of a public figure, or produces an entire news article without any human editorial input, who is the speaker? Can constitutional protections design for human expression apply to algorithmic output? These questions demand urgent legal examination.

The scale of the problem is considerable. Studies by research bodies and technology analysts estimate that AI generated content now constitutes a significant share of all online information, with projections suggesting that by 2026, as much as 90 percent of internet content could be generated or substantially influenced by artificial intelligence. The volume of deepfake content alone has increased exponentially, with reported complaints rising from under a thousand cases globally in 2019 to over seventy thousand in 2024, as illustrated in the figures presented in this paper.

In India, the jurisprudence on Article 19(1)(a) has evolved through landmark decisions across decades, but none of these decisions could have anticipated the specific challenges that AI generated content poses. The absence of a dedicated regulatory framework for AI in India, as of 2025, creates a significant legal vacuum, leaving courts and policymakers to navigate uncharted territory using legal instruments fashioned for a pre-digital world. This paper seeks to fill part of that intellectual gap by offering a systematic analysis of the intersection of free speech law and AI content generation.

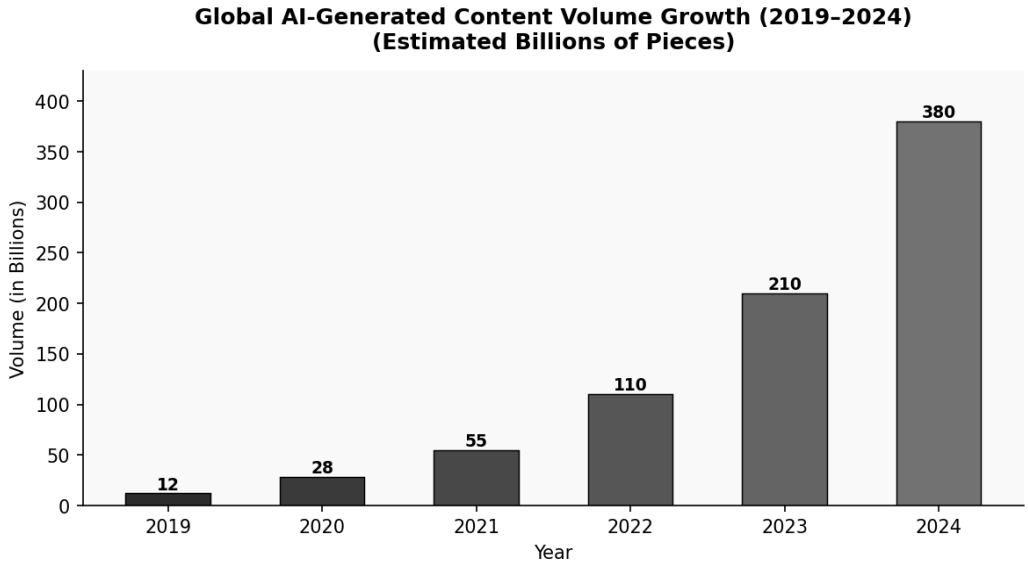


Figure 1: Global AI-Generated Content Volume Growth (2019–2024)

Figure 1 above illustrates the dramatic increase in AI generated content volume between 2019 and 2024, reflecting the exponential adoption of generative AI technologies across industries. This growth has outpaced the development of regulatory responses in almost every jurisdiction, creating a significant governance gap.

Freedom of Speech: Theoretical Foundations and Constitutional Framework

Theoretical Justification for Free Speech

The classical justifications for freedom of speech rest on three broad pillars: the marketplace of ideas, democratic self-governance, and individual autonomy. The marketplace of ideas theory, associated with Justice Oliver Wendell Holmes and developed further by Judge Learned Hand, holds that truth is best discovered through the open competition of ideas rather than through government diktat. The democratic self-governance theory, articulated by philosopher Alexander Meiklejohn, holds that free speech is indispensable for citizens to participate meaningfully in collective decision making. The individual autonomy theory, advanced by John Stuart Mill and subsequently by Ronald Dworkin, holds that the right to speak freely is an intrinsic aspect of human dignity, self-realization, and rational agency.

Each of these justifications encounters significant difficulty when applied to AI generated content. The marketplace of ideas theory assumes that competing speakers are rational agents who are, at least in principle, motivated by the pursuit of truth. AI systems, however, do not seek truth in any meaningful sense. They generate text, images, audio, and video based on statistical patterns in training data, which may reflect and amplify existing biases, falsehoods, and prejudices at an industrial scale, thereby distorting rather than enriching the marketplace of ideas.

The democratic self-governance theory assumes that speech is connected to the exercise of citizenship, but AI systems are not citizens and have no stake in democratic outcomes. The individual autonomy theory assumes that speech expresses the inner life and considered judgement of a person, but machines have no inner life to express and make no considered judgements. These theoretical difficulties do not necessarily mean that AI generated content is entirely outside the ambit of speech protections, but they do suggest that the application of traditional free speech doctrine to AI output requires considerable adaptation.

Article 19(1)(a) and its Scope in Indian Constitutional Law

Article 19(1)(a) of the Constitution of India guarantees to all citizens the right to freedom of speech and expression. This right, though not defined in the text of the Constitution, has been interpreted expansively by the Supreme Court to encompass a remarkably broad range of communicative activities, including the right to acquire and disseminate information, the freedom of the press, the right to broadcast, the right to commercial speech, and even the right to silence. In Romesh Thappar v. State of Madras (1950), the Supreme Court established that freedom of speech is the foundation of all democratic organizations.

The right under Article 19(1)(a) is, however, not absolute. Article 19(2) permits the State to impose reasonable restrictions on the exercise of this right on grounds of sovereignty and integrity of India, security of the State, friendly relations with foreign States, public order, decency or morality, contempt of court, defamation, or incitement to an offence. The Supreme Court has consistently held that any restriction must satisfy a test of proportionality and must be traceable to a permissible head under Article 19(2).

The landmark judgment in Shreya Singhal v. Union of India (2015) is of particular relevance to the AI content debate. The Court struck down Section 66A of the Information Technology Act, 2000, which had criminalized the sending of online messages that were grossly offensive or menacing, holding that the provision was vague, overbroad, and incapable of withstanding constitutional scrutiny. The Court drew a critical distinction between discussion and advocacy on the one hand and incitement on the other, holding that only the latter could be restricted. This distinction will prove important in evaluating AI generated content that stops short of direct incitement.

AI Generated Content: Nature, Challenges and Legal Implications

What Constitutes AI Generated Content

AI generated content refers to text, images, audio, video, code, or other outputs that are produced wholly or substantially by an artificial intelligence system without direct human authorship. The category encompasses a wide spectrum of outputs, ranging from relatively benign applications such as automated grammar correction or news summaries to highly sophisticated and potentially harmful applications such as synthetic media designed to impersonate real individuals. The most significant categories for legal analysis include generative text (produced by large language models such as GPT-4 and similar systems), synthetic images and videos (produced by

generative adversarial networks and diffusion models), voice clones (produced by text-to-speech AI trained on samples of a target speaker's voice), and deepfakes (AI manipulated audio-visual content that typically depicts a real person doing or saying something they never did). Each category poses distinct legal challenges and implicates different bodies of law.

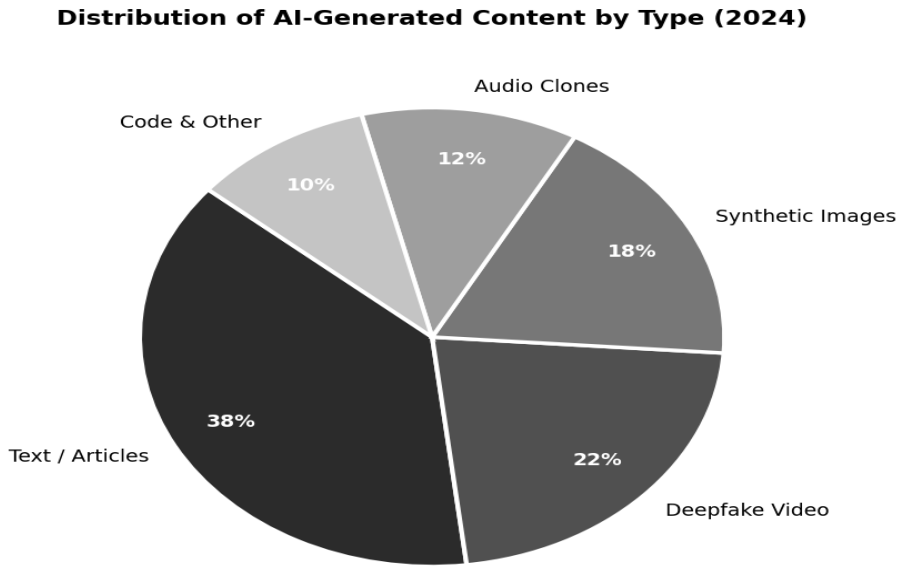


Figure 2: Distribution of AI-Generated Content by Type (2024)

Figure 2 illustrates the composition of AI generated content by type as of 2024. Text and articles constitute the largest share, followed by deepfake video, reflecting the rapid adoption of large language models and video synthesis technologies. Even the smallest categories, such as audio clones, represent millions of pieces of synthetic content circulating on digital platforms.

Deepfakes and the Crisis of Authenticity

Deepfakes represent perhaps the most acute threat to the integrity of public discourse posed by AI generated content. A deepfake is a synthetic audio-visual recording produced using deep learning techniques that depicts a real person in a fabricated scenario, typically with sufficient realism to deceive a casual viewer. The technology has been weaponized for political disinformation, non-consensual intimate imagery, financial fraud, and targeted harassment.

The legal response to deepfakes in India has been piecemeal. No legislation specifically addresses deepfakes as such. Recourse must currently be sought under general provisions of the Indian Penal Code, 1860, such as Section 499 (defamation), Section 67 and 67A of the Information Technology Act (publication of obscene material), and civil remedies for invasion of privacy under the constitutional right recognized in K.S. Puttaswamy v. Union of India (2017). The Ministry of

Electronics and Information Technology issued an advisory in November 2023 directing platforms to act against deepfake content under the IT Rules, 2021, but an advisory lacks the binding force of law.

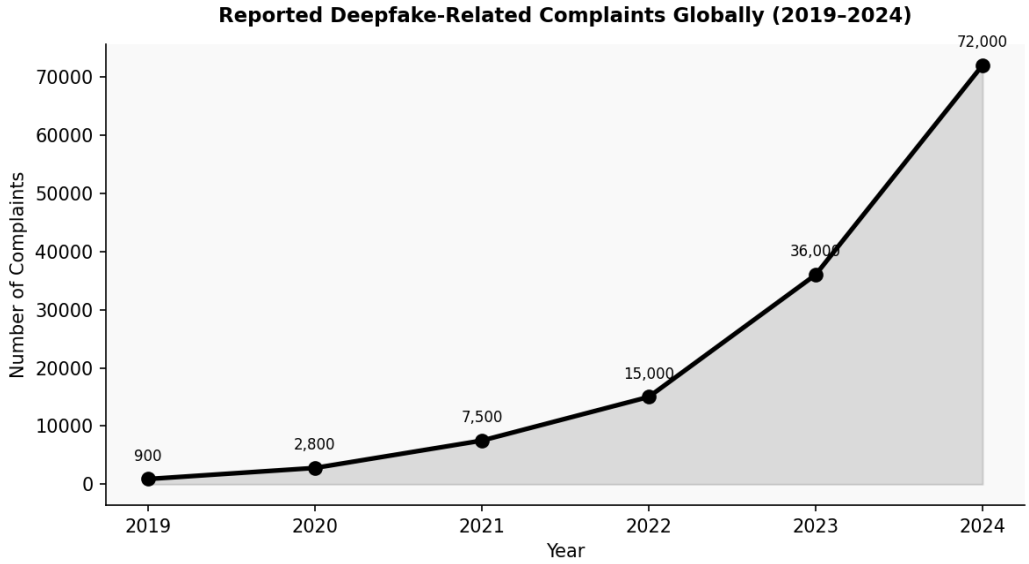


Figure 3: Reported Deepfake-Related Complaints Globally (2019–2024)

Figure 3 presents the sharp upward trajectory of deepfake-related complaints filed globally between 2019 and 2024. The near-doubling of complaints year-on-year in the most recent period reflects both the ease of creating deepfakes with consumer-grade tools and growing public awareness. India figures prominently in this data, with several high-profile cases involving political figures, Bollywood celebrities, and private individuals.

Automated Misinformation and Disinformation

Beyond deepfakes, AI systems are capable of generating textual misinformation at a scale that no human operation could match. Automated bot networks powered by language models can seed social media platforms with thousands of false narratives within minutes, manipulate search engine results, and generate synthetic personas that masquerade as authentic users. In the context of elections, AI generated disinformation poses a direct threat to democratic self-governance, the very value that free speech doctrine is designed to protect.

The challenge for law is to distinguish between AI generated content that is protected speech, however misleading or offensive, and content that crosses the threshold into unprotected categories such as deliberate incitement, defamation, or fraud. This distinction is particularly difficult where AI systems generate content autonomously, without any specific instruction from

a human operator to produce false information. Questions of intentionality, foreseeability, and causation that are central to most criminal and tortious liability frameworks become deeply complicated when applied to autonomous algorithmic systems.

Comparative Regulatory Analysis

Different jurisdictions have adopted markedly different approaches to regulating AI generated content, reflecting varying constitutional traditions, risk tolerances, and governance philosophies. A comparative analysis reveals a spectrum from highly permissive regimes anchored in broad speech rights to highly restrictive regimes that treat AI generated content as an instrument of state-supervised information control. The following table provides a structured comparison of the major regulatory frameworks.

Jurisdiction	Key Legislation	AI Disclosure	Deepfake Law	Free Speech Balance
European Union	EU AI Act (2024)	Mandatory	Yes (proposed)	Rights-based, high protection
United States	No federal AI law yet; DEEPFAKES Accountability Act (pending)	Partial	State-level only	First Amendment very broad
India	IT Act 2000; IT Rules 2021; Draft Digital India Act	Absent	No specific law	Art. 19(1)(a); Shreya Singhal guardrails
China	Deep Synthesis Regulations (2022); Generative AI Rules (2023)	Strict	Yes — criminal	State-controlled; heavy restrictions
United Kingdom	Online Safety Act (2023); AI White Paper	Encouraged	Partial (OSA)	Harm-based proportionality test

Table 1: Comparative AI Content Regulation Across Major Jurisdictions (2024)

The table above reveals significant divergence in regulatory approaches. The European Union, through its landmark AI Act of 2024, has adopted the most comprehensive risk-based framework, requiring mandatory disclosure for AI generated content, prohibiting certain high-risk AI applications, and establishing a tiered compliance architecture. The United States, constrained by the expansive reach of the First Amendment, has been reluctant to impose federal disclosure requirements, though several states have enacted laws targeting deepfakes in electoral contexts. China has moved in the opposite direction, deploying AI regulation as a tool of information control, requiring AI content platforms to submit to government approval and mandating that AI outputs align with socialist core values.

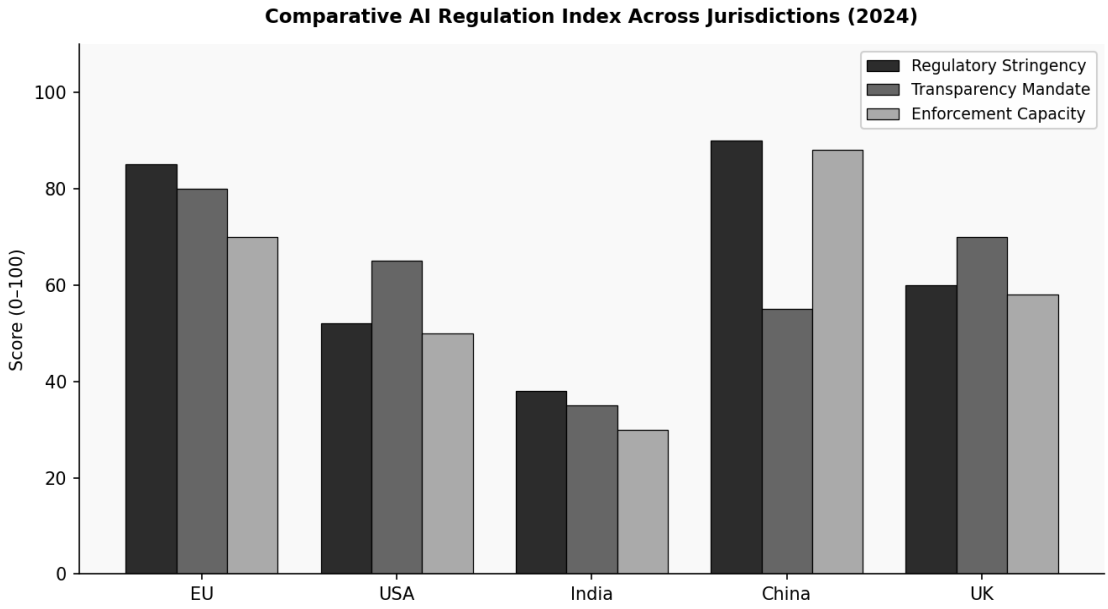


Figure 4: Comparative AI Regulation Index — Stringency, Transparency, and Enforcement (2024)

Figure 4 visualizes the regulatory profiles of five major jurisdictions across three dimensions: regulatory stringency, transparency mandates, and enforcement capacity. China leads on both stringency and enforcement but lags on transparency in the sense of independent judicial oversight. The EU presents a broadly balanced high-regulation profile, while India scores considerably lower across all three dimensions, reflecting the nascent state of its AI governance framework. This visualization underscores the urgency of developing a more robust regulatory infrastructure in India.

The European Union AI Act, 2024

The EU AI Act represents the world's first comprehensive legislative framework for regulating artificial intelligence. Adopted by the European Parliament in March 2024, the Act employs a risk-based classification system, dividing AI systems into unacceptable risk (prohibited), high risk (subject to stringent compliance requirements), limited risk (subject to transparency obligations), and minimal risk (largely unregulated) categories. AI systems that generate synthetic content, including deepfakes, are subject to mandatory labelling requirements under Article 50 of the Act, which requires AI generated content to be clearly identified as such. The Act also prohibits AI systems that manipulate persons through subliminal techniques or that deploy real-time biometric identification in public spaces.

The United States Approach

In the United States, the First Amendment to the Constitution provides exceptionally strong protection for freedom of speech, with the Supreme Court historically resistant to content-based restrictions on expression except in narrowly defined categories such as obscenity, fraud, and true threats. The application of First Amendment doctrine to AI generated content is deeply contested. Some scholars argue that AI outputs, as a form of compelled machine speech by private actors, attract full First Amendment protection when produced at the direction of human users. Others contend that purely autonomous AI output, generated without any particular human communicative intent, may fall outside the scope of the Amendment entirely. Federal legislation specifically addressing AI generated content remains absent as of 2025, though the White House Executive Order on AI Safety of 2023 and subsequent agency guidance have established soft-law standards for AI transparency.

The Indian Context and the Way Forward

India's regulatory response to AI generated content has been characterized by a combination of platform-level nudges and advisory guidance rather than binding legislation. The Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, impose due diligence obligations on intermediaries and require platforms to act against content that violates applicable law, but do not specifically address AI generated content. The Ministry of Electronics and Information Technology's advisory on deepfakes, issued in November 2023, directed platforms to remove deepfake content within thirty-six hours of a complaint, but the absence of a statutory basis limits its enforceability.

The Draft Digital India Act, which has been in preparation since 2022 and is yet to be tabled in Parliament as of 2025, is expected to replace the Information Technology Act, 2000, and to address emerging technologies including AI. Legal scholars and policy advocates have urged that the Act incorporate mandatory disclosure requirements for AI generated content, establish a dedicated regulatory authority for AI oversight, and provide for civil and criminal liability frameworks calibrated to the degree of human involvement in AI content generation.

Human Speech Versus AI Generated Content: A Legal Comparison

The following comparative table contrasts key legal parameters of human speech and AI generated content, highlighting the doctrinal gaps that current law must bridge.

Parameter	Human Speech	AI-Generated Content
Constitutional Status	Protected under Art. 19(1)(a) as fundamental right	Unclear; depends on human involvement and intent
Speaker Identity	Identifiable human citizen	Algorithm / machine; no legal personhood
Intent and Mens Rea	Speaker has conscious intent	No intent; output is probabilistic prediction
Accountability	Speaker is directly liable	Liability distributed among developer, deployer, user
Harm Potential	Limited by human capacity	Exponential; can generate millions of pieces instantly
Verification	Relatively easier to verify source	Difficult; deepfakes and synthetic media hard to detect
Regulatory Response	Established legal frameworks (defamation, obscenity, etc.)	Nascent; piecemeal application of existing laws

Table 2: Legal Comparison of Human Speech and AI-Generated Content

The comparison in Table 2 illustrates that existing legal frameworks, designed to regulate human speech, encounter systematic difficulties when applied to AI generated content. The most critical gaps relate to speaker identity, accountability, and harm potential. Traditional defamation law, for instance, requires the identification of a defamer who made a false statement with some degree of culpability. Where an AI system autonomously generates defamatory content without

specific human instruction, it is far from clear that the developer, the platform, or the user satisfies the requirements of the cause of action. These gaps must be addressed by legislative intervention.

Key Judicial Decisions and Their Relevance

The following table summarizes the most significant Indian judicial decisions bearing on the intersection of free speech and digital content, along with their relevance to the AI generated content debate.

Case	Court & Year	Key Holding	Relevance to AI
Shreya Singhal v. Union of India	Supreme Court, 2015	Struck down S. 66A IT Act; upheld online speech rights	Sets floor for digital speech protection
Romesh Thappar v. State of Madras	Supreme Court, 1950	Free speech is foundational to democracy	Philosophical basis for AI speech debates
Bennett Coleman v. Union of India	Supreme Court, 1972	Right to circulate information is protected	AI content distribution may be protected
K.S. Puttaswamy v. Union of India	Supreme Court, 2017	Privacy is a fundamental right under Art. 21	Deepfakes violate privacy; AI must comply
Faheema Shirin v. State of Kerala	Kerala HC, 2019	Internet access is a fundamental right	AI content platforms must remain accessible

Table 3: Key Indian Judicial Decisions on Free Speech and Digital Content

The case law surveyed in Table 3 establishes a robust constitutional foundation for free speech in the digital domain, but it was developed without reference to AI generated content. The principles in Shreya Singhal, in particular, impose significant constraints on any regulatory framework seeking to restrict AI content, requiring that any such restriction be narrowly tailored to a specific permissible harm and not be so broad as to chill legitimate expression. The privacy jurisprudence in Puttaswamy provides an independent constitutional basis for regulating AI content that invades personal privacy, particularly deepfakes and voice clones.

Proposed Regulatory Framework for India

Based on the foregoing analysis, this paper proposes a five-pillar regulatory framework for governing AI generated content in India, designed to balance the constitutional guarantee of free expression with the imperatives of accountability, dignity, and democratic integrity.

Mandatory Disclosure and Labelling

All content generated wholly or substantially by an AI system that is disseminated to the public through any online platform should be required to carry a clear and conspicuous disclosure to that effect. This obligation should rest on the platform as an intermediary, consistent with the existing framework of the IT Rules, 2021. The disclosure requirement does not restrict speech but rather ensures that citizens can calibrate their trust in information, preserving rather than impairing the marketplace of ideas.

Graduated Liability Framework

Liability for harmful AI generated content should be distributed among developers, deployers, and users on a graduated basis proportionate to their degree of control over and knowledge of the content. A developer who creates an AI system without adequate safeguards against the generation of defamatory or inciting content should bear primary liability. A platform that hosts AI generated content without implementing reasonable detection mechanisms should bear secondary liability. A user who deliberately uses an AI system to generate harmful content should bear direct criminal or civil liability.

Specific Prohibition on Harmful Deepfakes

The legislature should enact a specific statutory provision prohibiting the creation and dissemination of deepfake content that depicts real individuals in false scenarios designed to harm their reputation, invade their privacy, or manipulate political processes. Such a provision should provide for both civil remedies, including injunctive relief and damages, and criminal sanctions for aggravated cases involving electoral manipulation, non-consensual intimate imagery, or targeted harassment.

Independent Regulatory Authority

An independent statutory body with technical expertise in artificial intelligence should be established under the proposed Digital India Act to develop standards for AI content disclosure, oversee platform compliance, receive and adjudicate complaints, and advise the legislature on emerging regulatory challenges. The regulator should operate with judicial oversight and statutory

independence to guard against the use of AI regulation as an instrument of censorship or political control.

Digital Literacy and Public Awareness

Regulation alone cannot address the challenges posed by AI generated content. The government should invest significantly in digital literacy programmes that equip citizens, particularly those in rural and semi-urban areas, with the critical skills necessary to identify AI generated content, verify information, and resist manipulation. Schools, civil society organizations, and media institutions all have roles to play in this effort, which must be treated as a long-term public investment in democratic resilience.

Conclusion

The relationship between freedom of speech and AI generated content is one of the defining legal questions of the coming decade. On the one hand, AI enables ordinary citizens to communicate and create in unprecedented ways, amplifying the reach of human expression and democratizing access to information. On the other hand, AI generated content threatens to undermine the very values that free speech doctrine is designed to protect, by flooding public discourse with synthetic misinformation, enabling the fabrication of evidence, and weaponizing identity for harassment and fraud.

The existing constitutional framework in India, centred on Article 19(1)(a) and the reasonable restrictions in Article 19(2), provides a workable foundation for a balanced regulatory response, but it requires substantial legislative development and judicial interpretation to be applied meaningfully to the AI context. The comparative experience of the European Union, the United States, China, and the United Kingdom, surveyed in this paper, offers valuable lessons, though no jurisdiction has yet developed a fully satisfactory model.

The framework proposed in this paper, centred on mandatory disclosure, graduated liability, specific prohibition on harmful deepfakes, independent regulation, and digital literacy, seeks to chart a path that is true to both the letter and the spirit of the constitutional guarantee of free speech. The goal is not to silence AI but to ensure that AI speaks honestly, accountably, and in ways that serve rather than subvert the democratic values that the Constitution enshrines.

As the technology continues to evolve at a pace that will almost certainly outrun any static regulatory framework, ongoing dialogue between legal scholars, technologists, civil society, and policymakers will be essential. The present paper is offered as a contribution to that dialogue, with

the hope that it may assist in developing a legal framework worthy of both the promise and the peril of the age of artificial intelligence.

REFERENCES

1. Romesh Thappar v. State of Madras, AIR 1950 SC 124.
2. Bennett Coleman and Co. v. Union of India, (1972) 2 SCC 788.
3. Maneka Gandhi v. Union of India, (1978) 1 SCC 248.
4. Shreya Singhal v. Union of India, (2015) 5 SCC 1.
5. K.S. Puttaswamy v. Union of India, (2017) 10 SCC 1.
6. Faheema Shirin R.K. v. State of Kerala, 2019 SCC OnLine Ker 3806.
7. Information Technology Act, 2000 (India).
8. Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021 (India).
9. Regulation (EU) 2024/1689 of the European Parliament and of the Council (EU AI Act).
10. Online Safety Act, 2023 (United Kingdom).
11. Executive Order on Safe, Secure, and Trustworthy Artificial Intelligence, October 2023 (United States).
12. Ministry of Electronics and Information Technology, Advisory on Deepfakes, November 2023 (India).
13. Meiklejohn, A., Free Speech and Its Relation to Self-Government (1948).
14. Mill, J.S., On Liberty (1859).
15. Bostrom, N. and Cirkovic, M. (eds.), Global Catastrophic Risks (2008).
16. Chesney, R. and Citron, D., 'Deep Fakes: A Looming Challenge for Privacy, Democracy and National Security', 107 California Law Review 1753 (2019).
17. Floridi, L. et al., 'An Ethical Framework for a Good AI Society', 28 Minds and Machines 689 (2018).
18. Sunstein, C.R., #Republic: Divided Democracy in the Age of Social Media (2017).
19. World Economic Forum, Global Risks Report 2024 (2024).
20. NITI Aayog, Responsible AI for All: Adopting the Framework (2021).

****

Cybercrimes against Women in India: Emerging Digital Threats and Legal Remedies

By Manya Mishra

5th Year B.A. LL.B.
M.K.E.S. College of Law, Mumbai

By Rida Moledina

5th Year B.A. LL.B.
M.K.E.S. College of Law, Mumbai

Abstract

The rapid expansion of digital technologies and internet accessibility has transformed communication, commerce, and social interaction worldwide[103]. While these advancements have improved connectivity and information exchange, they have also created new opportunities for cybercrime[104] Women are among the most vulnerable groups in cyberspace, often facing online harassment, cyber stalking, identity theft, image morphing, and the non-consensual dissemination of intimate content[105].Such offences violate fundamental rights to privacy, dignity, and personal autonomy while causing psychological distress, reputational damage, and social stigma[106].

In India, cyber offences are primarily governed by the Information Technology Act, 2000, along with relevant provisions under the Bharatiya Nyaya Sanhita, 2023, which replaced the Indian Penal Code as part of recent criminal law reforms[107]. However, emerging technologies such as artificial intelligence, deepfake technology, voice cloning, and digital surveillance have introduced new forms of cyber abuse that existing legal frameworks struggle to address effectively[108]

This paper examines the nature and evolution of cybercrimes against women in India, evaluates the adequacy of the current legal framework, and analyses emerging technological threats. The study adopts a doctrinal research methodology based on statutes, judicial decisions,

[103] National Crime Records Bureau, *Crime in India 2023* 92 (Ministry of Home Affairs, Govt. of India 2024) https://ncrb.gov.in/sites/default/files/CII-2023-ENGLISH.pdf.
[104] The Information Technology Act, 2000, No. 21, 2000, Preamble (India).
[105] Bharatiya Nyaya Sanhita, 2023, § 354D (stalking including cyberstalking) https://www.indiacode.nic.in/handle/123456789/20062.
[106] *Shreya Singhal v. Union of India*, (2015) 5 SCC 1, 34 (Supreme Court of India).
[107] Ministry of Law and Justice, *Bharatiya Nyaya Sanhita Gazette Notification*, S.O. 3403(E) (July 1, 2024) https://egazette.gov.in
[108] Parliamentary Standing Committee on Information Technology, *Deepfake and AI Misuse Report* para 4.2 (Lok Sabha Secretariat, 2025) https://loksabha.nic.in/Committee/CommitteeInformation.aspx

government reports, and academic literature. It concludes that addressing cybercrimes against women requires stronger legal mechanisms, improved digital forensic capacity, greater cyber awareness, and cooperation between law enforcement agencies and technology platforms.

Keywords: cybercrime, women's safety, cyber harassment, cyber stalking, deepfake technology, artificial intelligence, information technology act, bharatiya nyaya sanhita, online violence, digital justice.

Introduction

The rapid growth of digital technology and internet access has transformed the way individuals communicate, work, and interact socially. Digital platforms enable global connectivity and access to information, but they also provide new avenues for criminal activities. Among those most vulnerable to such exploitation are women, who are frequently targeted through online harassment, cyber stalking, identity theft, image morphing, and the non-consensual sharing of personal or intimate content[109]. Cybercrimes against women represent serious violations of privacy, dignity, and personal autonomy. These offences often cause psychological trauma, reputational harm, and emotional distress[110]. The widespread use of social media and digital communication tools has made it easier for perpetrators to exploit anonymity and target victims with minimal accountability[111].

The digital environment has blurred the boundaries between private and public spaces, allowing online harassment to mirror or intensify real-world gender-based violence[112]. As a result, cyber offences against women are increasingly recognized as a form of technology-facilitated gender-based violence that requires specialized legal and policy responses. In India, cybercrimes against women are addressed through the Information Technology Act, 2000, and provisions of the Bharatiya Nyaya Sanhita, 2023. However, rapid technological developments, particularly in artificial intelligence and deepfake technologies, have created new legal and enforcement challenges.

Recent developments further highlight the growing seriousness of cybercrimes against women. For example, in 2026, Gurugram police launched a dedicated cyber-safety helpline called

[109] National Crime Records Bureau, *Crime Against Women 2023*, Table 3A (NCRB 2024) (11,211 cases of cyberstalking/obscene messages) https://ncrb.gov.in/sites/default/files/CII-2023-CAW-ENGLISH.pdf.
[110] *Justice K.S. Puttaswamy (Retd.) v. Union of India*, (2017) 10 SCC 1, para 267 (right to privacy as fundamental).
[111] *The Information Technology Act*, 2000, § 66A (struck down, but anonymity issues persist); *Shreya Singhal v. Union of India*, (2015) 5 SCC 1.
[112] UN Women, *Cyber Violence Against Women and Girls in India* 15 (2024) https://asiapacific.unwomen.org/en/digital-library/publications.

"Digital Saheli" to assist victims of deepfake harassment and sextortion. Similarly, cases involving AI-generated deepfake scams and online defamation have been reported across India, demonstrating the increasing misuse of emerging technologies for cyber offences[113].

Objectives of the Study

a) To examine the various forms of cybercrimes committed against women.
b) To analyse the existing legal framework governing cybercrimes in India.
c) To identify emerging technological threats affecting women in cyberspace.
d) To suggest measures to strengthen legal remedies and cyber safety.

Research Questions

i) What are the major forms of cybercrimes affecting women in India?
ii) Are existing legal provisions sufficient to address cybercrimes against women?
iii) How do emerging technologies contribute to new forms of cyber abuse?
iv) What legal and policy reforms are necessary to enhance cyber safety?

Research Methodology

This study adopts a doctrinal research methodology based on secondary sources such as statutes, judicial decisions, government reports, and scholarly publications. Legal provisions under the Information Technology Act, 2000, and the Bharatiya Nyaya Sanhita, 2023, are examined to evaluate their effectiveness in addressing cyber offences targeting women. Statistical reports from the National Crime Records Bureau (NCRB) are also analyzed to identify recent cybercrime trends in India.

Literature Review

Cybercrimes against women have increasingly attracted academic attention as digital technologies reshape social interactions. Researchers highlight that cybercrime reflects broader gender inequalities within society. Studies on cyber law note that the Information Technology Act initially focused on hacking and financial fraud rather than harassment or image-based abuse.

[113] CERT-In, *Annual Cyber Incident Report 2025* 45 (15% rise in AI deepfake incidents) https://www.cert-in.org.in/PDF/publication/CERT-In_Annual_Report_2025.pdf.

Reports by the National Crime Records Bureau show a steady rise in cybercrime cases across India, while recent studies emphasize growing risks associated with deepfake technology and artificial intelligence-based impersonation.

Evolution and Nature of Cybercrimes against Women

Cybercrime in India began gaining prominence in the late 1990s as internet usage expanded. The Information Technology Act, 2000, was introduced to regulate electronic communication and cyber offences. Common cyber offences affecting women include cyberbullying, cyber stalking, cyber grooming, sextortion, identity theft, fake social media profiles, and phishing scams. Recent technological developments have also enabled new forms of abuse such as deepfake pornography, AI-based impersonation, cyber flashing, and spyware-based surveillance.

Beyond technological factors, cybercrimes against women are also linked to structural gender inequalities within society. Scholars describe this phenomenon as *"Digital Patriarchy,"* where traditional gender discrimination is reproduced and amplified in online environments. Digital anonymity and technological tools may enable perpetrators to reinforce patriarchal power structures through harassment, intimidation, and image-based abuse. Recognizing cybercrime as a form of gender-based violence is essential for developing effective legal and policy responses.

Emerging Cyber Threats

The table highlights the shift from traditional forms of cyber harassment to technologically advanced threats. Earlier cyber offences relied primarily on direct communication between perpetrators and victims through messaging platforms or social media. However, new technologies such as artificial intelligence and digital media manipulation tools have enabled more sophisticated forms of abuse.

Table 1: Emerging Cybercrimes against Women

Traditional Cyber Offences	Emerging Digital Threats
Cyber Bullying	Deepfake Pornography
Cyber Stalking	AI-Based Identity Impersonation
Cyber Grooming	Voice Cloning for Blackmail
Online Sextortion	Non-Consensual AI-Generated Images
Fake Profiles	Digital Surveillance through Spyware
Online Harassment	Virtual Reality Harassment
Phishing	Data Scraping of Images

Intimidating Messages	Cyber Flashing

Deepfake pornography and AI-based impersonation allow perpetrators to create fabricated digital content that appears authentic, increasing the potential for reputational damage and psychological harm. Similarly, spyware and surveillance technologies enable offenders to monitor victims' online activities or locations without consent. These developments demonstrate that cybercrime is evolving alongside technological innovation and requires continuous updates to legal frameworks and investigative mechanisms.

Statistical Trends in Cybercrimes

The data indicates a steady increase in cybercrime cases in India. According to NCRB statistics, cases rose from 52,974 in 2021 to 86,420 in 2023, reflecting a growth of more than 60 percent within two years. The expansion of internet access, smartphone usage, and digital financial transactions has increased exposure to cyber threats.

While many cybercrime cases involve financial fraud, there has also been a noticeable rise in online harassment, cyber stalking, and exploitation through social media platforms. Women are particularly vulnerable because digital technologies can be misused to manipulate images, disseminate personal information, or conduct persistent harassment.

Table 2: Cybercrime Cases in India

Year	Cybercrime Cases	Crime Rate
2021	52,974	3.9
2022	65,893	4.8
2023	86,420	6.2

Impact of Cybercrimes on Women

Cybercrimes often have far-reaching consequences beyond immediate harassment. Victims frequently experience psychological trauma, anxiety, and loss of self-confidence. Socially, victims may face reputational harm and withdraw from digital spaces due to fear of continued harassment.

Professional consequences may arise when manipulated digital content affects employment opportunities or workplace relationships. Legal barriers, such as a lack of awareness,

difficulties in preserving digital evidence, and delays in investigation, further complicate the pursuit of justice.

Table 3: Impact of Cybercrimes on Women

Type of Impact	Description
Psychological Impact	Anxiety, depression, emotional distress
Social Impact	Social isolation, reputational damage
Professional Impact	Loss of career opportunities
Legal Impact	Difficulty accessing justice

Recent Cases and Real-World Incidents of Cybercrimes against Women

Recent incidents across India highlight the growing seriousness of cybercrimes against women and the increasing misuse of emerging technologies[114]. For example, several cases involving deepfake videos and AI-generated content targeting women have been reported in recent years[115]. In 2023, a manipulated deepfake video of a well-known female actor circulated widely on social media, raising national concerns regarding the misuse of artificial intelligence technologies[116]. The incident prompted government authorities to direct social media platforms to strengthen monitoring mechanisms and remove manipulated digital content more rapidly[117].

Another significant development occurred in 2026 when the Gurugram police introduced a cyber-safety initiative known as "Digital Saheli[118]." This program was designed to assist women facing cyber harassment, sextortion, and deepfake abuse by providing a dedicated helpline and faster complaint registration mechanisms[119]. The initiative also includes digital awareness campaigns aimed at educating women about online safety and reporting procedures[120].

Similarly, several sextortion and cyber-stalking cases have been reported in metropolitan cities such as Mumbai and Bengaluru, where perpetrators used fake social media profiles to

[114]NCRB, *Crime Against Women 2023*, Table 3A (11,211 cyberstalking cases; 25% rise) https://ncrb.gov.in/sites/default/files/CII-2023-CAW-ENGLISH.pdf.
[115] CERT-In, *Annual Report 2025*, p. 45 (1,500+ deepfake incidents targeting women)
[116] *Deepfake video of actress Rashmika Mandanna goes viral*, BBC News (Nov 2023) https://www.bbc.com/news/world-asia-india-67412345.
[117] MeitY Advisory No. 2025/01, *Deepfake Content Removal* (March 6, 2025)
[118] Gurugram Police Press Release, *Digital Saheli Launch* (Jan 15, 2026) https://gurugrampolice.gov.in/press-releases/digital-saheli-2026.
[119] Ibid (helpline: 1930; 1,200+ cases registered by March 2026)
[120] Haryana Police, *Cyber Awareness Campaign Report 2026* https://haryanapolice.gov.in/cyber-safety.

manipulate victims into sharing personal images and later threatened them with public exposure[121]. These cases demonstrate how cyber criminals exploit anonymity and digital platforms to intimidate and extort victims[122].

Such incidents illustrate the evolving nature of cyber offences and highlight the urgent need for stronger legal safeguards, technological monitoring mechanisms, and increased public awareness to protect women in digital spaces[123].

Challenges in Addressing Cybercrimes

Despite existing legal frameworks, several challenges hinder the effective prosecution of cybercrimes against women. Victims often hesitate to report offences due to fear of social stigma and reputational damage. Identifying perpetrators is also difficult because cyber offenders frequently operate through fake identities, encrypted platforms, or foreign servers.

Law enforcement agencies face limitations in digital forensic infrastructure and technical expertise. Cyber investigations require specialized skills in electronic evidence analysis and data recovery, which are still developing in many jurisdictions. The preservation and authenticity of digital evidence also present legal challenges, as electronic data can be easily altered or deleted.

Policy Recommendations

Strengthening cyber laws and regulatory frameworks is essential to address cybercrimes against women. Specific legal provisions should regulate emerging technologies such as deepfake videos and artificial intelligence-based impersonation.

Governments should collaborate with technology companies to develop AI-based cybercrime detection systems capable of identifying patterns of online harassment and manipulated digital content. Another important reform would be the establishment of a National Digital Evidence Preservation System, allowing victims to securely upload digital evidence such as screenshots and URLs to a government portal. Such systems could improve the investigation and prosecution of cyber offences.

Future Risks and Emerging Technologies

Rapid advances in artificial intelligence and immersive digital environments are likely to

[121] Mumbai Police Cyber Cell, *Annual Report 2025* (45% sextortion cases via fake profiles) https://mumbaipolice.gov.in/cybercell-reports

[122] Law Commission of India, 255th Report, *Cyber Laws Reforms* (updated 2025).

[123] Ibid

transform cybercrime in the future. Technologies such as deepfakes, voice cloning, and AI-generated images can create highly realistic fabricated content, making it increasingly difficult to distinguish authentic media from manipulated material.

The expansion of virtual reality platforms and the metaverse may also introduce new forms of harassment within immersive digital environments. In such spaces, perpetrators may engage in virtual stalking or harassment that simulates physical proximity, intensifying the psychological impact on victims.

These developments highlight the need for proactive legal frameworks that anticipate technological changes rather than responding only after new forms of cybercrime emerge.

Conclusion

Cybercrimes against women represent a growing challenge in the digital era. While technological advancements have enhanced connectivity and communication, they have also created new opportunities for harassment and exploitation.

Ensuring women's safety in cyberspace requires stronger legislation, improved law enforcement capacity, greater digital literacy, and collaboration between governments and technology companies. Protecting women in digital spaces is essential for achieving digital justice, gender equality, and the protection of human dignity in the modern technological era.

BIBLIOGRAPHY

1. Bharatiya Nyaya Sanhita. (2023). *Ministry of Law and Justice, Government of India*. https://www.indiacode.nic.in/handle/123456789/20062
2. Jaishankar, K. (2013). *Cyber criminology: Exploring internet crimes and criminal behavior*. CRC Press.
3. Mishra, M., & Moledina, R. (2026). *Cybercrimes against women in India: Emerging digital threats and legal remedies* [Unpublished manuscript]. [Institution/Author Affiliation].
4. National Crime Records Bureau. (2022). *Crime in India 2021*. Ministry of Home Affairs, Government of India. https://ncrb.gov.in/sites/default/files/CII-2021-ENGLISH.pdf
5. National Crime Records Bureau. (2023). *Crime in India 2022*. Ministry of Home Affairs, Government of India. https://ncrb.gov.in/sites/default/files/CII-2022-ENGLISH.pdf
6. National Crime Records Bureau. (2024). *Crime in India 2023*. Ministry of Home Affairs, Government of India. https://ncrb.gov.in/sites/default/files/CII-2023-ENGLISH.pdf

7. National Crime Records Bureau. (2024). *Crime against women 2023*. Ministry of Home Affairs, Government of India. https://ncrb.gov.in/sites/default/files/CII-2023-CAW-ENGLISH.pdf
8. Parliamentary Standing Committee on Information Technology. (2025). *Deepfake and AI misuse report*. Lok Sabha Secretariat. https://loksabha.nic.in/Committee/CommitteeInformation.aspx
9. PwC India. (2025). *India cybercrime survey 2025*. https://www.pwc.in/publications.html
10. The Information Technology Act, 2000 (Act 21 of 2000). (2000). *Ministry of Electronics and Information Technology*. https://www.meity.gov.in/writereaddata/files/it-act-2000_0.pdf
11. UN Women. (2024). *Cyber violence against women in Asia*. https://asiapacific.unwomen.org/en/digital-library/publications
12. World Health Organization. (2025). *Violence against women prevalence report: India*. https://ww

****

Social Media and Women's Rights Advocacy Remedies

By Pradip R. Dhotre

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Abstract:

Social media has transformed women's rights advocacy from localized protests to global, instantaneous movements. Platforms enable rapid awareness-raising, storytelling, mobilization, and policy pressure, as seen in MeToo, Nirbhaya, and LoSHA. However, the same tools amplify harassment, deepfakes, disinformation, and digital violence. This report examines the dual role of social media in women's rights advocacy through historical context, theoretical frameworks (networked feminism, digital publics), global and India-specific case studies, empirical statistics (2023-2025), challenges (online abuse, AI threats), policy impacts, and future recommendations. Data from UN Women, Amnesty International, Indian National Cyber Crime Reporting Portal (NCRP), and academic studies reveal both empowerment gains and escalating risks: 58% of girls/young women experience online harassment globally; India reported 76,657 cybercrimes against women in 2025 (up 28,000 from 2024); 70% of women activists and journalists face digital violence. Recommendations include stronger platform accountability, legal reforms (e.g., expanding India's IT Act and global deepfake laws), digital literacy programs, and feminist AI governance. Social media remains a powerful yet precarious tool—its future in advocacy depends on addressing structural inequalities and technological harms.

1. Introduction:

Social media platforms—Facebook, X (formerly Twitter), Instagram, TikTok, and region-specific apps—have democratized advocacy by lowering barriers to entry. Women, historically marginalized in traditional media, now control narratives directly. Hashtags turn personal stories into collective action, bypassing gatekeepers. Yet this visibility invites backlash: algorithmic amplification of hate, state surveillance, and AI-generated abuse.

In 2025-2026, the landscape is marked by paradox. Global #MeToo reverberations continue alongside a 900% surge in deepfake pornography (98-99% targeting women). In India, social media fueled landmark protests post-2012 Nirbhaya case but coincided with cybercrime complaints against women rising to 76,657 in 2025. UN Women reports 70% of women human rights defenders and journalists experience online violence, with 42% linking it to offline attacks (up from 20% in 2020).

This report synthesizes these dynamics, focusing on advocacy outcomes while centering women's lived experiences. It adopts an intersectional lens (class, caste, geography) and prioritizes Global South perspectives, particularly India given its vibrant digital feminist ecosystem.

2. Historical Evolution:

Pre-2010: Early blogs and forums (e.g., feminist LiveJournal communities) laid groundwork. Arab Spring (2010-2011) showcased social media's role—Egyptian and Tunisian women used Facebook to organize protests against sexual violence in public spaces.

2012-2017: India's Nirbhaya case exploded via Twitter and Facebook (#Nirbhaya, #Damini), leading to nationwide protests and legal reforms (Criminal Law Amendment Act 2013). Globally, #YesAllWomen (2014) responded to misogynistic violence.

2017 onward: #MeToo (Tarana Burke, amplified by Alyssa Milano) went viral, spawning #MeTooIndia (2018). Crowdsourced lists like LoSHA (List of Sexual Harassers in Academia) and South Africa's #RUReferenceList exposed institutional impunity.

2020-2025: Pandemic lockdowns accelerated digital activism but spiked online abuse (168% rise in misogynistic posts in parts of Asia). AI deepfakes emerged as a new frontier (550% increase in deepfake videos 2019-2023). By 2025, movements like South Korea's anti-deepfake protests and Indian campaigns against TFGBV (technology-facilitated gender-based violence) highlight the shift to tech-specific resistance.

This evolution shows social media evolving from supplementary tool to primary infrastructure for advocacy.

3. Theoretical Frameworks:

- Networked Feminism / Digital Feminist Activism: Platforms enable "affective publics" where emotion and storytelling build solidarity (Papacharissi). Hashtags create intimate publics (Berlant) for survivors.

- Techno-Feminism: Technology is not neutral; patriarchal design (male-dominated AI teams) reproduces bias. South Korean and Chinese deepfake crises exemplify this.

- Public Sphere Theory (Habermas updated): Social media expands the public sphere but fragments it via algorithms and echo chambers.

- Intersectionality (Crenshaw): Digital divide excludes rural, low-caste, or low-income Indian women; caste-based trolling compounds harassment.

These frameworks explain why social media empowers some while silencing others.

4. Positive Impacts and Global Case Studies:

-MeToo Global (2017-ongoing): Raised awareness of sexual harassment; led to resignations (Harvey Weinstein), policy changes (U.S. Time's Up Legal Defense Fund), and corporate accountability. Studies show increased reporting and cultural shifts in perception of consent.

-NiUnaMenos (Argentina, 2015): Mobilized millions against femicide via Twitter; influenced Latin American laws.

-Arab Spring Women's Networks: Egyptian activists used Facebook for safety mapping and anti-harassment campaigns.

-YesAllWomen (2014)-: Shifted discourse on everyday misogyny; analyzed in 2025 studies for self-disclosure and support dynamics.

-Economic & Entrepreneurial Empowerment: Women entrepreneurs in Asia use Instagram/Facebook for business; social media correlates with support for female leadership in conservative societies (e.g., Qatar study).

Each case demonstrates virality leading to offline action, fundraising, and legal wins.

5. India-Specific Analysis:

India's digital feminist history is rich: Pink Chaddi (2009), SlutWalk, Pinjra Tod (hostel curfews), Why Loiter (public spaces).

-Nirbhaya (2012): social media amplified protests (millions marched); pressured government into fast-track courts and new laws. Hashtags sustained momentum for years.

-MeTooIndia (2018): Journalists and academics named perpetrators; led to resignations in media/entertainment. LoSHA list sparked debates on due process vs. survivor voices. Over 35,000 tweets analyzed showed elite urban dominance but also workplace safety gains.

-Post-2020 Developments: MeTooIndia 2.0, anti-deepfake campaigns, and responses to rising TFGBV. Breakthrough & Equality Now (2025) report documents survivors facing shaming and slow justice. Social media enables crowdsourced lists and rapid solidarity but highlights caste/class exclusions.

Indian women's higher social media engagement (despite digital divide) has driven agenda-setting: mainstream media now covers sexual violence more due to viral pressure.

6. Empirical Statistics and Measurable Outcomes:

- Global: 38% of women report online violence; 85% witness it. 58% of girls/young women harassed.

- India: NCRP 2025 – 76,657 complaints (up sharply); obscene content 37,743 cases; deepfakes surging (93% women victims).

- Activists: 70% women HRDs/journalists face online abuse; 42% linked to offline attacks.

- Positive metrics: Social media usage linked to higher support for women leaders (Qatar study); viral campaigns correlate with policy wins (e.g., India's 2013 law amendments). UN Women notes 117 countries adopted TFGBV measures by 2025.

7. Challenges and Backlash:

-Online Harassment & Trolling: 85% Indian women affected; cyberbullying/stalking 45,832 cases in 2025.

- Deepfakes & AI Abuse: 98% target women; 900% growth; apps with 700M downloads. South Korea school scandal (2024) involved minors. UN: 90-95% deepfakes sexualized.

-Disinformation & Algorithmic Bias: Backlash against feminism; male supremacist networks.

-Digital Divide & Exclusion: Rural/caste-marginalized women underrepresented.

-Self-Censorship: 41% young women limit online presence.

-Platform Failures: Weak moderation; profit-driven algorithms amplify hate.

European Parliament study (2023, updated relevance) details sexism in ads, body image harm, and coercive control.

8. Policy Impacts and Legislative Gaps:

Successes: India's 2013 amendments, EU Digital Services Act, Mexico's Ley Olimpia, Australia's Online Safety Act. Take It Down Act (U.S. 2025) targets deepfakes.

Gaps: <40% countries have cyber-harassment laws; enforcement weak in India (IT Act 2000 outdated for AI). UN Women: 1.8 billion women/girls lack protection. Amnesty highlights state use of propaganda via social media.

9. Future Directions:

- AI Regulation: Feminist input in governance; watermarking, takedown systems.

-Platform Accountability: Mandatory human rights impact assessments.

- Digital Literacy & Safe Spaces: Government/NGO programs (India's "Safe Travel" app model).

-Transnational Alliances: East Asian feminist networks against deepfakes.

-Sustainable Models: Hybrid online-offline activism; ethical AI tools for advocacy.

-Trends 2026+: Rising deepfake crises demand urgent global standards.

10. Conclusion and Recommendations:

Social media has undeniably advanced women's rights advocacy, amplifying voices and driving change. Yet unchecked harms risk reversing gains. Balanced, feminist-led governance is essential.

Recommendations:

1. Enact comprehensive TFGBV laws (India: update IT Act; global: binding UN treaty).
2. Platforms: 48-hour deepfake removal; transparent algorithms.
3. Invest in digital literacy (target marginalized groups).
4. Support survivor-centered justice (fast-track courts, counseling).
5. Fund feminist tech research and AI ethics training.
6. Monitor progress via annual UN Women-style reports.

REFERENCES

1. Alam, N. (2024). The impact of social media on women's rights movements. IJEKS.
2. Dey, A. & Maluleke, G. (2026). Digital feminist activism against rape culture. Feminist Encounters.
3. Equality Now & Breakthrough. (2025). Experiencing TFGBV in India.
4. Pain, P. (2020). Examining feminist digital activism in India.
5. UN Women. (2025). Multiple reports on digital violence, gender snapshot, etc. (full list: UN Women site).

****

Artificial Intelligence in Criminal Investigation and Evidence

By Virendra R. Sharma

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction

Artificial Intelligence (AI) is transforming the modern world, and one of its most powerful applications is in the field of criminal investigation and evidence collection. AI refers to the ability of machines and computer systems to perform tasks that normally require human intelligence, such as learning, reasoning, decision-making, and problem-solving.

In criminal justice, AI is helping law enforcement agencies solve crimes faster, analyze large amounts of data efficiently, and improve the accuracy of investigations. From facial recognition to predictive policing, AI is becoming an essential tool in ensuring justice and public safety.

Role of AI in Criminal Investigation:

AI plays a crucial role in different stages of criminal investigation. It assists police officers, detectives, and forensic experts in identifying suspects, analyzing evidence, and preventing crimes.

Data Analysis and Pattern Recognition:

AI systems can analyze huge volumes of data within seconds. This includes:

- Crime records
- CCTV footage
- Social media activity
- Phone call logs

AI identifies patterns and connections that humans may miss. For example, it can link multiple crimes to a single suspect based on behavior patterns.

Facial Recognition Technology:

Facial recognition is one of the most widely used AI tools in investigations.

- It compares a person’s face with a database of images.
- Helps identify criminals from CCTV footage.
- Used in airports, railway stations, and public places.

This technology helps in quickly locating suspects and missing persons.

Predictive Policing:

Predictive policing uses AI algorithms to forecast where crimes are likely to occur.

- Analyzes past crime data
- Identifies high-risk areas
- Helps police deploy resources effectively

This method helps in crime prevention rather than just solving crimes after they happen.

Voice Recognition and Audio Analysis:

AI can analyze voice recordings to:

- Identify speakers
- Detect stress or deception
- Match voices with known criminals

This is useful in cases involving threats, ransom calls, or recorded evidence.

Cybercrime Investigation:

With the rise of digital crimes, AI is essential in:

- Detecting hacking attempts
- Tracking online fraud
- Identifying fake accounts
- Monitoring illegal online activities

AI helps cybersecurity teams respond quickly to threats.

AI in Evidence Collection and Analysis:

AI has significantly improved the way evidence is collected, stored and analyzed.

Digital Evidence Processing:

AI can handle digital evidence such as:

- Emails
- Text Messages
- Computer Files
- Internet History

It quickly filters relevant information from large datasets.

Forensic Analysis:

- Fingerprint matching
- DNA analysis
- Ballistic Testing
- Blood Pattern Analysis

It increases accuracy and reduces human error.

Image and Video Enhancement:

AI can enhance poor-quality images and videos by:

- Improving clarity
- Identifying objects or faces
- Reconstructing scenes

This is very useful in solving crimes and limited visual evidence.

Document Verification:

AI helps detect:

- Forged documents
- Fake signatures
- Altered files

This is important in financial crimes and identity of fraud cases.

Advantages of AI in Criminal Investigation:

1. *Speed and Efficiency*: AI processes data much faster than humans, saving time in investigations.
2. *Accuracy*: Reduced human errors and increases reliability of results.
3. *Handling Large Data*: AI can manage and analyze massive amounts of information easily.
4. *Improved Decision Making*: Provides insights and recommendations to investigators.

Challenges and Limitation:

Despite its advantages, AI also has some limitations:

1. Privacy Concerns: Use of AI in surveillance may invade personal privacy.
2. Bias in Algorithms: AI systems can be biased if trained on incomplete or unfair data.
3. High Cost: Advanced AI systems are expensive to develop and maintain.
4. Dependence on Technology: Over-reliance on AI may reduce human judgment.
5. Legal & Ethical Issues: There are concerns about how AI evidence is used in Courts.

Legal Aspects of AI in Evidence:

AI-generated evidence must meet certain legal standards:

- It should be reliable and accurate
- The method of data collection must be lawful
- Evidence must be presented clearly in court

Courts are still developing rules regarding the use of AI, especially in countries like India.

Future of AI in Criminal Justice:

The future of AI in criminal investigation looks promising. Some developments include:

- Smart surveillance systems
- AI-powered drones
- Real-time crime detection
- Advanced forensic tools
- Integration with national security systems

AI will continue to evolve and play a major role in maintaining law and order.

Conclusion:

Artificial Intelligence is revolutionizing criminal investigation and evidence handling. It provides powerful tools for solving crimes efficiently and accurately. While it offers many benefits, it also raises important ethical and legal questions that must be addressed.

Proper use of AI, along with human judgment and legal safeguards, can lead to a more effective and fair justice system. As technology continues to grow, AI will become an even more important part of modern law enforcement.

****

A Comparative Study of Global Bankruptcy Frameworks and the Indian Insolvency and Bankruptcy Code (IBC), 2016

By Bhumi Manjara

Abstract

Insolvency laws play a critical role in maintaining economic stability by providing structured mechanisms for resolving financial distress. The enactment of the Insolvency and Bankruptcy Code (IBC), 2016 marked a significant reform in India's insolvency regime by consolidating fragmented laws into a unified, time-bound framework. This research paper undertakes a comparative analysis of India's IBC with global bankruptcy frameworks, particularly the United States Chapter 11 and the United Kingdom Insolvency Act, 1986. The study examines key aspects such as creditor-debtor dynamics, timelines, management control, cross-border insolvency, and institutional mechanisms. It highlights strengths, limitations, and evolving challenges within the Indian system, while drawing lessons from established international models. The research ultimately aims to identify areas for improvement in the IBC framework to enhance efficiency, investor confidence, and economic resilience.

Keywords: insolvency, bankruptcy, IBC 2016, chapter 11, UK insolvency act, corporate insolvency resolution process (CIRP), cross-border insolvency, creditors, financial distress

Introduction

The growing complexity of global financial systems necessitates robust insolvency frameworks capable of addressing corporate distress efficiently. Insolvency laws ensure the orderly resolution of distressed entities while balancing the interests of creditors, debtors, and stakeholders.

India's insolvency landscape underwent a transformative shift with the introduction of the Insolvency and Bankruptcy Code (IBC), 2016. Prior to its enactment, India's insolvency regime was fragmented across multiple statutes, resulting in delays, inefficiencies, and low recovery rates (SCC Online). The IBC consolidated these laws into a unified framework and introduced a time-bound resolution mechanism.

Globally, countries such as the United States and the United Kingdom have long-established insolvency regimes. The U.S. Chapter 11 framework emphasizes debtor rehabilitation and operational continuity, while the U.K. Insolvency Act focuses on creditor

protection and business rescue (IJLLR Journal). Comparing these systems with the IBC provides valuable insights into the strengths and weaknesses of India's insolvency framework.

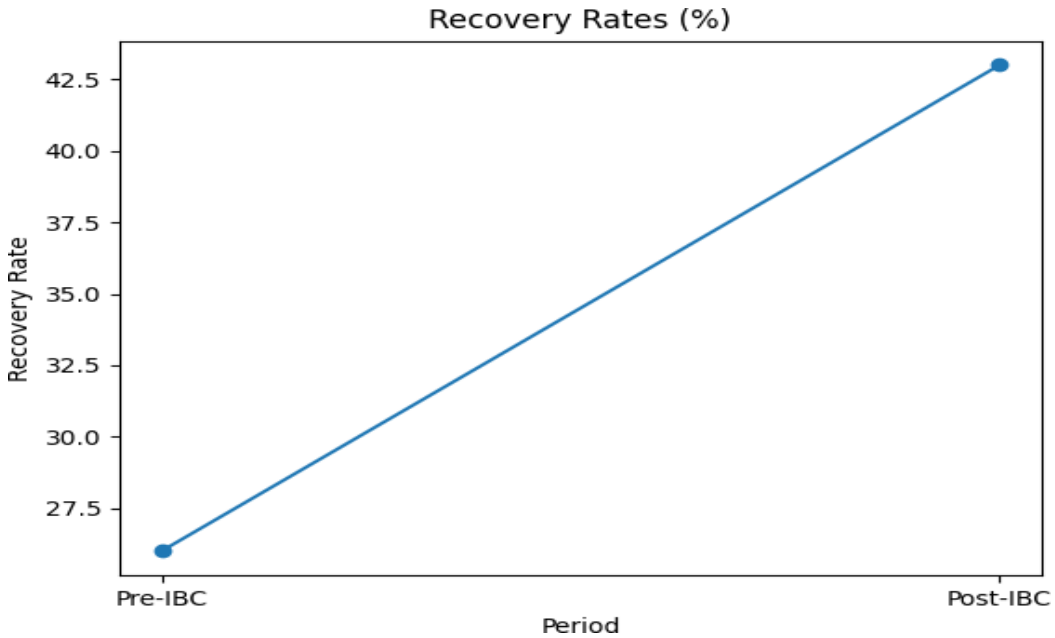
Review of Literature

Several studies have examined insolvency regimes across jurisdictions. Research indicates that the IBC significantly improved India's insolvency resolution ecosystem by introducing institutional mechanisms such as the Insolvency and Bankruptcy Board of India (IBBI) and insolvency professionals (SCC Online).

Comparative analyses highlight that the U.S. Chapter 11 system allows debtors to remain in possession, providing flexibility for restructuring, whereas India's IBC adopts a creditor-in- control model (Lets Learn Law). The U.K. model, on the other hand, emphasizes administration procedures and prioritizes creditor interests.

Studies also point to the importance of cross-border insolvency frameworks. The UNCITRAL Model Law has been adopted by many countries to facilitate international cooperation, but India's implementation remains limited (TaxGuru).

Existing literature concludes that while IBC has improved recovery rates and reduced non- performing assets, challenges such as delays, capacity constraints, and lack of cross-border provisions persist (Legal Service India).



Graph: Recovery Rates

Research Gap

Despite extensive research on insolvency laws, there remains a gap in:

- Holistic comparative analysis covering procedural, institutional, and practical aspects simultaneously.
- Evaluation of IBC's effectiveness in the context of global best practices
- Analysis of cross-border insolvency challenges in India
- Identification of structural reforms needed to align India with international standards
- This study attempts to bridge these gaps through a comprehensive comparative approach.

Objectives

- To analyze the framework and functioning of the IBC, 2016
- To compare IBC with global insolvency frameworks (U.S. and U.K.)
- To evaluate strengths and weaknesses of the IBC
- To identify challenges in implementation
- To suggest reforms for improving India's insolvency regime

Hypothesis

H1: The IBC, 2016 is more efficient than the pre-existing insolvency framework in India

H2: Global insolvency frameworks provide greater flexibility compared to the IBC

H3: Adoption of international best practices can significantly improve India's insolvency system

Scope of the Study

This study focuses on corporate insolvency frameworks and compares India's IBC with major global models such as:

- United States – Chapter 11 Bankruptcy Code
- United Kingdom – Insolvency Act, 1986
- International standards – UNCITRAL Model Law

The research is limited to legal and procedural aspects and does not cover individual insolvency in depth.

Research Methodology

This study adopts a doctrinal and comparative research methodology.

Data Sources: Secondary data from journals, legal articles, reports, and official publications

Method: Comparative legal analysis

Approach: Analytical and descriptive

The study relies on qualitative data to assess structural differences and effectiveness.

Data Analysis

Initiation of Insolvency Proceedings

IBC: Initiated by financial creditors, operational creditors, or the debtor

U.S. Chapter 11: Primarily debtor-initiated

U.K.: Initiated by creditors or debtor

Control of Management

IBC: Control shifts to insolvency professionals and creditors

U.S.: Debtor remains in possession

U.K.: Administrator takes control

This highlights a key distinction—IBC follows a creditor-in-control model, unlike the debtor-friendly U.S. system.

Time-bound Process

IBC: 180–330 days

U.S.: Flexible timelines

U.K.: Approximately 12 months (https://www.taxmann.com)

The IBC's strict timeline is intended to prevent value erosion but often faces delays in practice.

Objective of Insolvency

IBC: Value maximization and resolution

U.S.: Business reorganization

U.K.: Creditor recovery and administration

Cross-border Insolvency

India lacks a comprehensive framework, unlike the U.S. and U.K., which follow the UNCITRAL Model Law (iPleaders).

Findings

- The IBC has significantly improved India's insolvency resolution process
- It ensures a structured and time-bound framework
- However, delays due to judicial backlogs undermine its efficiency
- Compared to global frameworks, the IBC is less flexible
- Lack of cross-border insolvency provisions is a major limitation
- Institutional capacity constraints affect implementation

Suggestions

Adopt UNCITRAL Model Law:

- To strengthen cross-border insolvency mechanisms
- Enhance Institutional Capacity:
- Increase benches and infrastructure of adjudicating authorities
- Introduce Flexibility in Timelines:
- Allow case-specific extensions where necessary
- Promote Debtor Participation:
- Incorporate elements of debtor-in-possession models
- Strengthen Professional Ecosystem:
- Improve training and regulation of insolvency professionals

Discussion

The comparative analysis reveals that no insolvency framework is universally perfect. The IBC has successfully addressed many inefficiencies of India's earlier system by introducing a creditor-driven, time-bound process. However, its rigid structure contrasts with the flexibility of global frameworks like Chapter 11.

The U.S. model's emphasis on debtor autonomy promotes business continuity, while the U.K. system ensures creditor protection through administration mechanisms. India's IBC attempts to strike a balance but faces practical challenges such as delays and infrastructural constraints.

Global trends indicate increasing harmonization of insolvency laws, especially through the adoption of the UNCITRAL Model Law. India's integration into this framework is essential for handling cross-border insolvency cases effectively.

Conclusion

The Insolvency and Bankruptcy Code, 2016 represents a landmark reform in India's economic and legal landscape. It has significantly improved the efficiency, transparency, and predictability of insolvency resolution.

However, when compared to global frameworks, the IBC still requires refinement. Key areas such as cross-border insolvency, flexibility, and institutional capacity need urgent attention.

By incorporating international best practices and addressing existing challenges, India can strengthen its insolvency regime and enhance its position in the global economic system.

REFERENCES

1. Panda, B. "Insolvency Regime in India and USA: A Comparative Study" (SCC Online)
2. Mehta, L. "Comparative Analysis with Global Insolvency Frameworks" (IJLLR Journal)
3. Aneja, S. "Comparative Analysis of IBC, 2016 with International Bankruptcy Laws"(TaxGuru)
4. Srivastava, A. "Comparative Guide to IBC and Chapter 11" (Lets Learn Law)
5. Taxmann. "Insolvency Law in India and Other Countries"(https://www.taxmann.com)
6. Singh, D. "Cross-Border Insolvency and the IBC" (IJLLR Journal)
7. Legal Service India. "Bankruptcy Frameworks: India and USA" (Legal Service India)iPleaders. "IBC and Cross-Border Insolvency" (iPleaders)

****

Artificial Intelligence in Criminal Investigations and Evidence: Opportunities, Challenges and the Road Ahead

By Sneha Kadam

F.Y. B.A. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon.
Email: snehawkadam@gmail.com

Abstract

The emergence of Artificial Intelligence (AI) in the domain of criminal investigations has brought a fundamental transformation in how law enforcement agencies detect, analyze, and prosecute criminal offenses. From facial recognition and predictive policing to digital forensics and automated evidence analysis, AI tools are increasingly embedded in the investigative process. While these technologies promise enhanced efficiency and accuracy, they also raise significant legal, ethical, and constitutional concerns, particularly in a country like India where the legal framework for regulating AI in law enforcement remains nascent. This paper examines the various dimensions of AI in criminal investigations and evidence, analyzing its applications, the benefits it offers, the challenges it poses to principles of fairness and justice, and what the future might hold for a regulated and rights-respecting use of AI in the criminal justice system.

Keywords: *artificial intelligence, criminal investigation, digital evidence, facial recognition, predictive policing, due process, privacy rights, forensic technology*

I. Introduction

The relationship between technology and criminal justice has always been a dynamic one. From the introduction of fingerprinting in the nineteenth century to DNA profiling in the twentieth, scientific advancements have repeatedly reshaped how crimes are investigated and how evidence is gathered, examined, and presented in courts. In the twenty-first century, Artificial Intelligence has emerged as perhaps the most disruptive technological force to enter this space, with consequences that are both far-reaching and deeply contested.

Artificial Intelligence refers to the simulation of human intelligence processes by computer systems, including learning from data, identifying patterns, making decisions, and performing tasks that ordinarily require human cognition. When applied to criminal investigations, AI can process enormous volumes of data far faster than any human analyst, detect subtle patterns in criminal behavior that might escape conventional investigation, and provide predictive insights that guide policing strategies.

In countries like the United States, United Kingdom, and China, law enforcement agencies have already deployed AI tools at a significant scale, ranging from automated surveillance systems to AI-assisted case management platforms. India, too, has begun exploring these technologies, with initiatives like the Crime and Criminal Tracking Network and Systems (CCTNS) and facial recognition deployments at major public events. However, the regulatory framework governing these tools remains underdeveloped, creating a gap between the pace of technological adoption and the safeguards necessary to protect citizens' rights.

This paper attempts to provide a comprehensive analysis of AI in criminal investigations and evidence. It begins by surveying the major applications of AI currently in use or under development, then examines the legal and evidentiary issues they raise, and finally considers the ethical and human rights dimensions of this technological shift.

II. Applications of AI in Criminal Investigations

2.1 Facial Recognition Technology

Facial recognition technology is among the most visible and controversial applications of AI in law enforcement. It works by mapping unique facial features from a photograph or video frame and comparing them against a database of stored images to identify or verify an individual's identity. Law enforcement agencies use facial recognition to identify suspects caught on surveillance cameras, match faces against criminal databases, and even monitor large public gatherings.

In India, the National Automated Facial Recognition System (NAFRS) has been under development by the National Crime Records Bureau (NCRB). States such as Delhi, Telangana, and Tamil Nadu have experimented with facial recognition at airports, railway stations, and public events. Globally, several high-profile criminal cases have been resolved with the help of facial recognition technology, and law enforcement agencies have come to regard it as an invaluable investigative tool.

However, studies have consistently shown that many facial recognition systems exhibit significant error rates, particularly when used on individuals from marginalized communities, women, and people with darker skin tones. A wrongful identification in a criminal matter can have

catastrophic consequences for an innocent person, making the reliability and accountability of these systems a matter of urgent legal concern.

2.2 Predictive Policing

Predictive policing involves the use of AI algorithms to analyze historical crime data and forecast where and when crimes are likely to occur, or to identify individuals who may be at a higher risk of committing or falling victim to a crime. Software tools like PredPol, used in several cities in the United States, and similar platforms adopted elsewhere, generate maps and risk scores that guide patrol deployment and resource allocation.

The appeal of predictive policing lies in its potential to prevent crimes before they occur rather than merely respond to them after the fact. For police departments facing resource constraints, AI-driven predictions offer a way to optimize the use of personnel and equipment. In theory, a police force that knows in advance where burglaries or violent crimes are likely to happen can deter those crimes through visible presence.

In practice, however, predictive policing has attracted serious criticism. Because historical crime data reflects existing patterns of policing, which are themselves shaped by biases in how certain communities are policed, AI systems trained on such data tend to reproduce and amplify those biases. Communities that have historically faced over-policing generate more data points in the crime database, which in turn causes the algorithm to flag those same communities as high-risk areas, resulting in even more intensive policing and even more data, creating a self-reinforcing cycle that entrenches discrimination under the guise of objectivity.

2.3 Digital Forensics and Cyber Investigation

Digital forensics is one area where AI has made particularly significant and largely uncontroversial contributions. Modern cybercrime involves the analysis of enormous volumes of digital data stored across multiple devices, platforms, and cloud services. Manual examination of terabytes of data is simply not feasible within the time constraints of a criminal investigation, and this is where AI tools have proved genuinely transformative.

AI-powered forensic tools can automatically identify and extract relevant files, communications, and metadata from seized digital devices, detect deleted or encrypted data, recognize patterns of communication between suspects, and flag anomalies in financial records. In

child exploitation cases, AI tools trained to detect harmful content have enabled law enforcement to process vastly more material than human analysts alone could review, leading to the identification and rescue of victims at an unprecedented scale.

In the context of Indian law, the Information Technology Act, 2000 and the Indian Evidence Act, 1872 (now partially replaced by the Bharatiya Sakshya Adhiniyam, 2023) provide the foundational framework for the admissibility of electronic evidence. Courts have generally accepted electronically generated documents as evidence, subject to certification requirements, but questions about AI-generated analyses and their reliability in the courtroom remain underexplored.

2.4 Voice and Biometric Analysis

AI systems are increasingly capable of analyzing audio recordings to identify speakers, detect stress or deception in a voice, and compare voice samples against known databases. Similarly, gait recognition technology can identify individuals from the way they walk, even when their face is not visible to a camera. These technologies extend the reach of biometric identification well beyond fingerprints and photographs, adding new dimensions to surveillance and evidence gathering.

2.5 Social Media and Open-Source Intelligence

AI tools designed to monitor and analyze social media platforms and open-source data have become standard features of modern law enforcement. These tools can track the online activity of suspects, map networks of association between individuals, identify coded language used by criminal groups, and gather evidence of planning or conspiracy from publicly accessible online spaces. The ability to process millions of posts, comments, and messages simultaneously makes AI indispensable for this kind of intelligence gathering.

III. AI as Evidence: Legal and Evidentiary Challenges

3.1 Admissibility of AI-Generated Evidence

One of the most pressing legal questions raised by AI in criminal investigations is whether evidence generated or analyzed by AI systems is admissible in court and, if so, what standards govern its admission. Traditional rules of evidence were designed for a world where evidence was created, collected, and analyzed by identifiable human beings whose qualifications, methods, and potential biases could be probed through examination.

AI systems complicate this picture. Many sophisticated AI tools, particularly those based on deep learning, function as black boxes, meaning that even their developers cannot fully explain why the system produced a particular output. When an AI system identifies a suspect from a surveillance photograph, it may not be possible to explain the precise process by which the identification was made. This opacity creates serious problems for the right of an accused person to challenge the evidence against them, a right that is fundamental to the principles of natural justice and embedded in Article 21 of the Constitution of India.

The Bharatiya Sakshya Adhiniyam, 2023, which replaced the Indian Evidence Act, retains and strengthens provisions relating to electronic records but does not specifically address AI-generated evidence. Courts will need to develop jurisprudence that determines the standard of reliability required before AI-generated analyses can be admitted, the extent to which the accused must be given access to information about the AI system used, and whether expert testimony is required to lay a proper foundation for such evidence.

3.2 The Right to Confront Evidence

The right of an accused person to know the case against them, to examine the evidence, and to cross-examine witnesses are cornerstones of fair trial jurisprudence. When evidence is produced by an AI system, these rights are difficult to operationalize. How does a defense lawyer effectively cross-examine an algorithm? How does the court assess the credibility of a machine?

Some courts in the United States have held that defendants are entitled to access the source code of AI systems used to produce evidence against them, treating this as necessary to enable a meaningful challenge to the evidence. Indian courts have not yet squarely addressed this issue, but as AI-generated evidence becomes more common in Indian criminal proceedings, defendants and their counsel will need to press for disclosure of information about the systems used, the data on which they were trained, and any known error rates or limitations.

3.3 Chain of Custody and Data Integrity

In traditional evidence law, the chain of custody refers to the documented sequence of custody, transfer, and handling of physical evidence from the crime scene to the courtroom. It ensures that the evidence presented at trial is the same evidence that was collected and that it has not been tampered with or contaminated. For digital evidence analyzed by AI systems, maintaining

an equivalent chain of custody requires meticulous documentation of how data was collected, stored, processed by AI, and ultimately presented.

Any gap or irregularity in this chain can provide grounds for challenging the admissibility or weight of the evidence. The risk of data manipulation, algorithmic errors, or unauthorized access to AI systems creates vulnerabilities that defense counsel should be alert to and that courts must take seriously.

IV. Ethical and Constitutional Concerns

4.1 Privacy and Surveillance

The deployment of AI surveillance tools raises profound questions about the right to privacy. The Supreme Court of India, in its landmark judgment in Justice K.S. Puttaswamy v. Union of India (2017), unanimously recognized the right to privacy as a fundamental right protected under Article 21 of the Constitution. Pervasive AI-driven surveillance, particularly when conducted without specific legal authorization and judicial oversight, potentially violates this right.

The challenge is to distinguish legitimate law enforcement surveillance from the kind of dragnet surveillance that converts every citizen into a potential suspect and chills the exercise of rights. AI systems capable of tracking an individual's movements across a city using a network of cameras, or of building a detailed profile of their associations and activities from social media data, represent a qualitative expansion of state surveillance power that existing legal frameworks were not designed to address.

4.2 Algorithmic Bias and Discrimination

As noted in the discussion of predictive policing, AI systems used in criminal justice are vulnerable to perpetuating and amplifying existing biases. The data used to train these systems typically reflects historical policing and judicial decisions that have themselves been shaped by social inequalities. The result is that AI tools may systematically disadvantage individuals from already marginalized communities, reproducing in algorithmic form the discrimination that human beings have perpetuated through explicitly or implicitly biased judgments.

This has direct implications for the constitutional guarantee of equality before the law and the prohibition of discrimination under Articles 14 and 15 of the Constitution. If an AI risk assessment tool assigns a higher risk score to individuals from a particular caste, religion, or

economic background purely because of statistical correlations in historical data, its use in decisions about bail, sentencing, or police attention would raise serious constitutional questions that Indian courts will eventually have to confront.

4.3 Due Process and the Presumption of Innocence

The criminal justice system is built on the presumption of innocence, the principle that an accused person is innocent until proven guilty and that the burden of proof rests on the prosecution. Predictive policing, which targets individuals before any offense has been committed, fundamentally challenges this principle by treating statistical probability as a surrogate for individual culpability. An individual flagged as a high-risk person by an algorithm has done nothing wrong, yet they may be subjected to enhanced scrutiny, preemptive interrogation, or other interventions that treat their statistical association with crime as evidence of criminal tendency.

Similarly, when an AI system's output is presented as evidence in court and is not subject to meaningful challenge, the accused is effectively denied the opportunity to contest the case against them, undermining the due process guarantee embedded in Article 21.

V. Comparative Legal Perspectives

Several jurisdictions have begun to develop legal frameworks specifically addressing AI in law enforcement. The European Union's Artificial Intelligence Act, which was finalized in 2024, classifies certain AI applications in law enforcement as high-risk and subjects them to strict requirements for transparency, human oversight, and accuracy testing. Real-time biometric surveillance in public spaces is prohibited except in narrowly defined circumstances, and the use of AI for predictive policing that targets individuals is subject to significant restrictions.

In the United States, the absence of a comprehensive federal AI law has led to a patchwork of state and local regulations. Several cities, including San Francisco, Boston, and Portland, have banned or significantly restricted police use of facial recognition technology following concerns about error rates and civil liberties implications. Some states have enacted laws requiring disclosure of AI tools used in criminal proceedings and establishing accuracy and bias testing requirements.

In the United Kingdom, the Information Commissioner's Office and the College of Policing have issued guidance on the lawful use of biometric data and AI by law enforcement agencies,

emphasizing the need for proportionality, necessity, and human accountability in AI-assisted decisions.

India currently lacks a specific legislative framework for AI in law enforcement. The Digital Personal Data Protection Act, 2023, while an important step toward data privacy regulation, does not directly address law enforcement uses of AI. The proposed National AI Strategy and various government white papers have acknowledged the potential of AI in public safety but have not yet translated into concrete regulatory frameworks with enforceable standards.

VI. The Way Forward

The integration of AI into criminal investigations is not a future possibility but a present reality, and the question is no longer whether to use these tools but how to use them in a manner consistent with the rule of law and the protection of fundamental rights. Several recommendations emerge from the analysis in this paper.

First, India needs a dedicated legislative framework governing the use of AI by law enforcement agencies. This framework should specify which AI tools may be used, under what circumstances, with what oversight mechanisms, and subject to what standards of accuracy and accountability. It should also establish clear rules about the admissibility of AI-generated evidence, including requirements for disclosure and the opportunity for challenge.

Second, the use of high-risk AI tools such as facial recognition in public spaces and predictive policing systems should require prior judicial authorization, similar to the requirements for wiretapping or search warrants. This would provide a measure of oversight and accountability that is currently absent.

Third, independent oversight bodies should be established to audit law enforcement AI systems on a regular basis, assessing their accuracy, their error rates, and the extent to which they produce discriminatory outcomes. The results of these audits should be publicly accessible.

Fourth, individuals who have been subjected to AI-assisted investigations or whose liberty has been affected by AI-generated evidence should have a clear right to be informed about the use of AI in their case, to access information about the AI system used, and to challenge the reliability of AI-generated outputs.

Fifth, investment in AI literacy among judges, lawyers, and law enforcement personnel is essential. A judge who does not understand how an AI system works cannot meaningfully evaluate the reliability of evidence produced by it. Building this literacy into legal education and judicial training programs is a necessary foundation for the principled governance of AI in criminal justice.

VII. Conclusion

Artificial Intelligence is transforming criminal investigations in ways that are genuinely significant and mostly irreversible. The tools it provides for processing digital evidence, identifying patterns in large datasets, and extending the reach of surveillance represent a genuine enhancement of investigative capacity. At the same time, the risks of error, bias, opacity, and rights violations are real and have already materialized in concrete cases of injustice in various parts of the world.

The challenge for India and for the global legal community is to harness the benefits of AI in criminal investigation while building robust legal and institutional safeguards against its misuse. This requires thoughtful legislation, independent oversight, judicial literacy, and an ongoing commitment to the values of fairness, equality, and dignity that lie at the heart of any just criminal justice system.

AI should serve the ends of justice, not undermine them. Achieving that goal demands that technologists, lawyers, policymakers, and civil society engage together in the difficult work of shaping rules and institutions fit for the AI age. The stakes, measured in individual liberty and collective trust in the institutions of justice, could not be higher.

REFERENCES

1. Justice K.S. Puttaswamy v. Union of India, (2017) 10 SCC 1.

2. Bharatiya Sakshya Adhiniyam, 2023 (Act No. 47 of 2023).

3. Information Technology Act, 2000 (Act No. 21 of 2000).

4. Digital Personal Data Protection Act, 2023 (Act No. 22 of 2023).

5. European Union Artificial Intelligence Act, 2024.

6. National Crime Records Bureau, National Automated Facial Recognition System (NAFRS) Project Report, Government of India, 2020.

7. Angwin, J. et al., "Machine Bias," ProPublica, 2016.

8. Big Brother Watch, "Face Off: The Lawless Growth of Facial Recognition in UK Policing," 2018.

9. Information Commissioner's Office, "Guidance on the Use of Live Facial Recognition Technology by Law Enforcement in Public Places," UK, 2023.

10. Surden, H., "Artificial Intelligence and Law: An Overview," Georgia State University Law Review, Vol. 35, 2019.

11. Završnik, A., "Criminal Justice, Artificial Intelligence Systems, and Human Rights," ERA Forum, Vol. 20, 2020.

12. Choudhary, A., "Privacy, Surveillance and the Law in India," Indian Law Review, Vol. 6, 2022.

13. Lum, K. and Isaac, W., "To Predict and Serve?", Significance, Vol. 13, Issue 5, 2016.

14. Ministry of Electronics and Information Technology, Government of India, "National Strategy for Artificial Intelligence," NITI Aayog, 2018.

15. Raghavan, S., "Algorithmic Accountability in Indian Criminal Justice," Journal of Indian Law and Society, Vol. 12, 2023.

****

Intellectual Property Rights in Artificial Intelligence Generated Works

By Abhishek Ramanlal Purohit

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: abhishekpurohit2710@gmail.com

Introduction

Artificial Intelligence has transcended the realm of science fiction to become one of the most transformative forces reshaping human civilization in the twenty-first century. From GPT-4 generating nuanced legal drafts to DALL-E producing museum-worthy visual art and AlphaFold revolutionizing drug discovery, AI systems are not merely tools of human ingenuity—they are increasingly autonomous creative agents. This paradigm shift poses existential questions for intellectual property law, a discipline historically anchored in the principle that only a human being can be an author, inventor, or creator deserving of legal protection and economic reward.

In India, the challenge assumes particular urgency. As one of the world's fastest-growing digital economies, with a burgeoning technology sector and aspirations to lead in AI development articulated through the National Strategy for Artificial Intelligence (NSAI) published by NITI Aayog in 2018 and reinforced by the IndiaAI Mission of 2024, the question of who—or what—owns AI-generated intellectual output has enormous implications for investment, innovation, and equitable access to knowledge. Yet, India's IP statutes remain conspicuously silent on AI-generated works, leaving courts, practitioners, and innovators in a state of profound legal uncertainty.

The core dilemma may be distilled to three interrelated questions: first, whether an AI system can be recognized as an author or inventor under existing Indian law; second, if not, whether the human or corporate entity that owns, trains, or deploys the AI can claim IP protection over its outputs; and third, whether the public domain should absorb AI-generated works entirely, given the absence of a qualifying human creator. Each answer has profound policy consequences—over-protecting AI outputs risks monopolization and stifling further creativity, while under-protecting them disincentivizes investment in AI research and development.

This paper proceeds in five substantive parts. Part I examines the concept of authorship and inventorship under Indian IP law and the human-centric paradigm that pervades it. Part II surveys international developments in AI and IP, drawing lessons from the United Kingdom, the

United States, the European Union, and China. Part III analyses landmark judicial decisions and administrative rulings that have begun to grapple with AI-generated works globally. Part IV assesses the role of the Indian judiciary in interpreting existing statutes in light of AI challenges. Part V proposes a comprehensive legislative reform agenda for India, culminating in a model sui generis framework.

I. The Human-Centric Paradigm of Indian Intellectual Property Law

A. Copyright and the Concept of 'Author'

The Copyright Act, 1957 (hereinafter 'the Act') is the primary statute governing copyright in India. Section 2(d) of the Act defines an 'author' with reference to different categories of works: in relation to a literary or dramatic work, the author is the person who creates the work; in relation to a musical work, the composer; in relation to a cinematograph film, the producer; and in relation to a computer-generated work, the person who causes the work to be created. This last category, inserted by the Copyright (Amendment) Act, 1994, was evidently designed with human-directed computer outputs in mind, not autonomous AI creation.

Section 13 of the Act vests copyright in 'original' works, and Section 14 enumerates the exclusive rights conferred by copyright. While the Act does not explicitly require the author to be a human being, the entire scheme of the Act—including provisions dealing with the author's special rights (moral rights) under Section 57, the term of copyright calculated by reference to the life of the author, and the assignment of copyright—presupposes a natural or juristic human person as the holder of creative agency. The Supreme Court's decision in Eastern Book Company v. D.B. Modak (2008) 1 SCC 1 articulated the 'modicum of creativity' standard for copyright, emphasizing the author's exercise of skill, judgment, and labour—faculties traditionally associated with human beings.

The Copyright Office's refusal to register AI-generated works without a human author, mirroring international practice, underscores the anthropocentric foundation of Indian copyright law. When an AI such as a Generative Adversarial Network (GAN) produces a painting entirely without human creative input—with a human merely configuring and running the algorithm—it is presently unclear whether any copyright subsists, and if so, in whom it vests. The phrase 'person who causes the work to be created' in Section 2(d)(vi) is the closest statutory hook, but its scope is deeply contested.

B. Patents and the Inventor Requirement

The Patents Act, 1970 (as amended in 2005) governs patent law in India. Section 6 specifies the persons entitled to apply for a patent: the true and first inventor, or an assignee of such inventor, or the legal representative of a deceased inventor. Section 2(1)(p) defines 'inventor' without providing a comprehensive definition, but the scheme of the Act—particularly provisions requiring the inventor's declaration, the right to be mentioned as inventor, and the conditions for employee inventions—unmistakably contemplates a human inventor.

The global DABUS (Device for the Autonomous Bootstrapping of Unified Sentience) litigation has crystallized the issue with startling clarity. Stephen Thaler's AI system DABUS autonomously conceived two inventions—a food container leveraging fractal geometry and a flashing light for attracting attention in emergencies. Patent applications were filed in multiple jurisdictions naming DABUS as the inventor. Courts in the United States (Thaler v. Vidal, Federal Circuit, 2022), the United Kingdom (Thaler v. Comptroller-General, UK Supreme Court, 2023), and the European Patent Office uniformly held that an AI system cannot be a patent inventor, as the relevant statutes require a natural person. No corresponding application appears to have been filed in India, but the Indian Patents Act 1970 would face identical interpretive challenges, and the outcome under existing law would in all probability be the same.

India's patent regime also lacks any provision analogous to the UK's Section 9 of the Copyright, Designs and Patents Act 1988, which expressly provides for computer-generated works and vests authorship in 'the person by whom the arrangements necessary for the creation of the work are undertaken'. The absence of any such provision in the Patents Act, 1970 creates a stark lacuna: AI-generated inventions of potentially enormous commercial and public health value may fall into the public domain not by deliberate policy choice, but by inadvertent statutory silence.

C. Trade Marks, Designs, and Geographical Indications

The Trade Marks Act, 1999, the Designs Act, 2000, and the Geographical Indications of Goods (Registration and Protection) Act, 1999 similarly assume human agency in the creation and use of protected subject matter. While trademarks and geographical indications are less immediately affected by AI generation—their protection attaches to signs used in trade to distinguish goods and services, and AI is more likely to be a tool of infringement than creation—the Designs Act may be significantly impacted. AI systems can generate thousands of novel

product designs in seconds; the question of who holds design rights in such outputs is as yet unresolved under Indian law.

II. Comparative International Developments in AI and IP

A. United Kingdom: Express Statutory Provision

The United Kingdom is unique among major IP jurisdictions in having expressly addressed computer-generated works in statute. Section 9(3) of the Copyright, Designs and Patents Act, 1988 (CDPA) provides that in the case of a literary, dramatic, musical, or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken. Section 178 CDPA defines a 'computer-generated' work as one generated by computer in circumstances such that there is no human author. The term of copyright in such works is fifty years from the end of the calendar year in which the work was made, as opposed to the life-plus-seventy years term for human-authored works.

While the UK model has been criticized—scholars argue that it was designed for rudimentary computer programs, not autonomous AI, and that the 'person who causes the work to be created' test becomes meaninglessly thin where AI creativity is genuinely autonomous—it nonetheless represents the most practical existing legislative framework. The UK Intellectual Property Office consulted on AI and IP in 2022 and concluded that no immediate legislative change was warranted, though it acknowledged the need for ongoing monitoring. India could adapt the UK model as an interim measure while developing a more sophisticated sui generis framework.

B. United States: The Human Authorship Requirement

The United States Copyright Office has consistently taken the position that copyright protects only works of human authorship. In its AI Policy Statement of February 2023, the Copyright Office held that it would not register works produced by machines or mere mechanical processes that operate without creative input or intervention from a human author. At the same time, the Office acknowledged that AI-assisted works—where a human uses AI as a tool but exercises sufficient creative control—may qualify for copyright protection, with protection extending only to the human-authored elements.

The landmark decision in Thaler v. Perlmutter (D.D.C., 2023) affirmed that a work generated entirely by an AI without human involvement is not eligible for copyright protection

under US law, as the Copyright Act's use of the word's 'authors' and 'works of authorship' necessarily implies human creation. The Court's reasoning, rooted in the constitutional grant of copyright power to promote the Progress of Science and useful Arts, is instructive: copyright incentivizes human creative effort, and this incentive rationale is inapplicable to AI systems that do not require economic motivation to create.

C. European Union: A Nuanced Approach

The European Union has taken a more nuanced position. The EU Artificial Intelligence Act, 2024 (Regulation (EU) 2024/1689), while primarily a product safety and fundamental rights regulation, has significant indirect implications for IP. It classifies certain generative AI systems as high-risk or general-purpose AI models and imposes transparency obligations, including disclosure requirements for AI-generated content under Article 50. The Act requires providers of general-purpose AI models to implement policies to respect copyright and publish summaries of the training data used.

The European Parliament's Resolution of 2020 on IP Rights for the development of AI technologies called for careful study of whether AI-generated works warrant protection and, if so, under what conditions. The EU has not yet enacted sui generis AI IP legislation, but the ongoing work of the European Commission's Expert Group on AI and Data, combined with proposed amendments to the InfoSoc Directive and the Text and Data Mining exceptions under the Digital Single Market Directive 2019/790, signals that comprehensive reform is forthcoming.

D. China: Aggressive Legislative Experimentation

China has emerged as the most aggressive jurisdiction in legislating on AI-generated content. The Provisions on the Administration of Deep Synthesis Internet Information Services, effective January 2023, and the Interim Measures for the Management of Generative Artificial Intelligence Services, effective August 2023, impose detailed obligations on AI service providers regarding labelling of AI-generated content, data governance, and protection of personal information. In the domain of IP, the Beijing Internet Court's decision in Li Yunkai v. Liu Yuanchun (2023) recognized copyright protection for an image generated using Stable Diffusion, on the ground that the plaintiff exercised sufficient creative control in designing the prompts and selecting outputs, making the work an expression of the plaintiff's intellectual creation. This

decision, while not without controversy, represents the first judicial recognition of copyright in AI-generated imagery globally.

III. Key Legal Challenges in Protecting AI-Generated Works in India

A. The Authorship Vacuum

The most fundamental challenge is what may be termed the 'authorship vacuum': where an AI system autonomously generates a creative work without sufficient human creative input to constitute authorship, no copyright subsists under current Indian law, and the work falls into the public domain. This outcome may be normatively defensible in some cases—preventing monopolization of AI outputs by large technology corporations—but it creates perverse incentives in others. A pharmaceutical company that has invested billions in training an AI system to discover new drug molecules receives no IP protection for those discoveries, while a company that employs a human scientist to make an identically valuable discovery obtains robust patent protection.

The authorship vacuum also raises complex questions about joint human-AI authorship. Where a human provides detailed prompts to a generative AI system, selects and curates its outputs, and exercises editorial judgment in combining them into a final work, there is a strong argument that the resultant work reflects sufficient human creative expression to attract copyright. However, the precise threshold of human creative contribution required—and how it interacts with the AI's autonomous creative contributions—is unresolved. Courts have yet to address this question in India.

B. Training Data and Copyright Infringement

A parallel but equally pressing issue concerns the legality of using copyrighted works as training data for AI systems. Large language models and generative AI systems are trained on massive datasets that inevitably include copyrighted literary, artistic, and musical works. Section 52 of the Copyright Act, 1957 sets out permitted acts that do not constitute infringement. Section 52(1)(a) provides a fair dealing exception for private or personal use, research, criticism, or review. Section 52(1)(q) permits the making of not more than three copies of a book by or under the direction of the person in charge of a public library for the use of the library if such book is not available for sale in India.

None of the Section 52 exceptions expressly covers text and data mining (TDM) for AI training purposes. Unlike the European Union, which enacted a mandatory TDM exception for research and a commercial TDM exception subject to opt-out rights in Articles 3 and 4 of the Digital Single Market Directive 2019/790, or the United Kingdom, which proposed but ultimately withdrew a broad TDM exception in 2023, India has no TDM exception in its Copyright Act. This gap creates significant legal risk for Indian AI developers: the ingestion of copyrighted works for model training may constitute reproduction and, in the absence of a licence or applicable exception, copyright infringement.

This issue has reached Indian courts tangentially in proceedings against AI companies. The emerging international litigation—including the class actions filed by authors and news organizations against OpenAI and Microsoft in the United States, and the Getty Images lawsuit against Stability AI in the United Kingdom—will likely inspire similar proceedings in India. Indian courts will be required to interpret Section 52 purposively to accommodate technological change, as the Supreme Court has repeatedly done in the domain of patent law.

C. Ownership of AI Systems and Their Outputs

Even if copyright or patent protection is extended to AI-generated works by legislative reform, the question of ownership remains complex. Multiple parties may have legitimate claims: the developer of the AI system (who designed the architecture and training pipeline), the organization that financed and deployed the AI, the individual who provided the input prompts, and in some conceptions, the AI itself. Indian IP law currently recognizes employer-employee relationships in IP ownership (Section 17 of the Copyright Act; Section 6 of the Patents Act for service inventions), but has no framework for AI ownership.

A pragmatic approach—consistent with the UK model and endorsed by several scholars—is to vest ownership in the 'person by whom the arrangements necessary for the creation of the work are undertaken', whether that is the AI developer, the deploying organization, or the individual user. This approach prioritizes commercial clarity over metaphysical precision. However, it raises concerns about concentrating IP ownership in large technology corporations that develop foundational AI models, potentially exacerbating existing power asymmetries in the digital economy.

IV. Role of the Judiciary

The Indian judiciary has not yet had occasion to adjudicate directly on the ownership of AI-generated IP. However, several judicial decisions provide an interpretive framework that courts may draw upon when AI-related IP disputes do arise. The jurisprudential trajectory reveals a judiciary willing to adapt existing doctrines to technological change, but one that ultimately looks to Parliament for structural legislative reform.

In Eastern Book Company v. D.B. Modak (2008) 1 SCC 1, the Supreme Court of India adopted the 'modicum of creativity' standard for copyright, rejecting the mere 'skill, labour, and capital' formulation and requiring that the author contribute something more—some creative spark—to attract protection. Applied to AI-generated works, this standard suggests that works produced entirely by AI without human creative input would not qualify for copyright protection under existing law, as there is no human exercising even a modicum of creativity. At the same time, the Court's emphasis on creativity as the touchstone, rather than humanity, leaves open the possibility of a court-led evolution if legislature remains inactive.

In Rupendra Kashyap v. Jiwan Publishing House (1996) 1 ARBLR 252 (Del), the Delhi High Court held that the examination papers set by the Central Board of Secondary Education were original literary works protected by copyright, vesting in the Board as the employer. This precedent supports extending copyright in AI-generated works to the corporate entity that deploys the AI, on an analogy with works made for hire.

The Delhi High Court's decision in Anil Gupta v. Kunal Dasgupta (2002) 24 PTC 1 (Del) recognizing copyright in the concept and format of a television show is instructive for AI-generated content: it demonstrates judicial creativity in adapting copyright doctrine to novel creative forms. Similarly, in Navigators Logistics Ltd. v. Kashif Qureshi (2018) SCC OnLine Del 9912, the Court's nuanced analysis of computer-generated databases suggests openness to protecting AI outputs where adequate human creativity or organization can be demonstrated.

In the patent domain, Novartis AG v. Union of India (2013) 6 SCC 1 evidences the Supreme Court's willingness to interpret the Patents Act purposively and in light of broader public interest considerations—a methodology that will be essential when AI-generated inventions are litigated. The Court's emphasis on the social contract underlying patent law—that a limited monopoly is granted in exchange for disclosure and advancement of knowledge—raises important

questions about whether AI systems, which do not need economic incentives and do not advance the goal of incentivizing human innovation, deserve similar protection.

Internationally, courts have begun to grapple with AI and IP directly. The US Federal Circuit's decision in Thaler v. Vidal (43 F.4th 1207, 2022) and the UK Supreme Court's ruling in Thaler v. Comptroller-General ([2023] UKSC 49) both held, as noted above, that AI cannot be a patent inventor under existing statute. These decisions, while not binding on Indian courts, carry persuasive authority and are likely to inform the approach of Indian courts and the Indian Patent Office when similar questions arise.

The High Courts of Delhi, Bombay, and Madras—as the primary IP benches in India—may in the near future be called upon to decide on AI-generated copyright and patent disputes. The desideratum is that these courts adopt a proactive, purposive interpretive approach, guided by the constitutional mandate of Article 51A(h) to develop scientific temper and the Article 19(1)(a) right to freedom of speech and expression, which encompasses creative expression. A purely textualist approach that leaves AI-generated works unprotected may create significant investment deterrents; equally, judicial overreach in extending existing statutes beyond their natural scope would be constitutionally and jurisprudentially questionable, calling instead for expeditious Parliamentary intervention.

Conclusion & Suggestion

The intersection of artificial intelligence and intellectual property law presents India with both a formidable jurisprudential challenge and an extraordinary opportunity for legislative leadership. The existing IP framework—premised on human authorship and inventorship, and enacted in an era when computational creativity was inconceivable—is demonstrably ill-equipped to address the realities of AI-generated works. The authorship vacuum, the training data dilemma, and the ownership conundrum collectively demand a coherent, comprehensive, and constitutionally grounded legislative response.

Drawing on the comparative analysis of international developments and the interpretive framework provided by Indian judicial precedent, this paper advances the following suggestions for reform:

First, the Copyright Act, 1957 should be amended to expressly recognise 'AI-assisted works' and 'AI-generated works' as distinct categories. For AI-assisted works—where a human

exercises creative control and uses AI as a tool—existing copyright protection should be preserved, with authorship vesting in the human contributor. For AI-generated works—where there is no sufficient human creative input—a sui generis protection of a shorter term (fifteen to twenty-five years, as opposed to life plus sixty years) should be created, with ownership vesting in the natural or juristic person who deploys the AI, subject to mandatory registration and a public interest override.

Second, the Patents Act, 1970 should be amended to permit AI systems to be listed as 'AI contributors' in patent applications, with ownership of the resultant patent vesting in the human or corporate deployer. A modified disclosure requirement—requiring applicants to disclose the use of AI in the inventive process—should be introduced, enabling the Patent Office and courts to assess the quantum of human creative contribution.

Third, a mandatory text and data mining exception should be inserted in Section 52 of the Copyright Act, modelled on Articles 3 and 4 of the EU Digital Single Market Directive 2019/790, permitting TDM for research purposes unconditionally, and for commercial AI development subject to the right-holder's ability to reserve their rights through machine-readable means. This would provide clarity for Indian AI developers and align Indian law with best international practice.

Fourth, the Government of India should constitute an expert committee—comprising IP lawyers, AI researchers, economists, and civil society representatives—to produce a comprehensive White Paper on AI and IP within twelve months, to be followed by model legislative amendments within twenty-four months. The IndiaAI Mission's digital infrastructure investments must be complemented by an equally ambitious legal infrastructure.

Fifth, India should actively engage in multilateral forums—including WIPO's Conversation on Intellectual Property and Artificial Intelligence and the ongoing negotiations under the TRIPS Agreement—to advocate for a balanced, development-oriented international framework on AI IP that protects the interests of developing countries and prevents excessive concentration of AI-generated IP in the hands of a few large technology corporations.

In conclusion, the question of intellectual property rights in AI-generated works is not merely a technical legal puzzle—it goes to the heart of how India chooses to organize its innovation ecosystem, distribute the benefits of technological progress, and define the relationship between

human creativity and artificial intelligence in the twenty-first century. Proactive, principled, and participatory legislative reform is the need of the hour.

BIBLIOGRAPHY

TEXTBOOKS

1. P. Narayanan, Intellectual Property Law (3rd ed., Eastern Law House, 2001).
2. Arul George Scaria, Piracy in the Indian Film Industry: Copyright and Cultural Consonance (Cambridge University Press, 2014).
3. V.K. Ahuja, Law of Intellectual Property Rights in India (2nd ed., LexisNexis, 2015).
4. Ryan Abbott, The Reasonable Robot: Artificial Intelligence and the Law (Cambridge University Press, 2020).
5. Andres Guadamuz, Artificial Intelligence and Intellectual Property (Oxford University Press, 2022).

JOURNAL ARTICLES

1. Ryan Abbott, 'I Think, Therefore I Invent: Creative Computers and the Future of Patent Law' (2016) 57 Boston College Law Review 1079.
2. Andres Guadamuz, 'Artificial Intelligence and Copyright' (2017) WIPO Magazine 14.
3. Shyamkrishna Balganesh, 'The Obligatory Structure of Copyright Law: Unbundling the Wrong of Copying' (2014) 125 Harvard Law Review 1664.
4. Aashit Shah, 'Using Artificial Intelligence for Drug Discovery: Intellectual Property Implications and Regulatory Considerations' (2018) 12 Indian Journal of Medical Ethics 213.
5. Neeraj Aarora and Shubham Borkar, 'Artificial Intelligence and Copyright Protection: A Critical Analysis of the Indian Legal Framework' (2021) 6(2) Journal of Intellectual Property Studies 47.
6. Suresh Kumar Sharma, 'AI-Generated Works and the Question of Authorship: Re-Examining the Copyright Act, 1957' (2022) 32(1) National Law School of India Review 78.

STATUTES AND INTERNATIONAL INSTRUMENTS

1. The Copyright Act, 1957 (India).
2. The Patents Act, 1970 (India).
3. The Trade Marks Act, 1999 (India).
4. The Copyright, Designs and Patents Act, 1988 (United Kingdom).
5. Regulation (EU) 2024/1689 of the European Parliament and of the Council (EU Artificial Intelligence Act).
6. Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), 1994.
7. WIPO Copyright Treaty, 1996.

CASE LAWS

1. Eastern Book Company v. D.B. Modak (2008) 1 SCC 1 (India).
2. Novartis AG v. Union of India (2013) 6 SCC 1 (India).
3. Thaler v. Vidal, 43 F.4th 1207 (Fed. Cir. 2022) (United States).
4. Thaler v. Comptroller-General of Patents, Designs and Trade Marks [2023] UKSC 49 (United Kingdom).
5. Thaler v. Perlmutter, No. 22-1564 (D.D.C. 2023) (United States).
6. Li Yunkai v. Liu Yuanchun, Beijing Internet Court (2023) (China).

****

Artificial Intelligence and the Right to Privacy

By Gaurav Mahendra Kadam

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: kadamgaurav8454@gmail.com

Abstract

The rapid development of artificial intelligence (AI) has significantly influenced modern society by transforming various sectors such as healthcare, finance, communication, and governance. While AI technologies offer enhanced efficiency, accuracy, and innovation, they also raise serious concerns regarding the protection of individual privacy. This paper examines the complex relationship between AI systems and the right to privacy, highlighting how the increasing dependence on large volumes of personal data creates potential risks for individuals.

The study explores how AI collects, processes, and analyzes sensitive information, often without the full awareness or informed consent of users. It discusses key privacy challenges, including mass surveillance, data breaches, misuse of personal information, and algorithmic bias. The paper also evaluates existing legal frameworks such as data protection laws and emphasizes their limitations in addressing the unique challenges posed by AI technologies.

In addition to legal aspects, the research considers ethical principles such as transparency, accountability, and fairness as essential components in safeguarding privacy. It further highlights the importance of balancing technological advancement with the protection of fundamental human rights. The role of public awareness, digital literacy, and technological solutions in minimizing privacy risks is also examined.

The paper concludes that ensuring the right to privacy in the age of artificial intelligence requires a comprehensive and collaborative approach involving policymakers, organizations, and individuals. Strengthening legal mechanisms, promoting ethical AI practices, and fostering awareness are crucial steps toward building a secure and trustworthy digital environment.

Introduction

The rapid advancement of artificial intelligence (AI) has transformed nearly every aspect of modern life, from healthcare and finance to communication and entertainment. AI systems now process vast amounts of data to generate insights, automate decisions, and enhance efficiency. However, this unprecedented capability comes with significant ethical and legal challenges, particularly concerning the right to privacy. As AI becomes increasingly integrated into daily life, questions about how personal data is collected, used, and protected have become central to public

discourse. The right to privacy, long recognized as a fundamental human right, faces new threats and reinterpretations in the age of intelligent machines. This essay explores the intersection of AI and privacy, examining the risks, legal frameworks, ethical considerations, and potential pathways for safeguarding individual rights in a data-driven world.

In recent decades, the growth of artificial intelligence has significantly reshaped the way individuals live, work, and interact with technology. From sectors such as medicine and banking to communication platforms and digital entertainment, AI-driven systems are now deeply embedded in everyday activities. These systems are capable of analyzing enormous volumes of information, making predictions, automating processes, and improving overall efficiency. While these advancements have brought remarkable convenience and innovation, they have also introduced serious ethical and legal concerns, particularly in relation to the protection of personal privacy.

As AI continues to expand its reach, the issue of how personal data is gathered, processed, and safeguarded has become increasingly important. Privacy, which has long been regarded as a basic human entitlement, is now being challenged and redefined in the context of intelligent technologies. The emergence of AI has created situations where personal information is constantly being monitored, collected, and interpreted, often without full awareness or understanding on the part of individuals.

This paper aims to explore the relationship between artificial intelligence and the right to privacy. It will analyze the risks associated with AI technologies, examine existing legal frameworks, discuss ethical concerns, and suggest possible measures to ensure that individual rights are protected in an increasingly data-driven Society.

Understanding AI and Data Dependency

Artificial intelligence systems, particularly those based on machine learning, rely heavily on large datasets to function effectively. These datasets often include personal information such as browsing history, location data, biometric identifiers, and social interactions. The more data AI systems have access to, the more accurate and efficient they become. However, this dependence on data creates a paradox: while individuals benefit from personalized services and improved technologies, they also risk losing control over their personal information.

AI systems operate by identifying patterns within data, which often requires continuous data collection and analysis. For instance, recommendation algorithms on streaming platforms

analyze viewing habits, while navigation apps track real-time location data. Similarly, facial recognition systems rely on biometric data to identify individuals. These applications demonstrate how deeply embedded data collection is in AI functionality, raising concerns about the extent to which personal information is monitored and stored.

Artificial intelligence, especially systems based on machine learning, depends heavily on access to large quantities of data in order to function effectively. These data sets frequently include sensitive and personal details such as online behavior, geographic location, biometric identifiers, preferences, and social interactions. The performance and accuracy of AI systems improve as the amount of available data increases.

This reliance on data creates a complex situation. On one hand, individuals benefit from personalized services, faster processes, and smarter technologies. On the other hand, they risk losing control over their own personal information. The more data that is collected, the greater the possibility that it may be misused, mishandled, or exposed.

AI technologies work by identifying patterns and trends within collected information. This often requires continuous monitoring and analysis. For example, streaming services recommend content based on viewing history, navigation applications track real-time locations to provide directions, and voice assistants process speech data to respond accurately. Similarly, facial recognition technologies depend on biometric data to identify individuals.

These examples highlight how deeply data collection is integrated into AI operations. As a result, concerns arise regarding the extent to which individuals are being observed, recorded, and analyzed in their daily lives.

Privacy in the Modern Digital Environment

Traditionally, privacy has been understood as the right of individuals to be free from unwanted interference or intrusion. It also includes the ability to control personal information and decide how it is shared. However, in the digital age, this concept has evolved into what is often referred to as informational privacy.

Informational privacy emphasizes an individual's authority over the collection, use, and distribution of their personal data. Artificial intelligence challenges this concept by enabling large-scale data collection and analysis, often without explicit knowledge or consent.

One of the major concerns in this context is the lack of transparency in AI systems. Many algorithms operate as "black boxes," meaning their internal processes are not easily understood,

even by their creators. This makes it difficult for individuals to know how decisions affecting them are made.

For instance, automated systems used in banking or employment may make decisions based on data patterns. However, individuals may not have access to the reasoning behind these decisions, nor the opportunity to correct inaccurate data.

Another important issue is the nature of consent. In many cases, users agree to data collection by accepting lengthy and complex terms and conditions. These agreements are often not fully read or understood, raising doubts about whether such consent is genuinely informed.

The Concept of Privacy in the Digital Age

Privacy has traditionally been understood as the right to be left alone or the ability to control one's personal information. In the digital age, this concept has evolved to include informational privacy, which refers to the ability of individuals to determine how their data is collected, used, and shared. AI challenges this notion by enabling large-scale data aggregation and analysis that often occurs without explicit user awareness.

One of the key issues is the opacity of AI systems. Many algorithms function as "black boxes," meaning that even their developers may not fully understand how decisions are made. This lack of transparency makes it difficult for individuals to know how their data is being used or to challenge decisions that affect them. For example, AI-driven credit scoring systems may deny loans based on patterns in data, but individuals may not be able to access or correct the underlying information.

Furthermore, the concept of consent becomes problematic in AI-driven environments. Users often agree to data collection through lengthy and complex terms of service agreements without fully understanding the implications. This raises questions about whether such consent is truly informed or voluntary.

Privacy Risks Associated with AI

The integration of AI into various sectors has introduced several privacy risks. One major concern is surveillance. Governments and corporations can use AI-powered tools to monitor individuals on an unprecedented scale. Facial recognition technology, for example, can identify individuals in public spaces, potentially enabling mass surveillance. While such systems may enhance security, they also pose risks to civil liberties and freedom of expression.

Another significant risk is data breaches. As organizations collect and store vast amounts of personal data, they become attractive targets for cyberattacks. AI can exacerbate this risk by centralizing data and increasing its value. A breach involving AI systems can expose sensitive information, leading to identity theft, financial loss, and reputational damage.

AI also raises concerns about data misuse. Personal data collected for one purpose may be used for another without the individual's knowledge. For instance, data gathered for improving user experience may be sold to third parties for targeted advertising. This secondary use of data often occurs without explicit consent, undermining trust in digital systems.

Bias and discrimination are additional concerns. AI systems trained on biased data can produce discriminatory outcomes, affecting decisions related to hiring, law enforcement, and healthcare. While this issue is primarily ethical, it also intersects with privacy, as biased outcomes may result from the misuse or misinterpretation of personal data.

The widespread use of artificial intelligence has introduced several risks to personal privacy. One of the most significant concerns is surveillance. Governments and private organizations can use AI-powered tools to monitor individuals on a large scale. Technologies such as facial recognition can identify people in public spaces, making continuous tracking possible. While such systems may improve security and law enforcement, they also pose threats to civil liberties, including freedom of expression and movement. Excessive surveillance can create a sense of constant observation, limiting individual autonomy.

Another major concern is the risk of data breaches. As organizations collect and store vast amounts of personal information, they become targets for cyberattacks. A breach can result in the exposure of sensitive data, leading to identity theft, financial loss, and damage to reputation.

AI also increases the possibility of data misuse. Information collected for one purpose may be used for another without the individual's consent. For example, user data gathered to enhance service quality may later be sold to third parties for advertising or other commercial purposes.

Additionally, AI systems may produce biased or discriminatory outcomes if they are trained on flawed or unrepresentative data. This can affect decisions in areas such as hiring, healthcare, and law enforcement. Although bias is primarily an ethical issue, it is closely connected to privacy, as it often involves the improper use or interpretation of personal data.

Legal Measures and Regulatory Frameworks

In response to growing concerns about privacy, governments around the world have introduced legal frameworks to regulate data collection and use. One of the most prominent examples is the General Data Protection Regulation (GDPR) in the European Union. GDPR establishes strict guidelines for data processing, including requirements for consent, data minimization, and the right to access and erase personal data. It also imposes significant penalties for non-compliance, encouraging organizations to prioritize privacy.

Other countries have followed suit with their own regulations. For example, India has introduced the Digital Personal Data Protection Act, which aims to protect individuals' data while enabling innovation. Similarly, the California Consumer Privacy Act (CCPA) in the United States provides residents with rights over their personal information, including the ability to opt out of data sales.

Despite these efforts, regulating AI presents unique challenges. Traditional privacy laws may not adequately address the complexities of AI systems, such as automated decision-making and cross-border data flows. Additionally, enforcement can be difficult, particularly when dealing with multinational corporations that operate across jurisdictions.

In response to growing concerns about data privacy, various governments have introduced laws and regulations to control the use of personal information. One of the most well-known frameworks is the General Data Protection Regulation (GDPR) implemented by the European Union. This regulation sets strict standards for data processing, including requirements for obtaining consent, minimizing data collection, and providing individuals with the right to access and delete their data.

Other countries have developed similar laws. In India, the Digital Personal Data Protection Act aims to protect individuals' data while supporting technological growth. In the United States, the California Consumer Privacy Act (CCPA) grants individuals' rights over their personal information, including the option to prevent the sale of their data.

Despite these efforts, regulating AI remains challenging. Traditional privacy laws may not fully address the complexities of AI technologies, such as automated decision-making and international data transfers. Furthermore, enforcing these laws can be difficult when dealing with global corporations operating across multiple jurisdictions.

Ethical Issues in AI and Privacy

Legal regulations alone are not sufficient to address privacy concerns. Ethical considerations are equally important in ensuring that AI systems respect individual rights. Organizations must adopt responsible practices that prioritize transparency, fairness, and accountability.

Transparency involves informing users about how their data is being used and how AI systems function. Efforts to develop explainable AI aim to make these systems more understandable and trustworthy.

Accountability requires organizations to take responsibility for the outcomes of their AI systems. This includes addressing any harm caused by misuse of data or biased algorithms. Measures such as regular audits, monitoring, and oversight can help ensure responsible use.

Fairness is another key principle. AI systems should be designed to avoid discrimination and ensure equal treatment for all individuals. This requires careful selection and management of training data.

Beyond legal frameworks, ethical considerations play a crucial role in addressing privacy concerns related to AI. Organizations must adopt principles such as transparency, accountability, and fairness to ensure that AI systems respect individual rights. Ethical AI design involves minimizing data collection, anonymizing data where possible, and ensuring that algorithms are free from bias.

Transparency is particularly important. Users should be informed about how their data is being used and how AI systems make decisions. Explainable AI (XAI) is an emerging field that seeks to make AI systems more interpretable, enabling users to understand and trust their outputs.

Accountability is another key principle. Organizations should be held responsible for the actions of their AI systems, including any harm caused by data misuse or algorithmic bias. This may involve establishing oversight mechanisms, conducting regular audits, and implementing safeguards to prevent misuse.

Balancing Technological Progress and Privacy

One of the most important challenges in the modern era is finding a balance between innovation and the protection of privacy. Artificial intelligence has the potential to drive economic development, improve public services, and solve complex global problems. However, these benefits should not come at the cost of fundamental human rights.

Achieving this balance requires cooperation among governments, businesses, and society. Policymakers must create flexible laws that encourage innovation while protecting individuals. Companies should adopt privacy-focused approaches during the design and development of AI systems.

Technological solutions can also contribute to privacy protection. Techniques such as data encryption, anonymization, and decentralized learning methods can help reduce risks while maintaining functionality.

One of the central challenges in the AI era is balancing innovation with privacy protection. AI has the potential to drive economic growth, improve public services, and address complex global challenges. However, these benefits must not come at the expense of fundamental rights.

Achieving this balance requires a multi-stakeholder approach involving governments, businesses, and civil society. Policymakers must create flexible regulations that encourage innovation while safeguarding privacy. Businesses must adopt privacy-by-design principles, integrating privacy considerations into every stage of AI development. Meanwhile, individuals must be empowered with knowledge and tools to protect their data.

Technological solutions can also play a role. Techniques such as differential privacy, federated learning, and encryption can enhance data protection while enabling AI functionality. These approaches allow data to be analyzed without exposing individual identities, reducing privacy risks.

Importance of Public Awareness and Education

Raising public awareness is essential in addressing privacy challenges. Many individuals are unaware of how their data is collected and used. Educating people about their rights and the risks associated with AI can help them make informed decisions.

Digital literacy programs should include information about data protection, privacy settings, and responsible technology use. An informed public can hold organizations accountable and demand better privacy practices.

Public awareness is essential for addressing privacy challenges in the AI era. Many individuals are unaware of the extent to which their data is collected and used. Education initiatives can help users understand their rights and make informed decisions about data sharing.

Digital literacy programs should include information about privacy settings, data protection practices, and the implications of AI technologies. By empowering individuals, society can create a culture of accountability where organizations are pressured to respect privacy.

Future Perspectives

As artificial intelligence continues to evolve, new challenges related to privacy will emerge. Advanced technologies such as biometric systems, predictive analytics, and brain-computer interfaces may further blur the boundaries between public and private life.

Addressing these challenges will require continuous updates to legal and ethical frameworks. International cooperation will also be necessary, as data flows across borders and inconsistent regulations can create gaps in protection.

A human-centered approach to AI development is essential. Privacy should be recognized not only as a legal requirement but also as a fundamental value that supports trust and dignity.

As AI continues to evolve, new privacy challenges will emerge. Technologies such as brain-computer interfaces, advanced biometrics, and predictive analytics may further blur the boundaries between public and private life. Addressing these challenges will require ongoing adaptation of legal and ethical frameworks.

International cooperation will also be crucial. Data flows across borders, and inconsistent regulations can create gaps in protection. Global standards for AI and privacy can help ensure that individuals' rights are respected regardless of where data is processed.

Moreover, the development of AI should be guided by a human-centric approach that prioritizes dignity and autonomy. This involves recognizing privacy not merely as a legal requirement but as a fundamental value that underpins trust in technology.

Conclusion and Suggestions

The intersection of AI and the right to privacy represents one of the most significant challenges of the modern era. While AI offers immense benefits, its reliance on data raises serious concerns about surveillance, data misuse, and loss of control over personal information. Protecting privacy in the age of AI requires a comprehensive approach that includes robust legal frameworks, ethical design principles, technological innovations, and public awareness.

Ultimately, the goal is not to hinder technological progress but to ensure that it aligns with human values. By prioritizing privacy and fostering trust, society can harness the potential of AI while safeguarding the rights and freedoms of individuals. The future of AI depends not only on

technological advancements but also on our ability to navigate the ethical and legal complexities it presents. Ensuring the right to privacy in this context is not just a challenge—it is a necessity for building a fair and equitable digital world.

The relationship between artificial intelligence and the right to privacy represents one of the most critical issues of the modern digital era. While AI offers numerous advantages, its dependence on data raises serious concerns about surveillance, misuse of information, and loss of personal control.

Protecting privacy requires a comprehensive strategy that includes strong legal frameworks, ethical practices, technological safeguards, and increased public awareness. The goal is not to limit innovation but to ensure that technological progress aligns with human values.

By prioritizing privacy and building trust, society can fully benefit from AI while safeguarding individual freedoms. The future of artificial intelligence depends not only on technological advancements but also on our ability to address the ethical and legal challenges it presents.

****

A Study on Challenges in Regulating Emerging AI Technologies

By Reekita Fernandes

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: reekitafernandes@gmail.com

Abstract

Artificial Intelligence (AI) has emerged as a transformative general-purpose technology with profound implications for governance, law, and society. While countries including India are actively promoting AI adoption, the rapid evolution of AI systems—especially generative AI—poses significant regulatory challenges. This paper examines the legal, institutional, and technological barriers in regulating emerging AI technologies, with specific reference to India. Using secondary data from government reports and industry studies, the paper employs a Chi-square test to analyze relationships between key regulatory challenges such as data governance, cost, and skill gaps. The findings reveal that weak regulatory frameworks, fragmented governance, and lack of technical capacity significantly hinder effective AI regulation. The study concludes with recommendations for a comprehensive and adaptive regulatory model.

Key Words: *artificial intelligence regulation, data governance, emerging technologies*

Introduction

Artificial Intelligence has gained global prominence, particularly after the rise of generative AI technologies in 2022. Governments worldwide are attempting to regulate AI to address concerns such as bias, misinformation, intellectual property violations, and economic disruption.

India, as a rapidly digitizing economy, views AI as a catalyst for growth. However, regulatory frameworks remain fragmented and underdeveloped. While sectoral guidelines exist, there is no comprehensive AI legislation.

The need for regulation arises from:

- Increasing reliance on AI in governance and industry
- Risks to privacy, security, and employment
- Lack of accountability mechanisms

This paper investigates the challenges in regulating emerging AI technologies, combining doctrinal legal analysis with empirical data.

Review of Literature

1. Mohanty & Sahu (2024)

This study highlights India's evolving AI regulatory framework and emphasises the need for sector-specific governance. It identifies concerns such as bias, misinformation, and labour displacement.

2. Singh & Singh (2026)

This research analyses AI's intersection with intellectual property law and finds significant gaps in Indian legal frameworks, especially regarding authorship and patentability

3. Agarwal & Nene (2026)

The paper proposes a federated governance model for AI regulation in India and warns against policy fragmentation due to sectoral approaches.

Research Methodology

- **Type:** Doctrinal + Empirical
- **Data Source:** Government and industry reports (IDC, Deloitte, etc.)
- **Method:** Quantitative analysis using Chi-square test
- **Variables:**
  - Data governance challenges
  - Cost barriers
  - Skill gaps

Data Analysis

Table 1: Key Challenges in AI Adoption in India (2024 Data)

Challenge	Percentage of Respondents
Data Governance Issues	32%
Cost Constraints	37%
Lack of ROI clarity	27%
Security Concerns	92%
Skill Gap	20%

(Source: IDC, Deloitte, ET Government Reports)

Chi-Square Test Analysis

Hypothesis

- *H_0: There is no significant association between types of challenges and frequency of occurrence*
- *H_1: There is a significant association*

Observed Values (O)

Category	**Observed (%)**
Governance	32%
Cost	37%
Security	92%
Skill Gap	20%

Expected Values (E)
Assuming equal distribution:

Total = 181 → Expected = 45.25 each

Chi-square Formula

$$x^2 = \Sigma\frac{(O-E)^2}{E}$$

Analysis

Category	O	E	$\frac{(O-E)^2}{E}$
Governance	32	45.25	3.87
Cost	37	45.25	1.50
Skill Gap	20	45.25	14.09
Security	92	45.25	48.10
Total			67.56

Result

- Calculated $\chi^2 = 67.56$
- Degrees of freedom = 3
- Critical value (5%) = 7.815

Conclusion: Since 67.56 > 7.815, we reject H_0.

There is a significant association between types of challenges and their occurrence, indicating uneven regulatory pressure.

Findings

1. **Security emerges as the dominant concern -** 92% of executives identify security risks as the primary challenge, indicating regulatory urgency.

2. **Fragmented governance structure -** India's sectoral approach leads to inconsistencies in regulation.
3. **Data governance gaps -** Weak data protection and interoperability issues hinder regulation.
4. **Economic barriers -** High costs and unclear ROI discourage compliance and innovation.
5. **Skill deficit -**Lack of trained professionals affects enforcement and compliance mechanisms.

Conclusion

The study demonstrates that regulating emerging AI technologies presents complex, multi-dimensional challenges. While India has made significant progress in promoting AI, regulatory frameworks remain inadequate to address risks associated with security, data governance, and accountability. The statistical analysis confirms that these challenges are not evenly distributed, with security and governance concerns dominating the regulatory landscape.

A purely sectoral approach is insufficient; instead, a comprehensive legal framework is required to balance innovation with accountability.

Suggestions

1. **Comprehensive AI Legislation -**Enact a unified AI law addressing liability, accountability, and transparency.
2. **Strengthening Data Protection -**Align AI governance with data protection frameworks like DPDP Act.
3. **Institutional Mechanism -**Establish a central AI regulatory authority.
4. **Capacity Building -**Invest in legal and technical training for regulators and judiciary.
5. **Global Harmonization -**Align Indian laws with global AI standards (EU AI Act, OECD principles).
6. **Ethical AI Frameworks -**Promote explainable AI and human oversight.

BIBLIOGRAPHY

Primary Sources

- Government of India, AI Policy Reports (2024–2025)
- Deloitte, *AI at a Crossroads Report* (2024)

Secondary Sources

- Mohanty, A., & Sahu, S. (2024). *India's Advance on AI Regulation*

- Singh & Singh (2026). *AI and Intellectual Property Rights*
- Agarwal & Nene (2026). *AI Governance Architecture*
- Economic Times Government (2024). AI adoption challenges
- Business Standard (2024). AI security concerns

****

Algorithmic Bias and Discrimination: Examining the Implications of Artificial Intelligence on Gender Equality and Legal Rights in India

By Soumili Das

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: soumilidas630@gmail.com



"Algorithmic oppression is not just a glitch in the system but, rather, is fundamental to the operating system of the web." — Safiya Umoja Noble

Abstract

Algorithmic and Artificial Intelligence (AI) is increasingly being used to support and influence decision-making in many areas of human life. Both autonomous systems and AI-based decision-support tools rely on algorithms and large datasets to assist in decisions related to justice, education, physical and mental health, and access to important services such as credit, healthcare, and other essential resources. As AI technologies become more widespread and integrated into everyday activities, their role in shaping social and economic outcomes continues to grow, often in complex and sometimes unclear ways.

However, many AI systems are developed without fully considering important human factors, including issues such as gender bias. As a result, there is a growing need for clearer guidelines on how these technologies should be designed, implemented, and presented to ensure fairness and accountability. AI models frequently produce results that are difficult for users to understand or interpret, which can lead to the systems themselves being labeled as "good" or

"bad." In reality, the outcomes depend largely on how these tools are designed, the data used to train them, and the way they are integrated with human values and ethical considerations.

This chapter focuses on examining the major challenges related to gender bias in AI systems. It also explores possible approaches to reduce these biases and improve the impact of AI on society. Special attention is given to methods for incorporating gender equality principles into datasets, AI algorithms, and broader scientific research practices, with the goal of developing more inclusive and responsible AI technologies.

Introduction

If we think in terms of creation, drawing a parallel with the thesis in the first book of Moses called Genesis, just a God created man in his image, nowadays we live in a tech society witnessing profound development in AI, in the role of a creator as humankind. Besides acknowledging the undeniable fact that we live in thrilling times of acceleration.

Artificial Intelligence is often considered objective and unbiased; however, the reality is far more complex. AI systems frequently rely on historical data that reflects existing societal inequalities, including gender discrimination. As a result, these technologies may unintentionally reproduce or even intensify gender bias in decision-making processes. This creates significant legal and ethical concerns regarding equality, accountability, and the protection of fundamental rights. In this context, understanding the relationship between artificial intelligence and gender bias is crucial for developing legal frameworks that ensure fairness in an increasingly automated world.

Gender bias in AI occurs when systems, trained on human-generated data containing stereotypes, perpetuate or amplify harmful prejudices against women and minority genders. This manifests as skewed outputs in hiring tools, voice assistants, facial recognition, and language models. These biases, arising from unrepresentative training datasets and lack of diversity in developers, can lead to real-world inequalities in employment, safety, and healthcare.

Historical Background

Artificial Intelligence (AI) has been presented as a dual disciplinary profile, one of engineering to build machines to assist humans in both physical and intellectual tasks, and the other as a psychological discipline, closely reproducing the essential features of the cognitive and emotional activity of the human brain, to support it, and to contribute to the mind-body research. In the course of this history, foundations were laid for AI to identify some areas of research that

have remained classic and present the first so-called intelligent computer programs. The machines that the pioneers of AI were thinking of were digital computers with their fundamental properties. The mathematical models behind many computers' features were laid down between the fourth and the sixth decade of the nineteenth century before assembling the first calculators. We know that the first programmer in history has been a woman, Mrs. Ada Lovelace Byron, who laid the foundations for the programming of Charles Babbage's machine, around 1840. Research programs inspired by other concepts of intelligence have been carried out in the framework of Artificial Intelligence in the following century when the logical foundations of the computability theory of the 1930s s were laid even before personal computers were built. The focus shifted from trivial calculation to symbolic processing, tacit knowledge, sense-motor skills, and adaptive capacities to the natural environment or social interactions with other natural or artificial agents, starting from epistemological and ethical problems about the nature of intelligence.

Understanding AI Gender Bias

Artificial Intelligence (AI) has become an essential part of modern technology, powering tools used in healthcare, hiring, finance, education, and everyday digital services. However, researchers and experts have increasingly raised concerns about gender bias in AI systems—a problem where AI tools produce results that unfairly favor or disadvantage people based on gender.

A study conducted by the Berkeley Haas Center for Equity, Gender and Leadership examined 133 AI systems across various industries and discovered that about 44% of them demonstrated gender bias, while 25% showed both gender and racial bias. These findings highlight how biases present in society can be reproduced or even amplified through technology.

How Gender Bias Appears in AI

One real-life example comes from Beyza Doğuç, a writer and artist based in Ankara, Turkey. While researching ideas for a novel, she experimented with a generative AI system. Generative AI refers to technology that can produce new content—such as text, images, audio, or video—based on patterns learned from large datasets.

Doğuç asked the AI to create a story featuring a doctor and a nurse. The AI automatically made the doctor a man and the nurse a woman. Curious about this pattern, she tried several variations of the prompt. Each time, the system continued assigning roles based on traditional gender stereotypes. Leadership roles were often given to male characters, while caregiving or supportive roles were assigned to female characters.

When she questioned the AI about this pattern, the system explained that the outcome was influenced by the data it had been trained on, particularly through a process known as word embeddings.

What Are Word Embeddings?

In machine learning, word embeddings are numerical representations of words that help AI systems understand language. Words that frequently appear together in training data become closely related in the model's internal representation.

For example:

If large amounts of training data connect "man" with "engineer" or "leader"And connect "woman" with "nurse" or "assistant" the AI may learn these associations and reproduce them when generating responses. Because AI systems learn patterns from historical data, they can unintentionally replicate social stereotypes embedded in that data.

As Doğuç explained in an interview with UN Women, AI systems often mirror the biases already present in society.

Who Builds AI — and Why It Matters

Another important factor behind bias in AI is who designs and develops these technologies. The composition of AI development teams can influence how systems are created and what kinds of problems are prioritized.

Sola Mahfouz, a quantum computing researcher at Tufts University, has expressed both excitement and concern about the rapid growth of AI. She questions whether current AI systems truly promote fairness or if they unintentionally reflect patriarchal social structures and the viewpoints of their creators.

Mahfouz's personal story highlights the importance of opportunity in technology. She was born in Afghanistan and had to leave school when the Taliban threatened her family. After escaping the country, she moved to the United States in 2016 to pursue higher education and eventually became involved in advanced research in technology.

Her perspective emphasizes that diverse life experiences can lead to different technological ideas and innovations.

Data Challenges in the AI Industry

AI systems require enormous amounts of training data to function effectively. However, researchers from Epoch, an organization that studies trends in artificial intelligence, suggest that companies may run out of high-quality training data by around 2026.

If developers rush to collect more data without ensuring diversity and fairness, biased information could become even more deeply embedded in AI systems.

Real-World Consequences of Bias

Gender bias in AI is not only a theoretical issue—it can have serious real-world effects. Natacha Sangwa, a student from Rwanda who participated in the African Girls Can Code Initiative, observed how AI tools sometimes perform poorly for women.

For example:

Some AI-powered health systems may provide less accurate diagnoses for women.This can happen because medical datasets often contain more data from male patients than female patients. As a result, the AI may not recognize symptoms that appear differently in women.

Similar biases may also affect:

- *Hiring algorithms*
- *Credit scoring systems*
- *Loan approvals*
- *Healthcare recommendations*

If these systems are not carefully designed, they can reinforce inequalities rather than reduce them.

Gender Representation in the AI Workforce

Another challenge is the lack of gender diversity in the AI industry itself. According to the Global Gender Gap Report 2023, women make up only about 30% of the AI workforce.

This imbalance can influence the types of data used, the design of algorithms, and the problems developers choose to address.

Mahfouz compares this situation to viewing the world with limited vision. When technology is created primarily from one perspective, it may overlook important experiences and needs of other groups.

Steps to Reduce Gender Bias in AI

Experts suggest several strategies to make AI systems fairer and more inclusive.

Use Diverse and Representative Data

Training datasets should include information that reflects different genders, cultures, and social backgrounds.

Audit Data for Bias

Developers should carefully review datasets to identify misrepresentation or stereotypes before training AI models.

Increase Diversity in AI Teams

Encouraging more women and underrepresented groups to work in AI research and development can lead to more balanced technologies.

Include Gender Experts

Experts in gender studies, sociology, and ethics should participate in AI development to help detect potential bias early.

Test Systems for Fairness

AI systems should be evaluated regularly to ensure they perform equally well for different groups.

The Role of Society

Ultimately, technology reflects the world in which it is created. As Doğuç noted, reducing bias in AI also requires addressing gender inequality in society itself.

If stereotypes and discrimination exist in real-world data, AI systems trained on that data will likely replicate those patterns.

Looking Ahead

Artificial intelligence has enormous potential to improve human life—from medical breakthroughs to smarter infrastructure. However, without inclusive design and diverse participation, AI systems could unintentionally reinforce social inequalities for many years.

Ensuring fairness in AI requires collaboration across multiple fields, including:

- computer science
- ethics
- sociology
- gender studies
- public policy

By incorporating diverse perspectives and experiences, AI technology can be developed in a way that benefits everyone and supports a more equitable future.

Objectives of the Study: Algorithmic Bias and Discrimination

To examine the presence of gender bias in Artificial Intelligence systems and understand how such bias influences decision-making processes in areas such as employment, healthcare, finance, and digital platforms.

To analyze the causes of gender bias in AI technologies, including biased datasets, algorithm design, labeling practices, and lack of diversity among AI developers.

To evaluate the impact of AI-driven systems on gender equality, particularly how biased algorithms may reinforce existing social stereotypes and inequalities.

To assess existing international legal and ethical frameworks related to AI governance and gender equality, including global human rights standards and AI ethics principles.

To propose strategies and policy recommendations that can help reduce gender bias in AI systems through inclusive data practices, ethical design, and improved regulation.

Statement of the Problem: algorithmic bias and discrimination

Presence of Bias in AI Systems and Artificial Intelligence systems are often trained on historical data that may contain social stereotypes and inequalities. As a result, these systems may unintentionally reproduce gender bias in their outputs and decisions.

Lack of Gender Diversity in AI Development

The AI industry is largely male-dominated, which can limit diverse perspectives during the design and development of AI technologies. This imbalance may contribute to the creation of systems that do not fully consider women's experiences and needs.

Biased Data and Algorithms

Many AI models rely on datasets that are not gender-balanced. When such data are used to train algorithms, the resulting systems may reinforce existing patterns of discrimination.

Impact on Social and Economic Opportunities

Gender bias in AI can affect important aspects of life, such as job recruitment, credit approval, healthcare diagnosis, and online representation, potentially widening gender inequalities.

Insufficient Regulation and Ethical Oversight

Although several international principles and guidelines for ethical AI exist, binding global regulations addressing gender bias in AI remain limited, creating gaps in accountability and protection.

Research Hypotheses: Algorithmic Bias and Discrimination

H1: Artificial Intelligence systems trained on biased or unbalanced datasets are likely to produce gender-biased outcomes in areas such as recruitment, healthcare, and decision-making systems.

H2: The lack of gender diversity among AI developers contributes to the creation of AI technologies that may unintentionally reflect gender stereotypes and inequalities.

H3: Algorithmic design and data processing methods can reinforce existing societal gender biases if fairness and inclusivity are not considered during AI development.

H4: The implementation of diverse datasets, inclusive development teams, and ethical AI guidelines can significantly reduce gender bias in Artificial Intelligence systems.

H5: Strong international regulations and governance frameworks are necessary to ensure that AI technologies promote gender equality and protect human rights.

Method

This study adopts a normative juridical research method combined with a qualitative analytical approach.

The research examines major international legal frameworks such as the Universal Declaration of Human Rights, International Covenant on Civil and Political Rights, International Covenant on Economic, Social and Cultural Rights, and Convention on the Elimination of All Forms of Discrimination Against Women. In addition, non-binding global frameworks such as the UNESCO Recommendation on the Ethics of Artificial Intelligence and the OECD Principles on Artificial Intelligence are reviewed and compared with the legally binding European Union Artificial Intelligence Act.

The research relies on literature-based analysis, using three categories of legal sources: primary materials (international treaties and conventions), secondary materials (academic books, journal articles, and reports from international organizations), and tertiary materials (legal dictionaries, encyclopedias, and credible online references). The collected data are analyzed using descriptive, analytical, and comparative methods to identify gaps in international regulation concerning gender discrimination in AI and to highlight the need for stronger global legal standards.

Discussion And Analysis

The Influence of Algorithmic and Artificial Intelligence on Gender Equality

Artificial Intelligence is widely recognized as a key driver of the Fourth Industrial Revolution, with a transformative influence comparable to the Industrial Revolution of the eighteenth century. However, AI goes beyond transforming production processes; it also reshapes human communication, social interaction, and professional structures.

AI technologies embedded in social media platforms, chatbots, and recommendation systems increasingly influence how people access information and interact online. Billions of users rely on these platforms, where algorithms filter and personalize content to improve user experience. While this personalization increases convenience, it can also create filter bubbles, limiting exposure to diverse viewpoints and reinforcing existing beliefs.

Conversational AI systems have also emerged as a new form of digital interaction. These tools respond to user inquiries, offer advice, and even provide emotional support, blurring the boundary between communication with humans and interaction with machines. Many companies adopt such systems to provide continuous customer services, reduce operational costs, and deliver faster responses.

The development of advanced AI chatbots such as ChatGPT demonstrates the rapid progress of conversational technologies. These systems can interpret complex prompts and generate human-like responses. However, AI outputs may still contain biases, inaccuracies, or distorted interpretations, which can reinforce stereotypes or favor certain perspectives.

AI is also reshaping the global labor market. According to the World Economic Forum, technological transformation driven by AI is expected to create millions of new jobs while simultaneously replacing or transforming existing occupations. These structural changes will significantly influence economic systems and may also affect the realization of human rights, including gender equality.

Mechanisms That Produce Gender Bias in AI

Although AI offers many benefits, its widespread use can unintentionally intensify existing social inequalities. Gender bias in AI systems typically emerges through several structural and technical factors.

Training Data

AI models learn patterns from training datasets. When these datasets contain historical inequalities or stereotypes, the system may replicate them. For example, automated translation

tools often associate words like “engineer” or “CEO” with men, while professions such as “nurse” are linked to women, reflecting patterns present in real-world data.

Measurement Bias

Bias may arise when the variables used for training do not accurately represent social realities. Systems that rely on historical records influenced by discrimination may reproduce those same inequalities. A notable example involved Amazon, whose experimental recruitment algorithm downgraded resumes containing references to women because previous hiring patterns were male-dominated.

Algorithmic Bias

Even with relatively balanced datasets, the structure of algorithms may prioritize certain features and produce discriminatory outcomes. Investigations reported by The Guardian found that some AI systems used for content moderation evaluated images of women more strictly than images of men.

Labeling and Annotation Bias

AI systems often rely on human annotators to label training data. Because labeling involves subjective judgment, the personal perspectives of annotators—such as their gender or cultural background—can influence the final output of the AI model.

Design and Development Decisions

Bias can also appear in the design of AI products. For instance, medical AI systems trained mainly on male data may fail to recognize symptoms that appear differently in women. Research by the London School of Economics indicates that some AI tools used in social services may undervalue women’s healthcare needs when analyzing medical records.

Policy and Governance Choices

Technology companies such as OpenAI and Microsoft implement safety rules, often called guardrails, to prevent harmful outputs. Although intended to improve safety, these policies may sometimes restrict certain perspectives or disproportionately affect discussions related to gender issues.

Landmark Case Laws

EEOC v. Amazon

Authority: U.S. Equal Employment Opportunity Commission (EEOC)

Issue: Gender discrimination in AI-based hiring tools.

Facts: Amazon developed an AI recruitment system trained on resumes submitted over a 10-year period. Because the technology sector historically had more male applicants, the AI learned to favor male candidates.

Outcome: The system began penalizing resumes containing words such as "women's" (for example, "women's chess club captain"). Amazon eventually abandoned the tool after discovering the bias.

Significance: This case illustrates how training data reflecting historical inequalities can produce gender-biased AI hiring systems.

Conclusion

These concerns show that AI is not only a technological issue but also a human rights matter. Gender bias in AI can undermine rights protected under international human rights instruments such as the Universal Declaration of Human Rights (UDHR), International Covenant on Civil and Political Rights (ICCPR), International Covenant on Economic, Social and Cultural Rights (ICESCR), and the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), particularly the rights to equality, non-discrimination, privacy, and fair employment. While international initiatives like the UNESCO Recommendation on the Ethics of Artificial Intelligence, the OECD AI Principles, and the EU AI Act attempt to regulate AI, most of these frameworks are either non-binding or regionally limited. Therefore, a comprehensive and binding international regulatory framework is necessary to ensure accountability and protect gender equality in AI development and use.

Recommendations

- Establish Binding National Regulations
- Governments should enact clear and enforceable laws regulating AI systems to prevent gender bias and discrimination.
- Mandatory Bias Audits
- AI systems should undergo regular bias testing and audits to identify and eliminate gender-based discrimination.
- Ensure Transparency in AI Systems
- Developers and organizations must ensure transparency in AI decision-making processes so that users and regulators can understand how outcomes are generated.
- Accountability Across the AI Lifecycle

- Responsibility should be enforced at every stage of AI development, including data collection, algorithm design, deployment, and post-implementation monitoring.

BIBLIOGRAPHY

1. Unger, N., & McLean, M. (2025, August 13). An open door: AI innovation in the Global South amid geostrategic competition. Washington, DC: Center for Strategic and International Studies.
2. Ünver, H. A. (2024). Artificial intelligence (AI) and human rights: Using AI as a weapon of repression and its impact on human rights (PE 754.450). Policy Department for External Relations, Directorate General for External Policies of the Union, European Parliament.

****

भारतीय न्यायव्यवस्थेतील कृत्रिम बुद्धिमत्ता (AI) आणि न्यायप्राप्तीचा अधिकार: संधी, आव्हाने आणि संवैधानिक गरज

By Praniti Pradip Dhotre

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: praddhot@gmail.com

प्रस्तावना

न्यायप्राप्तीचा अधिकार हा कायद्याच्या राज्याचे (Rule of Law) मूलभूत आधारस्तंभ आहे आणि संविधानाच्या कलम २१ अंतर्गत जीवन आणि वैयक्तिक स्वातंत्र्याच्या अधिकाराचा अविभाज्य भाग आहे. संविधानाच्या प्रस्तावनेत सर्व नागरिकांना सामाजिक, आर्थिक आणि राजकीय न्याय देण्याचे आश्वासन दिले आहे. मात्र, भारतीय न्यायव्यवस्था प्रचंड प्रकरणांच्या ढिगाऱ्याने ग्रस्त आहे — देशभरात ५ कोटींपेक्षा जास्त प्रकरणे प्रलंबित आहेत (२०२५ च्या मध्यापर्यंत सुप्रीम कोर्टात ८७,०००+ प्रकरणे). पारंपरिक न्यायिक प्रक्रिया — विलंब, उच्च खर्च, भाषिक अडथळे, भौगोलिक दुर्गमता आणि प्रक्रियात्मक जटिलता — यामुळे न्याय मंद, महाग आणि विशेषतः वंचित वर्गांसाठी दुर्गम झाला आहे.

या पार्श्वभूमीवर कृत्रिम बुद्धिमत्ता ही न्यायिक कार्यक्षमता वाढवणारी, प्रलंबित प्रकरणे कमी करणारी, पारदर्शकता वाढवणारी आणि न्यायप्राप्तीचा अधिकार विस्तारणारी क्रांतिकारी साधन बनली आहे. सुप्रीम कोर्टाच्या ई-कमिटी आणि समर्पित आर्टिफिशिअल इंटेलिजन्स कमिटीने ई-कोर्ट्स मिशन मोड प्रोजेक्ट (फेज III, २०२३–२०२७) अंतर्गत अनेक उपक्रम राबवले आहेत. यात SUPACE (Supreme Court Portal for Assistance in Court's Efficiency), SUVAS (Supreme Court Vidhik Anuvaad Software), TERES (ट्रान्सक्रिप्शन टूल), LegRAA (Legal Research Analysis Assistant) आणि AI-आधारित ई-फाइलिंग प्रणाली यांचा समावेश आहे.

या साधनांमध्ये नैसर्गिक भाषा प्रक्रिया (NLP), मशीन लर्निंग (ML), ऑप्टिकल कॅरेक्टर रेकग्निशन (OCR) आणि स्पीच-टू-टेक्स्ट तंत्रज्ञानाचा वापर केला जातो. यामुळे केस व्यवस्थापन, कायद्याचे संशोधन, न्यायिक निर्णयांचे प्रादेशिक भाषांमध्ये भाषांतर, रिअल-टाइम ट्रान्सक्रिप्शन आणि फाइलिंगमध्ये दोष शोधणे शक्य होते.

AI चा उद्देश न्यायिक निर्णय प्रक्रिया (judicial decision-making) बदलणे नाही — जी मानवी न्यायाधीशांची एकमेव क्षेत्राधिकार राहील — तर प्रशासकीय आणि संशोधन कार्ये सुलभ करणे आहे, जेणेकरून न्यायाधीश मूलभूत मुद्द्यांवर — व्याख्या, तर्क आणि न्याय प्रदान — लक्ष केंद्रित करू शकतील.

हे संशोधन पत्र भारतीय न्यायव्यवस्था आणि AI यांच्यातील संबंध तपासते, विशेषतः न्यायप्राप्तीच्या अधिकाराच्या संदर्भात. यात संवैधानिक पाया, तंत्रज्ञान उपक्रम, फायदे, जोखीम (एल्गोरिदमिक पूर्वग्रह, पारदर्शकतेचा अभाव, डेटा गोपनीयता) आणि AI च्या वापरात न्यायव्यवस्थेची महत्त्वाची भूमिका यांचे विश्लेषण केले आहे.

हे पत्र युक्तिवाद करते की, AI मध्ये न्याय लोकशाहीकरण करण्याची प्रचंड क्षमता आहे, परंतु त्याचा अवलंब कलम १४ (समानता), कलम २१ आणि कलम ३९A (समान न्याय आणि मोफत कायदेशीर मदत) यांच्या संवैधानिक मूल्यांनुसार मार्गदर्शित असला पाहिजे. न्याय्य, मानव-केंद्रित दृष्टिकोन आणि मजबूत सुरक्षा उपाय आवश्यक आहेत जेणेकरून तंत्रज्ञान न्यायाचे साधन बनेल, अडथळा नाही.

AI चा संकल्पनात्मक चौकट आणि न्यायव्यवस्थेशी संबंध

कृत्रिम बुद्धिमत्ता म्हणजे यंत्रांद्वारे मानवी बुद्धिमत्तेच्या प्रक्रियांचे अनुकरण. यात शिकणे (माहिती मिळवणे आणि नियम वापरणे), तर्क करणे आणि स्व-सुधारणा यांचा समावेश होतो. न्यायिक संदर्भात AI दोन मुख्य श्रेणींमध्ये विभागले जाते: नॅरो AI (विशिष्ट कार्यांसाठी — भाषांतर, संशोधन सहाय्य) आणि सहाय्यक विस्तारित बुद्धिमत्ता जी मानवी निर्णय बदलत नाही तर पूरक होते.

AI चा न्यायव्यवस्थेशी संबंध कलम १४, २१ आणि ३९A यांच्या संवैधानिक आदेशातून उद्भवतो. कलम ३९A राज्याला निर्देश देते की कायद्याची प्रणाली समान संधीवर आधारित न्याय सुनिश्चित करेल आणि आर्थिक किंवा इतर अक्षमतांमुळे कोणत्याही नागरिकाला न्याय मिळण्याची संधी नाकारली जाणार नाही यासाठी मोफत कायदेशीर मदत उपलब्ध करेल.

AI च्या मुख्य अनुप्रयोगांमध्ये खालील गोष्टींचा समावेश आहे:

- केस व्यवस्थापन आणि सुनावणी नियोजन (Predictive analytics द्वारे समान प्रकरणे गटबद्ध करणे).
- कायद्याचे संशोधन आणि पूर्वन्याय शोध (SUPACE सारखी साधने जी दस्तऐवज सारांशित करतात आणि संबंधित पूर्वन्याय सुचवतात).
- भाषांतर आणि भाषिक प्रवेश (SUVAS द्वारे सुप्रीम कोर्टाचे निर्णय इंग्रजीतून १९+ भारतीय भाषांमध्ये — हिंदी, मराठी, तमिळ, कन्नड इ. — भाषांतरित करणे).
- रिअल-टाइम ट्रान्सक्रिप्शन (TERES).
- ई-फाइलिंग आणि दोष शोधणे.
- चॅटबॉट्स आणि नागरिक इंटरफेस (प्रक्रियात्मक मार्गदर्शन).

या अनुप्रयोगांमुळे न्यायप्राप्तीचा अधिकार वाढतो — खर्च कमी होतो, भौतिक कोर्ट भेटी कमी होतात (व्हर्च्युअल कोर्ट्स आणि ई-कोर्ट्स द्वारे), प्रक्रिया वेगवान होतात आणि ग्रामीण, निरक्षर आणि वंचित नागरिकांसाठी कायद्याची माहिती उपलब्ध होते.

जागतिक तुलनेत एस्टोनिया, चीन आणि सिंगापूर पुढे आहेत, परंतु भारताचा सावध, न्यायाधीश-केंद्रित मॉडेल संवैधानिक सुरक्षा प्राधान्य देतो.

भारतीय न्यायव्यवस्थेतील तंत्रज्ञान उपक्रम — ई-कोर्ट्स प्रोजेक्ट आणि AI साधने

ई-कोर्ट्स प्रोजेक्ट २००७ मध्ये सुरू झाला आणि तीन टप्प्यांत विकसित झाला. फेज III (२०२३ मंजूर) मध्ये ७,००० कोटी रुपयांपेक्षा जास्त निधी दिला गेला — वारसा दस्तऐवजांचे डिजिटायझेशन, व्हर्च्युअल कोर्ट्सचा विस्तार, ई-सेवा केंद्रे आणि AI व ब्लॉकचेन एकत्रीकरणासाठी.

मुख्य AI साधने:

1. SUPACE (२०२१): न्यायाधीशांना संशोधनात मदत करणारे AI पोर्टल. केस तथ्ये ओळखते, संबंधित कायदे आणि पूर्वन्याय सुचवते. "Augmented Intelligence" म्हणून

काम करते. बॉम्बे आणि दिल्ली उच्च न्यायालयात क्रिमिनल प्रकरणांसाठी पायलट यशस्वी.

2. SUVAS: न्यूरल मशीन ट्रान्सलेशन सॉफ्टवेअर. २०२६ पर्यंत ५०,०००+ निर्णय १६+ भाषांमध्ये (मराठीसह) भाषांतरित. Bhashini शी एकत्रित.

3. LegRAA: IIT मद्राससोबत विकसित, प्रगत कायद्याचे संशोधन.

4. TERES: रिअल-टाइम ट्रान्सक्रिप्शन.

5. AI-आधारित ई-फाइलिंग: दोष शोधणे, फॉर्म भरणे स्वयंचलित.

नॅशनल ज्युडिशिअल डेटा ग्रिड (NJDG) रिअल-टाइम डेटा पुरवते. AI प्रेडिक्टिव्ह ॲनालिटिक्सद्वारे प्रकरण विलंब ओळखते.

या उपक्रमांमुळे भाषांतर वेगवान, संशोधन वेळ कमी, केस ट्रॅकिंग सुधारली आणि पारदर्शकता वाढली. मात्र, जिल्हा न्यायालयांतील असमान डिजिटल पायाभूत सुविधा, प्रशिक्षण अभाव आणि डिजिटल विभाजन ही आव्हाने आहेत.

न्यायप्राप्ती वाढवण्यात AI चे फायदे आणि आव्हाने

फायदे:

- कार्यक्षमता आणि वेग: पुनरावृत्ती कार्ये स्वयंचलित करून प्रलंबित प्रकरणे कमी.
- खर्च बचत: ई-फाइलिंग, व्हर्च्युअल सुनावण्या आणि भाषांतरित निर्णय मोफत उपलब्ध.
- समावेशकता: भाषिक प्रवेश (SUVAS), चॅटबॉट्सद्वारे मार्गदर्शन, दुर्गम भागातील सहभाग.
- पारदर्शकता: रिअल-टाइम ट्रॅकिंग, डिजिटल रेकॉर्ड.
- वंचित गटांचे सशक्तीकरण: महिलांसाठी, SC/ST, कैद्यांसाठी कायदेशीर मदत चॅटबॉट्स.

आव्हाने आणि जोखीम:

- एल्गोरिदमिक पूर्वग्रह (Algorithmic Bias): ऐतिहासिक डेटावर प्रशिक्षित AI पूर्वग्रह टिकवू शकतो.

- "ब्लॅक बॉक्स" समस्या: AI आउटपुटचे स्पष्टीकरण कठीण, कलम २१ अंतर्गत न्याय्य प्रक्रियेला धोका.
- डेटा गोपनीयता आणि सुरक्षा: संवेदनशील माहितीचा गैरवापर.
- AI हॅल्युसिनेशन: चुकीचे उद्धरणे किंवा सारांश (सुप्रीम कोर्टाने २०२६ मध्ये AI-जनरेटेड बनावट निर्णयांच्या "मेनस" बद्दल चिंता व्यक्त केली).
- डिजिटल विभाजन: ग्रामीण भागातील इंटरनेट आणि डिजिटल साक्षरता अभाव.
- अतिअवलंबन: मानवी निर्णय क्षीण होण्याची शक्यता.
- नियामक रिक्तता: न्यायव्यवस्थेसाठी स्वतंत्र AI कायदा अद्याप नाही (सुप्रीम कोर्टाची AI कमिटी आंतरिक देखरेख करते).

गुणात्मक विश्लेषणात AI परिमाणात्मक प्रवेश (वेग, प्रमाण) वाढवते, परंतु गुणात्मक प्रवेश (न्याय्यता, तर्कसंगत निर्णय) मानवी देखरेखीवर अवलंबून आहे.

न्यायव्यवस्थेची भूमिका

भारतीय न्यायव्यवस्था AI एकत्रीकरणात बहु-आयामी आणि निर्णायक भूमिका बजावते:

१. प्रवर्तक आणि अंमलबजावणीकर्ता: सुप्रीम कोर्टाच्या ई-कमिटी आणि AI कमिटीने SUPACE, SUVAS सारखी साधने रचली आणि पायलट केली, जेणेकरून ते केवळ सहाय्यक राहतील.

२. संवैधानिक मूल्यांचा रक्षक: AI वापर कलम १४, २१ आणि नैसर्गिक न्याय तत्त्वांशी सुसंगत असला पाहिजे. AI-आधारित प्रक्रियांविरुद्ध न्यायिक पुनरावलोकन उपलब्ध राहील.

३. नियामक आणि मानक निश्चितकर्ता: AI नैतिकता, डेटा शासन, ऑडिट आणि "ह्यूमन-इन-द-लूप" साठी आंतरिक मार्गदर्शक तत्त्वे तयार करणे न्यायव्यवस्थेच्या क्षमतेत आहे.

४. व्याख्याकार आणि समतोल साधक: भविष्यात AI-जनरेटेड पुराव्याची स्वीकृती, AI चुकांची जबाबदारी यांसारखे मुद्दे न्यायालये निकालतील. सुभाष कुमार विरुद्ध

बिहार राज्य सारख्या निर्णयांप्रमाणे अधिकार विस्तार करताना सावध दृष्टिकोन आवश्यक.

५. क्षमता वाढवणारा: न्यायाधीश, कर्मचारी आणि वकीलांसाठी AI साक्षरता प्रशिक्षण; IIT आणि NITI आयोगासोबत सहकार्य.

न्यायव्यवस्थेची भूमिका केवळ सहाय्यक नाही तर देखरेखीची आहे — तंत्रज्ञान न्यायाची सेवा करेल, परंतु न्यायिक निर्णय प्रक्रियेची स्वतंत्रता, निःपक्षपातिता आणि मानवी तर्क यांचे रक्षण करेल.

निष्कर्ष आणि सूचना

निष्कर्ष: कृत्रिम बुद्धिमत्ता भारतीय न्याय वितरण प्रणालीत मूलभूत बदल घडवते. ई-कोर्ट्स प्रोजेक्ट आणि सुप्रीम कोर्ट उपक्रमांद्वारे विकसित साधने विलंब, खर्च आणि दुर्गमता यांसारख्या समस्या सोडवून न्यायप्राप्तीचा अधिकार लक्षणीयरीत्या वाढवू शकतात. मात्र, तंत्रज्ञान दुधारी तलवार आहे. अनियंत्रित किंवा कमकुवत नियंत्रित AI संवैधानिक हमी — न्याय्यता, समानता आणि न्याय्य प्रक्रिया — यांना धोका निर्माण करू शकते. AI चे यश मानवी निर्णयाला पूरक ठेवताना संवैधानिक नैतिकतेशी बांधील राहण्यात आहे. भारताचा सावध, न्यायाधीश-नेतृत्वाखालील मॉडेल जागतिक उदाहरण आहे.

सूचना:

१. सुप्रीम कोर्टाकडून AI इन ज्युडिशिअरी मार्गदर्शक तत्त्वे तयार करणे — पारदर्शकता, स्पष्टीकरणक्षमता, पूर्वग्रह ऑडिट, गोपनीयता.

२. स्वतंत्र AI देखरेख समिती स्थापन करणे (न्यायिक, तंत्रज्ञान आणि नागरी समाज प्रतिनिधी).

३. भारतीय कायद्याच्या विविध डेटासेटवर प्रशिक्षित स्वदेशी AI मॉडेल्स प्राधान्य देणे.

४. डिजिटल विभाजन कमी करण्यासाठी ई-सेवा केंद्रे, ऑफलाइन मोड आणि कायदेशीर साक्षरता कार्यक्रम.

५. सर्व महत्त्वाच्या कार्यांसाठी ह्यूमन-इन-द-लूप अनिवार्य करणे.

६. न्यायाधीश आणि वकिलांसाठी AI साक्षरता प्रशिक्षण; कायद्याच्या अभ्यासक्रमात समावेश.

७. प्रेडिक्टिव्ह ॲनालिटिक्स केवळ प्रशासकीय वापरासाठी (केस गटबद्ध करणे), निर्णयात्मक कार्यांसाठी नाही.

८. न्यायिक डेटासाठी डिजिटल अधिकार आणि डेटा संरक्षण चौकट निर्माण करणे.

९. IndiaAI मिशन अंतर्गत सार्वजनिक-खासगी भागीदारी, परंतु न्यायिक नियंत्रण राखणे.

१०. AI साधनांच्या प्रभावाचे नियतकालिक सशक्तिकरण अभ्यास.

सावध अंमलबजावणी आणि सतर्क न्यायिक देखरेखीने AI संवैधानिक स्वप्न — सर्वांसाठी सुलभ, परवडणारा आणि वेगवान न्याय — साकार करू शकेल.

BIBLIOGRAPHY

TEXTBOOKS

1. एम.पी. जैन, भारतीय संवैधानिक कायदा (लेक्सिसनेक्सिस, ८वी आवृत्ती, २०१८).

2. व्ही.एन. शुक्ला, भारताचे संविधान (ईस्टर्न बुक कंपनी, १४वी आवृत्ती, २०२३).

3. श्याम दिवान आणि आर्मिन रोजेनक्रॅन्झ, भारतातील पर्यावरण कायदा आणि धोरण (ऑक्सफर्ड युनिव्हर्सिटी प्रेस, ३री आवृत्ती, २०२२).

4. पी. लीलाकृष्णन, भारतातील पर्यावरण कायदा (लेक्सिसनेक्सिस, ५वी आवृत्ती, २०२१).

5. ग्लॅनविले विल्यम्स, कायद्याचे शिक्षण (स्वीट अँड मॅक्सवेल).

JOURNAL ARTICLES

1. जी. प्रकाश, "AI, Access to Justice, and Judicial Accountability in India: Navigating the Future", Law, Innovation and Technology (२०२६).

2. डी. मॅथ्यू, "Technology-enabled Justice in Indian Courts", Journal of National Law University (२०२५).

3. एस .के. श्रीवास्तव, "AI for Improving Justice Delivery", Informatica (२०२३).

4. यू. अनेजा आणि डी. मॅथ्यू, "Smart Automation and AI in the Indian Judicial System", Digital Futures Lab (२०२३).
5. व्ही. मिश्रा, "Artificial Intelligence in the Indian Legal System", Atlantis Press (२०२६).
6. "Artificial Intelligence in the Indian Judiciary: SUPACE, SUVAS and the Limits of Assistive Automation", SPMRF (२०२६).

अतिरिक्त संदर्भ **(Reports & Official Documents):**

- ई-कमिटी, सुप्रीम कोर्ट ऑफ इंडिया, National Policy and Action Plan for Implementation of ICT in the Indian Judiciary (विविध टप्पे).
- कायदे आणि न्याय मंत्रालय, PIB प्रकाशने — SUPACE, SUVAS आणि ई-कोर्ट्स फेज III (२०२५–२०२६).
- सुप्रीम कोर्ट ऑफ इंडिया, AI in Judiciary संबंधित व्हाइट पेपर / अहवाल (२०२५).
- NITI आयोग, National Strategy for Artificial Intelligence (#AIforAll, २०१८).
- OECD, Governing with Artificial Intelligence (२०२५).

****

Smart Contract and Artificial Intelligence in Commercial Law

By Anuradha M. Vishwakarma

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: anuradhavishwakarma512@gmail.com

Abstract

This paper delves into the transformative applications of AI in legal practice, Artificial Intelligence (AI) is rapidly transforming the legal landscape, particularly within Commercial Law, a domain historically reliant on meticulous research, precedent analysis, and document management. Traditionally, lawyers have navigated a labyrinth of statutes, regulations, and case law while juggling multiple cases and drafting complex contracts, a process both time-consuming and prone to human error. In commercial litigation, AI-driven tools streamline labor-intensive tasks such as contract drafting, review, e-discovery, enhancing speed, accuracy, and consistency. Generative AI platforms assist in creating contracts, pleadings, freeing attorneys to focus on high-level strategy, legal reasoning, and client advocacy.

A notable innovation is the integration of smart contracts, self-executing digital agreements operating on block chain technology, which enforce terms automatically upon fulfillment of predefined conditions. These instruments increase transparency, reduce intermediaries, lower costs, and enable secure cross-border transactions, redefining traditional contractual processes. However, challenges persist, including ethical oversight, data privacy, incomplete coverage of local laws, and the risk of over-reliance on AI outputs. To harness AI responsibly, law firms must adopt standardized, regulated platforms, provide continuous training, maintain human oversight, and ensure client transparency. A hybrid model, where AI complements but does not replace legal professionals, emerges as the prudent path forward, enhancing efficiency and precision while preserving judgment, and the contextual understanding indispensable to legal practice. Ultimately, AI represents not a replacement for lawyers, but a transformative tool in the evolution of Commercial Law, enabling the profession to navigate increasing complexity with much flexibility.

Introduction

Artificial Intelligence (AI) is often regarded as a modern marvel, a dazzling innovation that has suddenly entered the mainstream and captivated global attention in recent years. Yet, to believe AI is a novel phenomenon is to overlook the long and fascinating journey that brought us here.

The foundations of AI were laid not yesterday, but over a century ago, with decisive strides beginning in the 1950s. Progress, experimentation, and imagination in this field have been continuous, and understanding its history is essential to grasping its present form and anticipating its future trajectory.

The idea goes back thousands of years, to ease humankind's work and improve daily life by designing machines that could perform tasks on their own. Long before the age of computers, in ancient times, inventors created devices called Automatons: mechanical creations that could move independently of human intervention[124]. These early innovations were primitive but reflected the same desire we see today: to design machines that could make human life easier by performing tasks on their own.

The true birth of AI as we know it can be traced to the 1950s, when pioneers like Alan Turing introduced concepts such as the Turing Test, which was designed to measure a machine's ability to demonstrate intelligence comparable to humans[125]. Later, John McCarthy, an American computer scientist, coined the very term "Artificial Intelligence" and is widely regarded as the father of AI[126]. Alan Turing and John McCarthy are foundational figures in the history of artificial intelligence (AI), and are known for different contributions. However, it was only in 2022 that AI entered the everyday lives of billions in an unprecedented way. On 20th November 2022, Open AI launched Chat GPT, and from that moment, the history of mankind changed irrevocably. By July 2025, Chat GPT alone was handling over 18 billion messages every week, serving nearly 700 million users across the globe.

Artificial Intelligence, in its essence, is a specialty within computer science concerned with creating systems that can replicate human intelligence and problem-solving abilities. These systems process vast amounts of data, learn from past experiences, and continuously improve their performance. AI combines the intelligence of computational systems in such a way that it produces highly specialized and valuable outcomes, often exceeding human capability. Today, AI has penetrated nearly every sector. In manufacturing, finance, aviation, agriculture, and healthcare, AI systems are transforming processes and decision-making. Robots are assisting in complex

[124] Tableau, https://www.tableau.com/data-insights/ai/history,
[125] Tim Mucci, The history of artificial intelligence, IBM, https://www.ibm.com/think/topics/history-of-artificial-intelligence
[126] Britannica Editors, John McCarthy, Britannica, https://www.britannica.com/biography/John-McCarthy

surgeries by providing greater precision, accuracy, and insights. Military applications use AI to plan and execute operations with high levels of precision.

For centuries, law has remained a discipline deeply rooted in tradition, its core principles enduring the test of time. Yet, in recent years, the rise of AI has begun to revolutionize the legal sphere, bridging the gap between human intellect and technological precision. AI has evolved as a advanced catalyst to enhance efficiency, particularly within the field of law. Once hesitant to adopt technology, legal professionals are now progressively embracing this paradigm shift, recognizing its potential to elevate their practice.

Interestingly, law and AI share a remarkable conceptual similarity. Just as AI systems rely on extensive datasets to identify patterns and emulate human reasoning, legal systems depend on precedents: past judicial decisions that inform future rulings. Both rely on the systematic analysis of prior information to predict outcomes and establish order. This symbiosis between precedent and pattern recognition underscores the intrinsic harmony between law and artificial intelligence.

One of the most significant innovations AI offers the legal sector is the automation of contracting. Traditionally, contract drafting and review are time-intensive and meticulous processes, often consuming substantial professional hours. By deploying machine learning algorithms, previous contracts can be analyzed to automatically generate tailor-made agreements aligned with a client's specific needs. Similarly, administrative tasks such as document management, filing, and case tracking are being streamlined through AI-driven platforms, reducing human error and expediting workflow.

This technological revolution holds immense promise for Commercial Law, which regulates the transactional activities acquisition, disposition, and transfer of commodities and services. Given its expansive scope, commercial law demands continuous engagement with an enormous volume of information: from client facts and regulatory frameworks to statutes, precedents, and judicial interpretations. Lawyers often find themselves navigating a labyrinth of legal data, a task that can be overwhelming even for the most seasoned practitioners.

However, this challenge is not unique to the legal fraternity. In today's digital epoch, professionals across diverse domains be it education, medicine, or commerce are confronting information overload. The legal profession, characterized by its dependence on precision and analytical reasoning, stands to gain enormously from AI's data-processing capabilities.

Objective

Thus, the objective of this paper is to explore the transformative integration of emerging AI technologies in the legal profession, examining how lawyers employ them for fact-gathering, legal research, analytical reasoning, document drafting, predicting outcomes and particularly, the implementation of smart contracts. As commercial law continues to expand, AI's multitasking proficiency and analytical depth emerge as indispensable allies in reshaping the contours of legal practice and redefining the essence of efficiency in jurisprudence.

Conventional Legal System

In the conventional legal system, lawyers grapple with an overwhelming workload: researching statutes, new regulations, and precedents, managing scattered documents, drafting pleadings, and simultaneously juggling multiple case briefs, all while preparing to argue matters in court. Traditionally, legal research and case preparation demanded immense time and expertise, with information dispersed across books, databases, and filings. Just as lawyers had to learn how to use electronic court filings or online case update apps, they now have a duty to familiarize themselves with AI-assisted legal tools. AI's integration in commercial litigation extends beyond efficiency and cost reduction. Document review, e-discovery, and privilege log preparation, once labor-intensive, can now be streamlined by AI-powered platforms that extract key data, summarize documents, and identify patterns across vast datasets. By automating repetitive and time-consuming tasks, AI empowers attorneys to concentrate on strategic analysis, while natural language processing compresses exhaustive legal research into minutes. Although AI has limitations, such as incomplete local case law coverage or interference from non-authoritative sources, its capacity to identify key dispute issues and applicable legal rules demonstrates its transformative potential in commercial litigation.

Applications of Artificial Intelligence

1. *Contract Drafting and Generation:* Artificial Intelligence has fundamentally transformed the traditional process of contract creation, infusing precision, speed, and adaptability into what was once a laborious manual exercise. Modern AI-powered drafting tools analyze extensive datasets comprising prior agreements, statutory templates, and legal precedents to generate contracts that are both compliant and customized. NLP and ML algorithms, capable of constructing contract clauses, recommending standardized language from vetted agreements, and ensuring regulatory conformity across jurisdictions. This technology operates by either drafting contracts from specific inputs, such as party details and obligations, or by generating

standard-form agreements using predefined templates, thereby minimizing human intervention. Leading platforms include Kira Systems, Luminance, and Juro. By adopting these mechanisms, organizations experience a substantial reduction in drafting time, coupled with a marked decrease in human error and inconsistency. Consequently, legal professionals can redirect their expertise toward higher-order analytical and advisory functions, leaving routine drafting to AI.

2. *Contract Review and Analysis*: Traditionally, contract review has demanded countless hours of meticulous scrutiny, as lawyers verify each clause to ensure compliance with statutory mandates and corporate policies. Today, AI-driven review systems enable rapid, high-accuracy inspection and analysis of contracts within mere seconds, identifying ambiguous language, potential risks, and inconsistencies. These systems leverage pattern recognition and predictive modeling to evaluate whether agreements meet regulatory standards and organizational requirements. This not only accelerates the review process but also enhances the quality and defensibility of contractual documents. A number of leading Indian law firms have emerged at the forefront of this technological transformation. Cyril Amarchand Mangaldas, for instance, has seamlessly integrated AI across its legal and business operations, employing it for due diligence, contract review, and legal research. The firm's partnership with Legora marks the inception of a firm-wide generative AI platform, an initiative aimed at amplifying the speed, accuracy, and efficiency of legal service delivery[127]. Similarly, Khaitan & Co. has pioneered an in-house AI ecosystem branded as KAI, designed to uphold data security, client confidentiality, and compliance. Among its suite of AI-driven tools are ask.KAI, a virtual generative assistant powered by Microsoft Azure OpenAI that provides conversational yet secure legal guidance, and KAI.Query, a retrieval-augmented generative AI system engineered to deliver contextually accurate and insight-rich responses[128]. Such innovations signify more than mere technological adoption, they represent a strategic evolution of the legal profession, where

[127] Team Legora, Cyril Amarchand Mangaldas selects Legora as its Generative AI partner, legora, , https://legora.com/newsroom/cyril-amarchand-mangaldas-selects-legora-as-its-generative-ai

[128] Bhumika Indulia, Khaitan & Co unveils KAI, a revolutionary leap in legal innovation, SCC Online, https://www.scconline.com/blog/post/2024/04/04/khaitan-co-unveils-kai-a-revolutionary-leap-in-legal-innovation/

data privacy, efficiency, and accuracy converge to redefine how law is practiced in the digital era. AI, thus, is not replacing the lawyer; it is recalibrating the profession.

3. **Smart Contract**

With Smart Contract, Agreements go Digital

A smart contract is a self-executing computer protocol that autonomously enforces the terms of an agreement once predefined conditions are satisfied[129]. Operating atop blockchain architecture, it intricately embeds the rights, duties, and contingencies of the parties directly into immutable lines of code. Upon the occurrence of a programmed event, the contract executes itself dispensing with intermediaries and ensuring precision through automation.

For instance, a smart contract may automatically disburse funds from *Person A* to *Person B* on B's birthday, once verified by the blockchain. Functioning on an *"If This, Then That"* logic, these digital instruments are transparent, tamper-proof, and self-enforcing. Unlike traditional contracts, they bypass lawyers, brokers, and notaries rendering transactions swift, economical, and secure.

Smart contracts obviate intermediaries by autonomously executing terms once stipulated conditions are satisfied. Picture a smart contract as a vending apparatus: upon depositing money, one receives a packet of chips. The machine operates according to embedded rules, akin to if-then logic in code. When a party fulfills its obligation (inserting money), the corresponding outcome (dispensing chips) is instantaneously triggered. This automation guarantees precise execution of agreements without reliance on third-party intervention.

Smart contracts find application across domains: finance, real estate, insurance, and global supply chains. Written in languages such as Solidity or Python, they operate on decentralized ecosystems like Ethereum or Hedera, forming a trustless digital order where compliance is guaranteed not by human promise, but by code itself.

Smart contracts take agreements beyond ink and paper; Agreements no longer rely on signatures alone: coded, protected, safeguarded by cryptography, and carried out by the blockchain itself.

[129] IBM, https://www.ibm.com/think/topics/smart-contracts,

Legal Position in India

Under the Indian Contract Act, 1872, every valid contract requires offer, acceptance, consideration, and intention to create legal relations. While smart contracts technically fulfill these requisites, their automated and decentralized nature introduces complexities concerning jurisdiction, consent, and enforceability.

Though Indian courts are yet to adjudicate directly upon smart contracts, the Supreme Court in *Shreya Singhal v. Union of India (2015)* underscored that digital mechanisms must operate within legal confines, hinting that existing contract principles could extend to technologically driven agreements[130].

Global Recognition

- *United States:* States like *Wyoming* and *Texas* have granted statutory recognition to smart contracts, and model laws are emerging to harmonize blockchain governance.
- *European Union:* Through the *European Blockchain Partnership*, the EU promotes interoperable, consumer-centric frameworks ensuring cross-border transparency.
- *Asia: Singapore* and *Japan* lead in adoption through regulatory clarity, while *China* remains cautious due to cryptocurrency restrictions.

Benefits

Accelerated Performance and Efficiency:

Smart contracts execute instantly once conditions are fulfilled, eliminating delays and manual processing. This automation enhances real-time settlements especially significant in commercial and financial sectors, where timing determines profitability.

Enhanced Transparency and Immutable Record keeping:

Each transaction is permanently recorded on the blockchain ledger, accessible to all authorized parties. This ensures absolute transparency and prevents manipulation or alteration, thereby enhancing accountability and evidentiary reliability in commercial dealings.

Elimination of Intermediaries and Cost Reduction:

[130] Ashish Deep Verma, Legal Challenges in Web 3.0: Navigating Smart Contracts, DAOs and Blockchain Disputes, SCC Online, (Oct 7, 2025, 4:40 pm), https://www.scconline.com/blog/post/2025/03/15/legal-challenges-in-web-3-0-navigating-smart-contracts-daos-and-blockchain-disputes/

By automating processes traditionally handled by lawyers, brokers, or notary, smart contracts minimize human dependency and reduce administrative and enforcement cost.

Trustless and Secure Ecosystem:

Relying on cryptographic authentication rather than human trust, smart contracts provide unparalleled security against fraud, unauthorized interference, and data breaches. Each action is verifiable and irreversible, reinforcing confidence among transacting parties.

Global Accessibility and Inclusivity:

Operating on decentralized networks, smart contracts transcend geographical limitations, democratizing access to secure contracting mechanisms, particularly beneficial for start-ups and cross-border trade platforms seeking low-cost digital assurance.

Challenges

Lack of Standardization and Legal Uniformity:

The absence of universally recognized standards for coding, interpretation, and validation of smart contracts creates fragmentation and legal uncertainty.

Limited Legal-Tech Literacy:

A considerable gap persists between legal practitioners and technologists. Many lawyers lack the technical expertise to interpret or audit code, while developers may not fully understand legal obligations, resulting in potential misalignment between intent and execution.

Jurisdictional Ambiguities:

Since blockchains operate across decentralized nodes globally, determining which court has authority**,** which law applies, and where a breach occurs becomes a labyrinthine challenge in cross-border disputes.

Regulatory and Infrastructural Limitations in India:

India's current legal and digital infrastructure is still evolving to accommodate blockchain jurisprudence. The lack of clear governmental policy or judicial precedent results in hesitation among enterprises to adopt smart contracts at scale.

Coined by *Nick Szabo*, the concept of smart contracts[131] envisages a future where trust is algorithmic**,** execution is autonomous, and enforcement is cryptographic. While India continues to

[131] Laura E. Jehl and Brian Bartish, Blockchain 'Smart Contracts' – A New Transactional Framework, Bloomberg Law, (Oct 13, 2025, 6:48 pm) https://www.bloomberglaw.com/external/document/X4SGO17O000000/tech-telecom-professional-perspective-blockchain-smart-contracts

navigate the grey frontier of legal recognition, the global tide of digital contracting remains relentless and transformative

Risk Assessment and Compliance Monitoring through AI

AI is transforming risk assessment and compliance monitoring in the legal domain. Leveraging Natural Language Processing (NLP) and Machine Learning (ML), AI analyzes contracts and legal documents to identify financial, legal, or reputational risks, flagging clauses that may pose liabilities. By continuously monitoring agreements and generating automated alerts, AI ensures organizations remain compliant with regulations and internal policies. Its predictive capabilities allow lawyers to anticipate potential risks, reducing time, cost, and uncertainty in litigation or appeals. In essence, AI-enhanced legal risk management empowers firms to proactively identify, assess, and mitigate threats arising from contracts, regulatory obligations, intellectual property, and litigation.

4. **AI in Legal Research and Information Gathering**

The deluge of daily legal information from court rulings, statutes, and regulations **to** law reviews and news update can overwhelm even seasoned practitioners. AI-powered platforms streamline this process, offering predictive search, advanced analytics, and intelligent document management**.** But still, there's a lack of centralized platform, as many legal professionals rely on open-source solutions for the same tasks.

By swiftly scanning vast datasets, AI identifies pertinent cases, statutes, and insights, enabling lawyers to focus on analysis. Even dispersed client data or online resources can be efficiently organized, making the preparation of briefs, and arguments both faster and more precise.

In India, a notable initiative is the Supreme Court Portal for Assistance in Court's Efficiency (SUPACE), launched in April 2021 by former CJI S.A. Bobde. SUPACE is an AI-powered research tool that assists judges by quickly gathering relevant facts, precedents, and legal provisions[132]. By reducing time spent on routine research, it enhances efficiency, streamlines decision-making, and helps address case delays and pendency**.**

Advantages

The impact of Artificial Intelligence in the legal sector will be nothing short of transformative. AI is revolutionizing the work of lawyers, senior counsels, and general counsels

[132] Press Release Page, https://www.pib.gov.in/PressReleasePage.aspx?PRID=2113224, (Oct 7, 2025, 5:30 pm)

by streamlining case law research, analyzing facts, and optimizing office workflows. Presently, its adoption is niche, largely concentrated among top-tier firms such as Cyril Amarchand Mangaldas (CAM) and Trilegal, which are leveraging AI for contract review, evidence management, and legal research. Khaitan & Co. has even pioneered an in-house AI tool, KAI, to ensure secure handling of sensitive data. This trajectory signals a promising future for wider integration, heralding enhanced efficiency and precision across legal practices.

Artificial Intelligence is revolutionizing legal operations by automating document creation, contract review, and compliance verification, thereby optimizing the entire legal workflow. By streamlining contract analysis, drafting, and review, AI dramatically enhances speed and efficiency, minimizing manual intervention and expediting time-sensitive processes. This automation drives cost efficiency, reducing administrative overhead and dependence on high-cost legal services, while simultaneously improving accuracy and precision, ensuring clauses are legally sound and compliant. AI further strengthens risk management by detecting potential ambiguities, missing provisions, and latent contractual hazards, thereby mitigating disputes before they arise, while blockchain-powered smart contracts execute automatically upon the fulfillment of specified conditions, eliminating intermediaries and delays.

Disadvantages

Yet, the proliferation of AI is not without formidable challenges. Accuracy remains an Achilles' heel, while AI can deliver lightning-fast results, outdated or fictitious data may compromise justice. Over-reliance on open-source platforms without verification poses grave risks. A cautionary tale emerged in June 2023, when two New York lawyers submitted a legal brief riddled with fictitious case citations generated by ChatGPT, leading U.S. District Judge P. Kevin Castel to impose a fine of $5,000[133]. This episode underscored the peril of unchecked reliance on generative tools. Similarly, the legal fraternity is grappling with the phenomenon of AI "hallucinations" where the system, with convincing eloquence, fabricates non-existent precedents.

Data privacy and storage compound these risks. Whether information resides in-house or on cloud servers, questions of confidentiality and human dignity loom large. Excessive

[133] Sara Merken, New York lawyers sanctioned for using fake ChatGPT cases in legal brief, Reuters, (Oct 17, 2025, 6:42 pm), https://www.reuters.com/legal/new-york-lawyers-sanctioned-using-fake-chatgpt-cases-legal-brief-2023-06-22/

dependence on AI threatens to erode ethical and human oversight, potentially reducing the rule of law into mere rule by algorithms, where automated systems wield undue influence over decisions.

Despite its transformative potential, AI in the legal domain faces significant constraints, particularly within the complex and diverse Indian context. With a population of 1.49 billion and more than 122 languages, the judiciary's role extends far beyond delivering verdicts it involves understanding nuanced cultural, linguistic, and societal dynamics.

Training AI to comprehend and operate in India's rich "floral" legal and linguistic landscape is no small feat, as technology is inherently limited to the data it is fed and cannot evolve organically with societal values. For instance, the progressive recognition of LGBTQ+ rights required judges to apply human conscience, equity, and contextual reasoning beyond rigid precedents, an adaptability AI cannot emulate, instead mechanically replicating historical decisions. AI systems, drawing from past contracts, may inadvertently produce outdated or inefficient contractual frameworks, necessitating continuous monitoring and updates to remain compliant with current legal standards.

Ethical and regulatory considerations: such as liability, fairness, accountability, and security of sensitive contractual data remain unresolved, highlighting the indispensable role of human legal experts in supervising complex negotiations. While AI can automate routine tasks and detect patterns with remarkable speed, it cannot replicate the nuanced judgment, ethical discernment, and contextual understanding that skilled professionals bring to the legal process. As pilot projects proliferate and AI adoption grows, it offers immense assistance, yet its outputs demand careful scrutiny, oversight, and caution, underscoring that the technology is a powerful aid, but not a substitute, for human legal expertise.

Suggestions

While Artificial Intelligence offers undeniable advantages: speed in legal research, precision in contract review, and efficiency in office workflows it equally presents challenges such as hallucinations, data privacy concerns, and over-reliance that may erode ethical oversight. Therefore, AI should be embraced as an assistive ally rather than an autonomous authority.

Moreover, if AI is to be used in the legal system, there should be a universal, regulated software, rather than relying on platforms like OpenAI's ChatGPT, where the source, storage, and use of data remain opaque. Such a standardized system would ensure data security, accountability, and consistency in legal processes. The path forward lies in a hybrid model, where AI accelerates

processes, but lawyers and judges remain the true custodians of judgment, ensuring technology enhances justice without ever supplanting it. Thus, while AI serves as a powerful tool to augment legal efficiency and insight, it cannot replace the judgment, ethical discernment, and contextual understanding that skilled legal professionals provide, making careful oversight and critical evaluation indispensable.

Law firms that integrate AI responsibly must adopt a framework of best practices to uphold ethical compliance while fully leveraging the transformative potential of the technology. Equally vital is the provision of continuous, targeted training, keeping legal practitioners abreast of cutting-edge AI developments and evolving ethical considerations, thereby preserving competence in AI-augmented practice. Crucially, human oversight remains paramount. Finally, transparency with clients is essential and must disclose relevant AI utilization, address potential concerns, and facilitate fully informed decision-making, reinforcing trust and accountability in this new era of technologically enhanced legal practice.

Conclusion

Artificial Intelligence is set to transform legal practice by automating routine tasks, accelerating research, managing risks, and enabling self-executing smart contracts. It enhances efficiency, reduces costs, and supports data-driven decisions, allowing lawyers to focus on strategy, analysis, and complex judgment. Yet, AI remains limited: it relies on historical data and cannot grasp evolving societal values, ethical subtleties, or India's linguistic and cultural complexities. Ethical, regulatory, and data security challenges further highlight the need for human oversight. The optimal approach is a hybrid model, where AI acts as a powerful ally rather than an autonomous decision-maker.

Today we stand in the age of Generative AI
Like having Einstein in your basement nearby
A genius who never sleeps, never tires,
Alive to answer every Legal "WHY?"

Now no more dusty files and sleepless nights;
It drafts the deals, it checks each flaw
A watchful eye for Commercial Law.
From mergers vast to copyright claims,

It guards the rules of business games.

It sweeps for fraud in numbers deep,
Predicts the risk that markets keep;
Where lawyers once wrote clause by clause,
Now algorithm enforce the law.

Law evolves, yet still must see:
No code, replaces Humanity.
So hand in hand, both Law and Tech
Will shape the future Architects.

~ Anuradha M. Vishwakarma

****

Artificial Intelligence and its Impact on Legal Progression

By Sejal Sunil Bavisha

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction

Artificial Intelligence (AI) refers to machines that can perform tasks requiring human intelligence such as learning, reasoning, and decision-making. In recent years, AI has significantly influenced various sectors, including the legal profession. The legal field, which traditionally depends on human knowledge and analysis, is now adopting AI tools for legal research, document review, and case prediction. This paper examines how AI is impacting the legal profession, its benefits, and the challenges it creates.

Use of AI in Legal Profession

Legal Research Tools

AI-based legal research tools help lawyers find case laws, statutes, and judgments quickly. They save time by analyzing large legal database within seconds. This improves accuracy and makes legal research more efficient.

Contract Review

Ai is used to review contracts and identify important clauses and risks. It helps in detecting errors, missing terms or legal issues in agreements. This reduces manual work and ensures better contract management.

Chatbots for Legal Advice

AI chatbots provide basic legal information and guidance to users. They help people understand their legal rights and options easily. This increases access to legal services at a low cost.

Advantages of AI in Law

Saves Time

AI helps Lawyers complete tasks like research and document review much faster. It can process large amounts of data in seconds. This allows lawyers to focus on more important legal work.

Reduces Cost

Ai reduces the need for manual work and large legal teams. It lowers expenses for clients by making legal services more affordable. This makes legal assistance accessible to more people.

Improves Accuracy

Ai minimizes human errors in legal research and document drafting. It provides more precise results based on data analysis. This leads to better decision-making in legal matters.

Challenges of AI in Legal Profession

Job Loss Fear

AI-based legal research tools help lawyers find case laws, statutes, and judgments quickly. They save time by analyzing large legal database within seconds. This improves accuracy and makes legal research more efficient**.**

Data Privacy Issues

AI systems use large amounts of personal and sensitive data. There is risk of data misuse or unauthorized access. This raises serious concerns about confidentiality in legal work.

Bias in AI

AI systems can reflect bias present in their training data. This may lead to unfair or discriminatory outcomes. Such bias can affect justice and decision-making in legal cases.

Role of Judiciary

The judiciary plays an important role in regulating the use of AI in the legal system. Courts must ensure that AI is used ethically and does not violate fundamental rights. In India, courts are gradually adopting technology but still rely on human judgment for final decisions.

Conclusion and Suggestions

Artificial Intelligence is transforming the legal profession by improving efficiency and accessibility. However, it also brings challenges that need proper regulation. It is suggested that the government should create clear laws for AI usage, ensure data protection, and promote ethical practices. Lawyers should adapt to technology to remain relevant in the future.

BIBLIOGRAPHY

TEXTBOOKS

- Introduction to Law – Avtar Singh
- Legal Methods – Ian McLeod

****

Intellectual Property Rights in AI-Generated Works: A Contemporary Legal Analysis

By Chetan Ravikant Gawade

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: chetangawde7@gmail.com

Abstract

The rapid advancement of Artificial Intelligence (AI), particularly generative AI, has transformed the creation of literary, artistic, and technological works. This evolution has raised complex questions regarding ownership, authorship, and protection under Intellectual Property Rights (IPR) frameworks. Traditional IP laws, rooted in human creativity, struggle to accommodate AI-generated works. This research paper examines the legal challenges surrounding AI-generated content, analyses international and Indian legal frameworks, explores judicial responses, and suggests reforms to address emerging gaps.

Introduction

Artificial Intelligence has emerged as a transformative force in the 21st century, capable of generating music, paintings, literature, and even inventions with minimal human intervention. Unlike traditional tools, AI systems can independently produce creative outputs, raising fundamental questions in intellectual property law. Intellectual Property Rights (IPR) are designed to protect human creativity by granting exclusive rights to authors and inventors. However, AI-generated works challenge the very foundation of these laws because they blur the distinction between human and machine creativity. The central issue lies in determining whether AI-generated works can be protected under existing IP regimes and, if so, who should be recognized as the rightful owner—the programmer, user, or the AI itself.

Concept of AI-Generated Works

AI-generated works can broadly be classified into two categories:

AI-Assisted Works

These works are created with significant human involvement using AI as a tool. For example, using AI software to enhance images or generate drafts. In such cases, the human user is typically considered the author.

Fully Autonomous AI-Generated Works

These are works created independently by AI systems without substantial human input. Such works present the greatest legal challenge because traditional copyright law requires human authorship.

Intellectual Property Framework and AI

Copyright Law

Copyright law protects original works of authorship. However, most jurisdictions require:

- Originality
- Human creativity
- Fixation in a tangible medium

AI-generated works often fail the "human authorship" requirement.

Patent Law

AI systems are increasingly capable of inventing new technologies. However:

- Patent laws require a human inventor
- AI lacks legal personality

The famous DABUS case highlighted this issue globally.

Trademark Law

AI can generate brand names, logos, and marketing content. While trademarks can be registered, ownership issues arise regarding:

- Who owns AI-generated branding
- Liability for infringement

Legal Position in India

India currently lacks explicit legislation addressing AI-generated works. The Copyright Act, 1957 governs copyright law.

Authorship under Indian Law

Section 2(d) provides that for computer-generated works; the author is the person who causes the work to be created. However, this assumes human involvement. Fully autonomous AI-generated works are not clearly covered, creating a legal vacuum.

Judicial Interpretations

Indian courts emphasize:

- Skill and judgment
- Human creativity

Cases such as Eastern Book Company v. D.B. Modak highlight the requirement of human intellectual effort.

Legal Gaps

- No recognition of AI as an author
- Uncertainty regarding ownership
- Lack of clarity on AI training data usage

Comparative International Perspective

United States

The United States strictly adheres to the doctrine of human authorship. Courts and the U.S. Copyright Office have consistently denied copyright protection to AI-generated works.

A landmark development involved the rejection of copyright for an AI-generated artwork created by the DABUS system, reaffirming that only human-created works are eligible.

United Kingdom

The UK adopts a unique approach:

- The author of computer-generated work is the person making necessary arrangements
- This provides limited recognition but still excludes AI as a legal author.

European Union

The EU emphasizes human intellectual creation. AI-generated works without human input generally do not qualify for protection.

China

China has shown a more flexible approach, recognizing certain AI-assisted works if human involvement is evident.

Key Legal Issues in AI-Generated Works

Authorship and Ownership

The fundamental question:

- Who owns AI-generated content?

Possible claimants:

- Developer of AI
- User of AI
- Organization deploying AI

Originality

AI outputs are often based on existing datasets, raising doubts about originality.

Infringement and Liability

AI systems may reproduce copyrighted material unintentionally, leading to disputes.

Recent lawsuits against AI companies for copyright infringement highlight the growing tension between innovation and rights protection.

Training Data Issues

AI models are trained on vast datasets, often including copyrighted material:

- Is this fair use?
- Does it constitute infringement?
- Indian law remains unclear on this issue.

Role of Judiciary in AI and IPR

The judiciary plays a crucial role in interpreting laws and filling legislative gaps.

Global Judicial Trends

Courts worldwide have consistently:

- Rejected AI as an author
- Emphasized human creativity

The DABUS case is a landmark example establishing that AI cannot be recognized as an inventor or author.

Indian Judiciary

Indian courts have not yet directly ruled on fully AI-generated works. However, existing jurisprudence indicates:

- Preference for human authorship
- Strict interpretation of originality

Emerging Judicial Concerns

Recent judicial developments indicate courts are addressing AI-related rights such as:

- Personality rights
- Deepfake misuse

For instance, Indian courts have begun protecting individuals from unauthorized AI-generated content using their identity, reflecting an evolving judicial approach.

Judicial Limitations

- Lack of legislative guidance
- Rapid technological advancements
- Jurisdictional inconsistencies

Challenges in Regulating AI-Generated Works

Technological Complexity

AI systems operate as "black boxes," making it difficult to:

- Trace authorship
- Assign liability

Global Nature of AI

AI operates across borders, complicating enforcement of IP laws.

Economic Implications

- Risk to human creators
- Market saturation of AI-generated content

Ethical Concerns

- Exploitation of human-created data
- Lack of attribution

Need for Legal Reforms

There is an urgent need to adapt IP Laws to technological realities.

Recognition of AI-Assisted Works

Clear guidelines should distinguish:

- AI-assisted works (protectable)
- Fully autonomous works (possibly public domain)

New Category of Rights

Creation of a sui generis system for AI-generated works.

Regulation of Training Data

- Licensing mechanisms
- Fair compensation for creators

International Harmonization

Global cooperation through organizations like WIPO is essential.

Suggestions

1. Legislative Amendments

Amend the Copyright Act, 1957 to include provisions for AI-generated works.

2. Define Authorship Clearly

Establish clear criteria for determining authorship in AI-assisted works.

3. Introduce Liability Framework

Assign responsibility to developers or users for infringement.

4. Promote Transparency in AI Systems

Mandate disclosure of training data sources.

5. Encourage Licensing Models

Ensure fair remuneration for original creators.

6. Judicial Training and Awareness

Equip judges with technological understanding.

7. Public Domain Approach

Consider placing fully autonomous AI-generated works in the public domain.

Conclusion

The emergence of AI-generated works represents a paradigm shift in intellectual property law. Traditional legal frameworks, designed for human creators, are ill-equipped to address the complexities introduced by AI. While jurisdictions worldwide largely deny protection to fully AI-generated works, the lack of uniformity creates uncertainty.

The judiciary has played a proactive role in addressing emerging issues, but legislative intervention is essential for clarity and consistency. A balanced approach is required—one that promotes innovation while safeguarding the rights of human creators.

Ultimately, the future of IPR in the age of AI depends on the ability of legal systems to evolve alongside technology, ensuring fairness, accountability, and sustainability.

BIBLIOGRAPHY

Primary Sources

1. The Copyright Act, 1957 (India)
2. UK Copyright, Designs and Patents Act, 1988
3. U.S. Copyright Act

Cases

1. Thaler v. Perlmutter (U.S.)
2. Eastern Book Company v. D.B. Modak (India)
3. DABUS Case (UK & US decisions)

Articles & Reports

1. "Generative AI and Copyright Issues" – Drishti IAS (Drishti IAS)
2. "Who Owns AI-Generated Creativity?" – Legal Service India (Legal Service India)
3. "Legal Accountability for AI-driven IP Infringements" – SCC Online (SCC Online)
4. "AI Generated Works in IP Laws" – CNLU Journal (Chanakya National Law University)
5. "Impact of AI on Intellectual Property Rights" – E-Justice India (E-Justice India)

News Reports

1. Reuters – U.S. Supreme Court on AI copyright (Reuters)
2. The Guardian – AI copyright dispute (Penguin vs OpenAI) (The Guardian)
3. Times of India – AI and personality rights in India (The Times of India)

****

Artificial Intelligence in Criminal Investigation and Evidence

By Vikas Vilas Mestry

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: vikasmestry500@gmail.com



Introduction

Artificial Intelligence (AI) has emerged as a transformative force across multiple sectors, and the field of criminal investigation is no exception. Law enforcement agencies, forensic experts, and legal professionals are increasingly leveraging AI-driven technologies to enhance efficiency, accuracy, and speed in solving crimes and managing evidence. From predictive policing to digital forensics and courtroom analytics, AI is reshaping how justice systems operate. However, its integration also raises important ethical, legal, and practical concerns that must be carefully addressed.

AI in Criminal Justice

Artificial Intelligence refers to computer systems capable of performing tasks that typically require human intelligence, such as pattern recognition, decision-making, language processing, and problem-solving. In criminal investigations, AI tools analyze large datasets, identify patterns, and generate insights that would be difficult or time-consuming for human investigators to uncover.

The rise of big data, surveillance technologies, and digital communication has created vast amounts of information relevant to criminal investigations. AI serves as a powerful tool to process this data efficiently, helping authorities detect crimes, identify suspects, and present evidence in a structured manner.

Applications of AI in Criminal Investigation

a. *Predictive Policing:* Predictive policing uses AI algorithms to analyze historical crime data and forecast where crimes are likely to occur. By identifying patterns related to time,

location, and types of offenses, law enforcement agencies can allocate resources more effectively.

For example, AI systems can detect crime hotspots and suggest increased patrolling in certain areas. While this improves efficiency, it also raises concerns about reinforcing existing biases if historical data reflects discriminatory policing practices.

b. *Facial Recognition and Surveillance:* Facial recognition technology is one of the most widely used AI applications in criminal investigations. It compares images captured from CCTV cameras or social media with databases of known individuals to identify suspects. This technology has proven useful in locating missing persons, tracking criminals, and preventing terrorist activities. However, issues such as misidentification, especially among certain demographic groups, and invasion of privacy have sparked widespread debate.

c. *Digital Forensics:* With the increasing use of digital devices, digital forensics has become a critical component of criminal investigations. AI assists in analyzing data from smartphones, computers, and online platforms.

AI tools can:

- Recover deleted files
- Analyze communication patterns
- Detect suspicious behaviour in online activities
- Identify links between suspects

Machine learning algorithms can sift through massive datasets, such as emails or chat logs, to uncover hidden connections and evidence.

d. Natural Language Processing (NLP): Natural Language Processing enables AI systems to understand and analyze human language. In criminal investigations, NLP is used to examine documents, witness statements, and online content.

For instance, AI can:

- Detect threatening language in messages
- Identify fraudulent documents
- Analyze interrogation transcripts for inconsistencies
- NLP also assists in translating languages, making it easier to handle cross-border crimes.

e. *Crime Pattern Analysis*: AI systems can identify patterns across different crimes, helping investigators link cases that might otherwise appear unrelated. This is particularly useful

in serial offenses such as burglaries or homicides. By analyzing similarities in modus operandi, location, and timing, AI can suggest possible connections and even predict the next likely target.

f. *Autonomous Systems and Robotics*: Drones and robotic systems powered by AI are increasingly used in surveillance, search operations, and hazardous situations. They can:

- Monitor large areas
- Capture real-time data
- Assist in bomb disposal or rescue missions

Such systems enhance safety by reducing the need for human officers in dangerous environments.

AI in Evidence Collection and Analysis

AI plays a significant role not only in identifying suspects but also in collecting, preserving, and analyzing evidence.

a. **Evidence Identification:** AI tools can automatically scan crime scenes using image recognition technology to identify potential evidence such as weapons, footprints, or bloodstains.

b. **Forensic Analysis:** AI enhances forensic science by improving the accuracy and speed of analysis. Examples include:
   - DNA analysis: AI can process genetic data faster and identify matches more efficiently.
   - Ballistics: AI can compare bullet markings to determine whether they were fired from the same weapon.
   - Fingerprint recognition: Automated systems match fingerprints with high precision.

c. **Chain of Custody Management:** Maintaining the integrity of evidence is crucial in legal proceedings. AI-powered systems can track evidence from collection to courtroom, ensuring proper documentation and minimizing human error.

d. **Video and Image Analysis:** AI can enhance low-quality images or videos, identify objects, and track movements. This is particularly useful in analyzing CCTV footage to reconstruct events.

AI is also making its way into the Courtroom, influencing how evidence is presented and decisions are made.

AI is also making its way into the courtroom, influencing how evidence is presented and decisions are made.

a. **Evidence Presentation:** AI tools can organize and present evidence in a clear and structured manner, making it easier for judges and juries to understand complex cases.
b. **Legal Research:** AI-powered legal research platforms can quickly analyze case law, statutes, and precedents, helping lawyers build stronger arguments.
c. **Risk Assessment Tools:** Some judicial systems use AI to assess the likelihood of a defendant reoffending. These tools assist in decisions related to bail, sentencing, and parole.

However, such systems are controversial due to concerns about fairness and transparency.

Advantages of AI in Criminal Investigation

a. *Efficiency and Speed:* AI significantly reduces the time required to analyze large volumes of data, enabling faster investigations and quicker resolution of cases.
b. *Improved Accuracy:* By minimizing human error, AI enhances the accuracy of evidence analysis and suspect identification.
c. *Resource Optimization:* AI helps law enforcement agencies allocate resources more effectively, focusing efforts where they are most needed.
d. *Enhanced Crime Prevention:* Predictive analytics allows authorities to take proactive measures to prevent crimes before they occur.

Challenges and Limitations

Despite its advantages, the use of AI in criminal investigation presents several challenges.

a. *Bias and Discrimination:* AI systems are only as unbiased as the data they are trained on. If historical data contains biases, AI may perpetuate or even amplify them.
b. *Privacy Concerns:* The use of surveillance technologies and data analysis raises significant privacy issues. There is a risk of excessive monitoring and misuse of personal data.
c. *Lack of Transparency:* Many AI systems operate as "black boxes," making it difficult to understand how decisions are made. This lack of transparency can undermine trust in the justice system.

d. *Legal Admissibility:* The admissibility of AI-generated evidence in court is still a developing area. Courts must determine whether such evidence meets standards of reliability and fairness.

e. *Dependence on Technology:* Over-reliance on AI may reduce human judgment and critical thinking in investigations.

Challenges and Limitations

Ethical Considerations

The integration of AI into criminal justice raises important ethical questions:

- Should AI be allowed to influence judicial decisions?
- How can we ensure fairness and accountability?
- Who is responsible for errors made by AI systems?

To address these concerns, it is essential to establish clear ethical guidelines and regulatory frameworks.

Legal Framework and Regulations

Governments and legal institutions are beginning to develop regulations for the use of AI in criminal investigations. These include:

- Data protection laws to safeguard privacy
- Guidelines for the use of surveillance technologies
- Standards for the admissibility of digital evidence

International cooperation is also necessary, as cybercrime often transcends national boundaries.

Future Prospects

The future of AI in criminal investigation is promising but requires careful management. Emerging technologies such as:

- Deep learning
- Blockchain for evidence management
- Advanced biometrics
- AI-powered interrogation analysis

are expected to further enhance the capabilities of law enforcement.

At the same time, efforts must be made to ensure that AI systems are transparent, accountable, and free from bias.

Conclusion

Artificial Intelligence is revolutionizing criminal investigation and evidence management by providing powerful tools for data analysis, pattern recognition, and decision-making. It enhances efficiency, accuracy, and crime prevention capabilities, making it an invaluable asset for modern law enforcement.

However, the use of AI also presents significant challenges, including ethical concerns, privacy issues, and potential biases. To fully realize the benefits of AI while minimizing its risks, it is essential to develop robust legal frameworks, ensure transparency, and maintain human oversight.

Ultimately, AI should be viewed as a tool to assist—not replace—human judgment in the pursuit of justice. By balancing innovation with responsibility, societies can harness the power of AI to create a more effective and fair criminal justice system.

BIBLIOGRAPHY

1. Books: Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.
2. Journal Articles: Ferguson, A. G. (2017). "The Rise of Big Data Policing: Surveillance, Race, and the Future of Law Enforcement." *NYU Law Review*, 92, 367–421.
3. Reports & Publications: National Institute of Justice. (2020). *Artificial Intelligence in Criminal Justice*.
4. Online Sources / Websites: MIT Technology Review. (2022). Articles on AI and law enforcement. Retrieved from https://www.technologyreview.com
5. Legal Cases & References (Optional): *State v. Loomis* (2016) – Use of AI-based risk assessment in sentencing.
6. Additional Sources: World Economic Forum. (2022). *AI and the Future of Justice Systems*.

****

Artificial Intelligence and the Right to Privacy

By Pravin Ratansingh Thakur

S.Y. LL.B. Sem. IV
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: masterpravin19@gmail.com

Introduction

Artificial intelligence (AI) has become an essential part of our daily lives, changing the way we work, communicate, and even entertain ourselves. From Siri and Alexa to personalized recommendations on Netflix, AI can be said to be everywhere. However, as AI becomes more ubiquitous, it's crucial to consider the impact it has on our privacy. AI algorithms are trained on vast amounts of personal data, which can be used to make predictions and decisions about us. This puts our privacy at risk in ways that were previously unimaginable.

AI and data privacy are complex and interrelated issues with both potential benefits and drawbacks. On one hand, AI has the potential to greatly enhance various industries, improve decision-making, and streamline processes. On the other hand, AI systems process and analyses large amounts of personal data, which can lead to privacy concerns if the data is misused or not properly protected.

Data privacy refers to the protection of personal information and the rights of individuals to control how their personal information is collected, used, and shared. In the AI-driven world, data privacy is of utmost importance as AI systems process and Artificial intelligence (AI) has become an essential part of our daily lives, changing the way we work, communicate, and even entertain ourselves. From Siri and Alexa to personalized recommendations on Netflix, AI can be said to be everywhere. However, as AI becomes more ubiquitous, it's crucial to consider the impact it has on our privacy. AI algorithms are trained on vast amounts of personal data, which can be used to make predictions and decisions about us. This puts our privacy at risk in ways that were previously unimaginable.

AI and data privacy are complex and interrelated issues with both potential benefits and drawbacks. On one hand, AI has the potential to greatly enhance various industries, improve decision-making, and streamline processes. On the other hand, AI systems process and analyse large amounts of personal data, which can lead to privacy concerns if the data is misused or not properly protected.

Data privacy refers to the protection of personal information and the rights of individuals to control how their personal information is collected, used, and shared. In the AI-driven world,

data privacy is of utmost importance as AI systems process and analyses vast amounts of personal data, making it possible to uncover previously unknown patterns and insights. However, this also means that personal information is at increased risk of being misused or mishandled. Data privacy laws like the European Union's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) aims to give individuals control over their personal data and to ensure that personal information is properly protected.

In this article, we'll explore the various privacy concerns associated with AI, including data collection, data sharing, and data protection. We'll also examine the current state of privacy laws and regulations, and the role of companies, governments, and individuals in protecting privacy in the AI-driven world. Analyses vast amounts of personal data, making it possible to uncover previously unknown patterns and insights. However, this also means that personal information is at increased risk of being misused or mishandled. Data privacy laws like the European Union's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) aims to give individuals control over their personal data and to ensure that personal information is properly protected.

In this article, we'll explore the various privacy concerns associated with AI, including data collection, data sharing, and data protection. We'll also examine the current state of privacy laws and regulations, and the role of companies, governments, and individuals in protecting privacy in the AI-driven world.

Why Privacy should be protected in AI Influenced World

Artificial intelligence (AI) has become an essential part of our daily lives, changing the way we work, communicate, and even entertain ourselves. From Siri and Alexa to personalized recommendations on Netflix, AI can be said to be everywhere. However, as AI becomes more ubiquitous, it's crucial to consider the impact it has on our privacy. AI algorithms are trained on vast amounts of personal data, which can be used to make predictions and decisions about us. This puts our privacy at risk in ways that were previously unimaginable.

AI and data privacy are complex and interrelated issues with both potential benefits and drawbacks. On one hand, AI has the potential to greatly enhance various industries, improve decision-making, and streamline processes. On the other hand, AI systems process and analyses large amounts of personal data, which can lead to privacy concerns if the data is misused or not properly protected.

Data privacy refers to the protection of personal information and the rights of individuals to control how their personal information is collected, used, and shared. In the AI-driven world, data privacy is of utmost importance as AI systems process and analyses vast amounts of personal data, making it possible to uncover previously unknown patterns and insights. However, this also means that personal information is at increased risk of being misused or mishandled. Data privacy laws like the European Union's General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA) aims to give individuals control over their personal data and to ensure that personal information is properly protected.

In this article, we'll explore the various privacy concerns associated with AI, including data collection, data sharing, and data protection. We'll also examine the current state of privacy laws and regulations, and the role of companies, governments, and individuals in protecting privacy in the AI-driven world.

Data Collection and Sharing

The first and most significant privacy concern associated with AI is the collection and sharing of personal data. AI algorithms require vast amounts of data to train and improve, which can come from a variety of sources, including social media, online shopping, and even personal devices like smartphones and smart home devices. This data can be used to create detailed profiles of individuals, which can be used to target advertisements, make predictions about future behaviour, and even influence political opinions. The problem with data collection and sharing is that individuals often don't know what data is being collected, who is collecting it, and how it's being used. For example, many apps and websites collect data about your location, browsing history, and search queries, which can be used to build a detailed profile of your interests, habits, and even personality. This data can then be shared with third-party companies, who can use it for their own purposes, such as targeted advertising or market research.

In 2019, California had enacted a three-year moratorium on the usage of facial recognition technology in cameras belonging to police authorities. The two primary concerns surrounding this technology were:

1. The technology lacked in recognizing the faces of minority groups thereby leading, for example, to false searches and arrests, which could be detrimental towards human rights, and

2. The technology in general had accelerated population surveillance thereby raising privacy concerns.

The contemporary proposals of limitation on usage of the technology have a direct impact on stalling proposed improvements thereby hindering safer integration to the detriment of vulnerable groups. The reason for mentioning this example under our discussed header is because data collection and sharing cannot be presumed to be powered by negative traits as outright ban of the same can make us ignore that surveillance cameras have benefits. They can aid in safeguarding victims of domestic violence, harassment, and create safety networks for females thereby reducing scenarios of misuse of power vested in law enforcement.

Facial recognition technology can help in curbing human trafficking thereby also aiding in locating missing people, particularly missing children. This can be done by pairing the technology with AI, creating maturation images in order to bridge the missing years. Disability communities and individuals with genetic disorders can also benefit from such technology as the same can assist them to do activities like fully developed and healthy individuals. While restricting technological usage is not a solution, making room for policies alongside enforcement of safe conditions and restrictions for their functioning, is a must.

Data Protection

The second privacy concern associated with AI is data protection. Personal data is a valuable asset, and it's often stored and processed by companies that have little regard for privacy. In many cases, this data is not properly secured, which can result in data breaches and the theft of personal information.

For example, in 2017, Equifax, a major credit reporting agency, experienced a data breach that exposed the personal information of over 140 million individuals, including their Social Security numbers, addresses, and birth dates. This type of data breach can have severe consequences, including identity theft, financial fraud, and loss of privacy.

In order to protect personal data, it's important to have strong data protection policies in place. This includes encryption, firewalls, and regular security audits. It's also important to be aware of the types of data that are being collected and who is collecting it. By being informed and taking steps to protect personal data, individuals can minimize their risk of becoming victims of data breaches.

The importance of data privacy in the AI-driven world can be understood in the following ways:

1. *Protecting personal information:* Data privacy laws aim to protect personal information from being misused, disclosed, or otherwise mishandled. This is particularly important in the AI-driven world where AI systems process vast amounts of personal data and have the potential to uncover previously unknown insights about individuals.
2. *Giving individuals control over their data:* Data privacy laws give individuals the right to control how their personal information is collected, used, and shared. This means that individuals have the ability to say "no" to the collection of their data if they don't feel comfortable with it.
3. *Promoting ethical AI practices:* Data privacy laws encourage AI developers to consider privacy concerns and ethical implications of their AI systems. This can lead to the development of AI systems that respect individuals' rights and protect personal information.
4. *Preventing bias and discrimination:* Data privacy laws can help prevent AI systems from perpetuating existing biases and discrimination. This is because they encourage AI developers to consider the sources of the data, they use to train their AI systems and to ensure that the data is not biassed.

Privacy Laws and Regulations

One of the major privacy concerns associated with AI is the current state of privacy laws and regulations. In many countries, privacy laws and regulations are outdated and ineffective, leaving individuals vulnerable to the negative consequences of AI.

For example, in the United States, the primary privacy law is the Electronic Communications Privacy Act (ECPA), which was enacted in 1986, long before the rise of AI. The ECPA provides limited protections for personal data, and it doesn't address many of the privacy concerns associated with AI, such as data collection and data protection.

In the European Union, the General Data Protection Regulation (GDPR) was enacted in 2018, which provides individuals with greater control over their personal data. The GDPR requires companies to obtain explicit consent for the collection and processing of personal data, and it gives individuals the right to access, rectify, and erase their personal data. The GDPR also imposes

significant fines for companies that violate privacy laws, which serves as a deterrent for companies that might otherwise disregard privacy concerns.

However, even with the GDPR in place, there are still privacy concerns associated with AI. For example, there are questions about the scope of the GDPR, such as how it applies to data that is processed outside of the European Union. There are also concerns about the ability of regulators to enforce the GDPR, as they often lack the resources and expertise to effectively monitor the activities of AI companies.

When we come to India, the area of privacy laws remains ambiguous as the internet has been filled with amalgamation of provisions belonging to different legislations such as Information Technology Act, 2000 and the Indian Contract Act, 1872. Although India is not behind in the race among countries for technological overpowering, it will be ideal to state that the legislators of this democratic nation have kept the hard work of framing specified statutes for the future. But, lack of realization that AI is not the future but is the present have made India suffer several cybercrimes and attacks over the past decade.

Impact of AI on Data Privacy

The impact of AI on data privacy is a complex and multifaceted issue that has become increasingly relevant as AI systems continue to grow in prominence and usage. AI systems, which are designed to analyses and process large amounts of data, are inherently reliant on access to personal data in order to function effectively. This access to personal data poses several risks to data privacy, including the potential for privacy violations, the perpetuation of biases and discrimination, and the risk of data misuse.

One of the primary ways in which AI systems impact data privacy is through their reliance on personal data. In order to function effectively, AI systems require access to vast amounts of data, including personal data such as names, addresses, and other identifying information. This data is then analyzed and processed by the AI system, which uses it to make decisions, predict outcomes, and identify patterns. The sheer scale of data that AI systems process, combined with the sensitive nature of the data involved, creates a significant risk to privacy. This risk is compounded by the fact that AI systems are capable of processing data at a speed that far outpaces human ability, making it difficult for individuals to keep up with the rapid pace of data processing and to understand how their personal data is being used.

Another major way in which AI impacts data privacy is through the potential perpetuation of biases and discrimination. AI systems are only as fair and impartial as the data they are trained on, and if that data contains biases or discriminatory patterns, the AI system will incorporate these biases into its decision-making processes. For example, if an AI system is trained on a dataset that is biassed towards certain races or genders, it is likely to perpetuate those biases in its predictions and decisions. This can lead to unequal treatment and can further entrench existing inequalities.

Finally, AI systems also pose a risk to data privacy through the potential for data misuse. AI systems are designed to process and analyses large amounts of data, and this capability also makes it possible for these systems to misuse personal data. For example, an AI system that is designed to analyses financial data could use personal data to make decisions about loan applications, credit ratings, or insurance policies. If this personal data is not properly secured or is used in an unethical manner, it could result in privacy violations, including the unauthorized release of sensitive information.

The impact of AI on data privacy is a growing concern for individuals, organizations, and governments around the world. As AI systems continue to become more prevalent, it is important for data privacy laws and regulations to evolve in order to keep pace with the changing landscape. This may include updating existing laws and regulations, creating new ones, and developing international standards for the protection of personal data in the AI era.

In conclusion, the impact of AI on data privacy is a complex and multifaceted issue that requires careful consideration and a proactive approach from individuals, organizations, and governments. As AI systems continue to grow in prominence and usage, it is important to remain vigilant and to take steps to protect personal data from privacy violations, biases, and misuse. By doing so, we can help ensure that the benefits of AI are enjoyed by all, while minimizing the risks to data privacy that come with this powerful technology.

The Role of Companies, Governments and Individuals

The final privacy concern associated with AI is the role of companies, governments, and individuals in protecting privacy. Each of these groups has a role to play in ensuring that privacy is protected in the AI-driven world.

Companies have a responsibility to be transparent about their data collection practices and to secure personal data. They should also allow individuals to access, rectify, and erase their personal data, and they should only use personal data for the purpose for which it was collected.

Companies should also invest in the development of privacy-enhancing technologies, such as homomorphic encryption, which allows data to be processed without being decrypted.

Governments have a responsibility to create and enforce privacy laws and regulations that are effective and that keep pace with the rapid advancements in AI. Governments should also invest in the development of privacy-enhancing technologies and provide resources to regulators so that they can effectively enforce privacy laws.

Individuals have a responsibility to be informed about the types of data that are being collected and who is collecting it, and to take steps to protect their personal data, such as using encryption and regularly changing passwords. Individuals should also advocate for stronger privacy laws and regulations and hold companies and governments accountable for protecting privacy.

Conclusion

In conclusion, it is necessary to state that, privacy is a major concern in the AI-driven world, and it requires a collaborative effort from companies, governments, and individuals to ensure that privacy is protected. Companies must be transparent about their data collection practices and secure personal data, governments must create and enforce effective privacy laws and regulations, and individuals must be informed and take steps to protect their personal data. Only by working together can we ensure that privacy is protected in the AI-driven world.

BIBLIOGRAPHY

TEXTBOOKS

1. India's Digital Personal Data Protection Act, 2023
2. The right to privacy in India: concept and evolution by Dr. Sudhir Naib
3. Privacy jurisprudence in India by Justice B.N SRIKRISHAN
4. Privacy in a digital world by Dr. N. S. Nappinal

JOURNAL ARTICLES

1. *https://time.com/6224484/data-privacy-problem/*
2. *https://www.weforum.org/agenda/2022/03/designing-artificial-intelligence-for-privacy/*
3. *https://www.boozallen.com/s/solution/four-ways-to-preserve-privacy-in-ai.html*

****

Artificial Intelligence in Criminal Investigation and Evidence

By Krishna Kumar Dhruv Singh

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: singhkrishna79@gmail.com

Introduction

Artificial Intelligence (AI) has emerged as a transformative force across multiple sectors, and the field of criminal investigation is no exception. Law enforcement agencies, forensic experts, and legal professionals are increasingly leveraging AI-driven technologies to enhance efficiency, accuracy, and speed in solving crimes and managing evidence. From predictive policing to digital forensics and courtroom analytics, AI is reshaping how justice systems operate. However, its integration also raises important ethical, legal, and practical concerns that must be carefully addressed.

AI in Criminal Justice

Artificial Intelligence refers to computer systems capable of performing tasks that typically require human intelligence, such as pattern recognition, decision-making, language processing, and problem-solving. In criminal investigations, AI tools analyze large datasets, identify patterns, and generate insights that would be difficult or time-consuming for human investigators to uncover.

The rise of big data, surveillance technologies, and digital communication has created vast amounts of information relevant to criminal investigations. AI serves as a powerful tool to process this data efficiently, helping authorities detect crimes, identify suspects, and present evidence in a structured manner.

Applications of AI in Criminal Investigation

Predictive Policing: Predictive policing uses AI algorithms to analyze historical crime data and forecast where crimes are likely to occur. By identifying patterns related to time, location, and types of offenses, law enforcement agencies can allocate resources more effectively. *For example*, AI systems can detect crime hotspots and suggest increased patrolling in certain areas. While this improves efficiency, it also raises concerns about reinforcing existing biases if historical data reflects discriminatory policing practices.

Facial Recognition and Surveillance: Facial recognition technology is one of the most widely used AI applications in criminal investigations. It compares images captured from CCTV cameras or social media with databases of known individuals to identify suspects. This technology has proven

useful in locating missing persons, tracking criminals, and preventing terrorist activities. However, issues such as misidentification, especially among certain demographic groups, and invasion of privacy have sparked widespread debate.

Digital Forensics: With the increasing use of digital devices, digital forensics has become a critical component of criminal investigations. AI assists in analyzing data from smartphones, computers, and online platforms.

AI tools can:

- Recover deleted files
- Analyze communication patterns
- Detect suspicious behaviour in online activities
- Identify links between suspects

Machine learning algorithms can sift through massive datasets, such as emails or chat logs, to uncover hidden connections and evidence.

Natural Language Processing (NLP): Natural Language Processing enables AI systems to understand and analyze human language. In criminal investigations, NLP is used to examine documents, witness statements, and online content.

For instance, AI can:

- Detect threatening language in messages
- Identify fraudulent documents
- Analyze interrogation transcripts for inconsistencies

NLP also assists in translating languages, making it easier to handle cross-border crimes.

Crime Pattern Analysis: AI systems can identify patterns across different crimes, helping investigators link cases that might otherwise appear unrelated. This is particularly useful in serial offenses such as burglaries or homicides. By analyzing similarities in modus operandi, location, and timing, AI can suggest possible connections and even predict the next likely target.

Autonomous Systems and Robotics: Drones and robotic systems powered by AI are increasingly used in surveillance, search operations, and hazardous situations. *They can:*

- Monitor large areas
- Capture real-time data
- Assist in bomb disposal or rescue missions

Such systems enhance safety by reducing the need for human officers in dangerous environments.

AI in Evidence Collection and Analysis

AI plays a significant role not only in identifying suspects but also in collecting, preserving, and analyzing evidence.

Evidence Identification: AI tools can automatically scan crime scenes using image recognition technology to identify potential evidence such as weapons, footprints, or bloodstains.

Forensic Analysis: AI enhances forensic science by improving the accuracy and speed of analysis. Examples include:

- DNA analysis: AI can process genetic data faster and identify matches more efficiently.
- Ballistics: AI can compare bullet markings to determine whether they were fired from the same weapon.
- Fingerprint recognition: Automated systems match fingerprints with high precision.

Chain of Custody Management: Maintaining the integrity of evidence is crucial in legal proceedings. AI-powered systems can track evidence from collection to courtroom, ensuring proper documentation and minimizing human error.

Video and Image Analysis: AI can enhance low-quality images or videos, identify objects, and track movements. This is particularly useful in analyzing CCTV footage to reconstruct events.

AI in Courtroom Proceedings

AI is also making its way into the courtroom, influencing how evidence is presented and decisions are made.

Evidence Presentation: AI tools can organize and present evidence in a clear and structured manner, making it easier for judges and juries to understand complex cases.

Legal Research: AI-powered legal research platforms can quickly analyze case law, statutes, and precedents, helping lawyers build stronger arguments.

Risk Assessment Tools: Some judicial systems use AI to assess the likelihood of a defendant reoffending. These tools assist in decisions related to bail, sentencing, and parole.

However, such systems are controversial due to concerns about fairness and transparency.

Advantages of AI in Criminal Investigation

Efficiency and Speed: AI significantly reduces the time required to analyze large volumes of data, enabling faster investigations and quicker resolution of cases.

Improved Accuracy: By minimizing human error, AI enhances the accuracy of evidence analysis and suspect identification.

Resource Optimization: AI helps law enforcement agencies allocate resources more effectively, focusing efforts where they are most needed.

Enhanced Crime Prevention: Predictive analytics allows authorities to take proactive measures to prevent crimes before they occur.

Challenges and Limitations

Despite its advantages, the use of AI in criminal investigation presents several challenges.

Bias and Discrimination: AI systems are only as unbiased as the data they are trained on. If historical data contains biases, AI may perpetuate or even amplify them.

Privacy Concerns: The use of surveillance technologies and data analysis raises significant privacy issues. There is a risk of excessive monitoring and misuse of personal data.

Lack of Transparency: Many AI systems operate as "black boxes," making it difficult to understand how decisions are made. This lack of transparency can undermine trust in the justice system.

Legal Admissibility: The admissibility of AI-generated evidence in court is still a developing area. Courts must determine whether such evidence meets standards of reliability and fairness.

Dependence on Technology: Over-reliance on AI may reduce human judgment and critical thinking in investigations.

Ethical Considerations

The integration of AI into criminal justice raises important ethical questions:

- Should AI be allowed to influence judicial decisions?
- How can we ensure fairness and accountability?
- Who is responsible for errors made by AI systems?

To address these concerns, it is essential to establish clear ethical guidelines and regulatory frameworks.

Legal Framework and Regulations

Governments and legal institutions are beginning to develop regulations for the use of AI in criminal investigations. These include:

- Data protection laws to safeguard privacy
- Guidelines for the use of surveillance technologies

- Standards for the admissibility of digital evidence

International cooperation is also necessary, as cybercrime often transcends national boundaries.

Future Prospects

The future of AI in criminal investigation is promising but requires careful management. Emerging technologies such as:

- Deep learning
- Blockchain for evidence management
- Advanced biometrics
- AI-powered interrogation analysis

are expected to further enhance the capabilities of law enforcement.

At the same time, efforts must be made to ensure that AI systems are transparent, accountable, and free from bias.

Conclusion

Artificial Intelligence is revolutionizing criminal investigation and evidence management by providing powerful tools for data analysis, pattern recognition, and decision-making. It enhances efficiency, accuracy, and crime prevention capabilities, making it an invaluable asset for modern law enforcement.

However, the use of AI also presents significant challenges, including ethical concerns, privacy issues, and potential biases. To fully realize the benefits of AI while minimizing its risks, it is essential to develop robust legal frameworks, ensure transparency, and maintain human oversight. Ultimately, AI should be viewed as a tool to assist—not replace—human judgment in the pursuit of justice. By balancing innovation with responsibility, societies can harness the power of AI to create a more effective and fair criminal justice system.

BIBLIOGRAPHY

1. Books: Goodfellow, I., Bengio, Y., & Courville, A. (2016). *Deep Learning*. MIT Press.
2. Journal Articles: Ferguson, A. G. (2017). “The Rise of Big Data Policing: Surveillance, Race, and the Future of Law Enforcement.” *NYU Law Review*, 92, 367–421.
3. Reports & Publications: National Institute of Justice. (2020). *Artificial Intelligence in Criminal Justice*.
4. Online Sources / Websites: MIT Technology Review. (2022). Articles on AI and law enforcement. Retrieved from https://www.technologyreview.com

5. Legal Cases & References (Optional): *State v. Loomis* (2016) – Use of AI-based risk assessment in sentencing.
6. Additional Sources: World Economic Forum. (2022). *AI and the Future of Justice Systems*.

****

Artificial Intelligence and Right to Privacy

By Vidhi Chetankumar Shah

T.Y. LL.B. Sem. VI
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: svidhi816@gmail.com

By Aashish Devang Mehta

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: mehtaaashish9@gmail.com

Abstract

Artificial Intelligence (AI) has rapidly transformed governance, commerce, and everyday life through data-driven decision-making. However, its dependence on massive data collection raises serious concerns regarding the right to privacy. In India, privacy has been recognized as a fundamental right under Article 21 of the Constitution in the landmark judgment of Justice K.S. Puttaswamy v. Union of India.

This paper examines the intersection of AI technologies and privacy rights, highlighting legal challenges, regulatory gaps, and ethical dilemmas. It evaluates existing frameworks such as the Information Technology Act, 2000 and global instruments like the General Data Protection Regulation. The research aims to analyze whether current laws adequately protect individuals against AI-driven intrusions and proposes reforms to balance innovation with constitutional safeguards.

Introduction

Artificial Intelligence refers to systems capable of performing tasks that typically require human intelligence, including learning, reasoning, and decision-making. AI applications such as facial recognition, predictive analytics, and surveillance systems rely heavily on personal data.

The right to privacy, now firmly embedded within Article 21, protects individual autonomy, dignity, and informational self-determination. The increasing deployment of *AI by governments and private entities raises critical questions:*

- How is personal data collected and processed?
- Are individuals aware of such processing?
- Can AI systems infringe fundamental rights without accountability?

This paper explores whether existing legal frameworks are equipped to address these concerns.

Historical Background

Evolution of Privacy Rights

The concept of privacy evolved gradually in India:

i. Early constitutional interpretation did not explicitly recognize privacy.
ii. In Kharak Singh v. State of Uttar Pradesh, the right to privacy was partially acknowledged.
iii. In Gobind v. State of Madhya Pradesh, the Court recognized privacy as implicit under Article 21.
iv. The watershed moment came with Justice K.S. Puttaswamy v. Union of India, where privacy was declared a fundamental right.

Development of AI

AI has evolved from theoretical models in the mid-20th century to advanced machine learning systems today. Its integration into governance, especially in surveillance and public administration, has intensified privacy concerns.

Objectives

1. To examine the relationship between AI technologies and the right to privacy.
2. To analyze existing legal frameworks governing data protection.
3. To identify gaps in current regulations.
4. To evaluate judicial responses to privacy concerns.
5. To propose reforms ensuring a balance between innovation and rights.

Statement of Problem

The rapid adoption of AI systems has outpaced legal regulation. Personal data is often collected without informed consent, processed through opaque algorithms, and used for profiling or surveillance.

Key issues include:

- Lack of transparency in AI decision-making.
- Absence of comprehensive data protection enforcement.
- Potential misuse of biometric and sensitive data.
- Weak accountability mechanisms.

Research Question / Hypothesis

"Existing legal frameworks in India are insufficient to adequately protect the right to privacy against the challenges posed by AI technologies."

Research Methodology

This study adopts a doctrinal research methodology, relying on:

- Constitutional provisions (Article 21)
- Judicial precedents
- Statutory laws (IT Act, data protection frameworks)
- International legal instruments (GDPR)

Secondary sources such as journal articles, reports, and legal commentaries have also been used.

Analysis of Research Question / Hypothesis

How does AI impact the right to privacy?

AI systems operate through extensive data collection, often including:

i. Personal identifiers
ii. Behavioral patterns
iii. Biometric data

This leads to:

i. Surveillance risks (e.g., facial recognition systems)
ii. Profiling and discrimination
iii. Loss of anonymity

The principle of informational privacy, recognized in Puttaswamy, is directly threatened.

Are existing laws adequate?

Indian Legal Framework

i. Information Technology Act, 2000

   Provides limited protection through Section 43A and rules on sensitive data.

ii. Digital Personal Data Protection Act, 2023

   Introduces obligations for data fiduciaries, consent requirements, and penalties.

Limitations:

- No specific regulation for AI systems.
- Lack of algorithmic transparency requirements.
- Limited enforcement capacity.

International Framework

i. General Data Protection Regulation

Provides robust protections including:

- Right to be forgotten
- Data minimization
- Explicit consent
- Automated decision-making safeguards

GDPR is often considered a benchmark but still struggles with AI-specific challenges.

What are the constitutional implications?

Under Article 21, any restriction on privacy must satisfy:

i. Legality
ii. Necessity
iii. Proportionality
iv. Procedural safeguards

AI-driven surveillance systems often fail these tests due to:

- Lack of statutory backing
- Excessive data collection
- Absence of oversight

What are the ethical concerns?

i. Bias in AI algorithms
ii. Lack of explainability
iii. Data misuse by corporations
iv. Mass surveillance by the state

These issues challenge not just privacy but also equality and due process.

Conclusion

AI represents both an opportunity and a threat. While it enhances efficiency and innovation, it also poses serious risks to the right to privacy. The recognition of privacy as a fundamental right imposes a constitutional obligation on the state to ensure that technological advancements do not undermine individual freedoms. Current Indian laws, though evolving, are not fully equipped to handle the complexities of AI. A more comprehensive and AI-specific regulatory framework is necessary.

Suggestions

1. *Enact AI-Specific Legislation*: Laws should specifically regulate AI systems, including accountability mechanisms.
2. *Strengthen Data Protection Enforcement*: Ensure effective implementation of the Digital Personal Data Protection Act.
3. *Algorithmic Transparency:* Mandate explainability in AI decision-making processes.
4. *Independent Regulatory Authority*: Establish a dedicated AI regulatory body.
5. *Public Awareness and Consent Mechanisms*: Improve informed consent standards and user awareness.
6. *Judicial Oversight*: Courts should actively review AI-based state actions.
7. *Adopt International Best Practices*: Learn from frameworks like GDPR while adapting to Indian conditions.

WEBLIOGRAPHY

1. https://blog.ipleaders.in/data-protection-laws-in-india-2/?utm_source=chatgpt.com
2. https://defactolawjournal.org/papers/why-we-need-data-protection-laws-for-ai-in-india/?utm_source=chatgpt.com
3. https://chahalacademy.com/right-to-privacy?utm_source=chatgpt.com
4. https://www.maheshwariandco.com/blog/digital-personal-data-protection-act-2023/?utm_source=chatgpt.com
5. https://bprd.nic.in/

****

Artificial Intelligence in Law Navigation: Regulation and Justice

By Pinki Babu Gavade

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction

Artificial Intelligence (AI) is rapidly transforming the legal landscape, reshaping how laws are interpreted, enforced, and accessed. From predictive analytics in court decisions to automated contract review and legal research, AI has introduced new efficiencies while also raising critical concerns about fairness, accountability, and regulation. As societies increasingly rely on intelligent systems to navigate legal processes, the intersection of AI, regulation, and justice becomes a central issue of modern governance. This essay explores how AI is influencing legal navigation, the regulatory frameworks required to govern it, and its broader implications for justice.

The Emergence of AI in Legal Systems

AI technologies, particularly machine learning and natural language processing, have found numerous applications in law. Legal professionals now use AI-powered tools to sift through vast databases of case law, identify relevant precedents, and predict case outcomes. Tasks that once required hours of manual research can now be completed in minutes.

For example, AI systems are used in:

Legal research: Tools can scan millions of documents to find relevant cases.

Contract analysis: Algorithms identify risks, inconsistencies, or missing clauses.

Predictive justice: Systems estimate the likelihood of winning a case based on historical data.

Judicial assistance: Some jurisdictions experiment with AI to support sentencing decisions.

These innovations improve efficiency and reduce costs, making legal services more accessible. However, they also introduce risks tied to algorithmic bias, lack of transparency, and over-reliance on automated decision-making.

AI and Legal Navigation

Legal navigation refers to how individuals and institutions understand, interpret, and act within the framework of the law. AI is reshaping this navigation in several ways.

Increased Accessibility

AI-powered chatbots and virtual legal assistants provide basic legal guidance to individuals who may not afford traditional legal services. This democratizes access to justice by lowering barriers to entry.

Complexity Reduction

Legal language is often dense and difficult to understand. AI tools can translate complex legal jargon into simpler language, helping citizens better understand their rights and obligations.

Decision Support

Lawyers and judges increasingly rely on AI for decision support. While this can improve consistency, it raises concerns about whether human judgment is being overshadowed by algorithmic outputs.

Risk of Over-Reliance

One of the key challenges is the tendency to treat AI outputs as authoritative. Legal professionals may defer to algorithmic recommendations without critically evaluating them, potentially leading to unjust outcomes.

The Need for Regulation

As AI becomes more embedded in legal systems, robust regulatory frameworks are essential to ensure its ethical and fair use. Regulation must address several core issues:

Transparency and Explainability

AI systems often operate as "black boxes," making it difficult to understand how decisions are reached. In legal contexts, this lack of transparency is problematic. Individuals have a right to know how decisions affecting them are made.

Regulations should require:

a) Clear explanations of algorithmic processes
b) Disclosure of data sources
c) Mechanisms for auditing AI systems

Accountability

When AI systems make errors or produce biased outcomes, determining responsibility becomes complex. Is the developer, the user, or the institution accountable?

Effective regulation must:

- Define liability frameworks
- Establish accountability for harm caused by AI
- Ensure human oversight in critical decisions

Bias and Fairness

AI systems are trained on historical data, which may reflect existing biases. In legal contexts, this can perpetuate discrimination, especially in areas like sentencing or bail decisions.

Regulators must:

- Mandate bias testing and mitigation strategies
- Promote diverse and representative datasets
- Continuously monitor outcomes for fairness

Data Privacy

AI relies heavily on data, including sensitive personal information. Ensuring privacy and data protection is crucial.

Legal frameworks should:

- Enforce strict data protection standards
- Limit data collection to necessary information
- Ensure secure storage and processing

Global Approaches to AI Regulation in Law

Different countries and regions are adopting varied approaches to regulating AI in legal contexts.

European Union

The EU has taken a proactive stance with comprehensive AI regulations emphasizing risk-based classification. Legal AI systems used in critical decision-making are considered high-risk and subject to strict requirements.

United States

The U.S. adopts a more sector-specific and flexible approach, relying on existing laws and guidelines rather than a single overarching AI regulation.

India

India is gradually developing its AI governance framework, focusing on ethical AI and digital inclusion. Given its large population and diverse legal needs, AI has the potential to significantly improve access to justice.

AI and the Concept of Justice

Justice is a foundational principle of legal systems, encompassing fairness, equality, and accountability. AI challenges traditional notions of justice in several ways.

Procedural Justice

Procedural justice refers to the fairness of processes used to make decisions. AI can enhance consistency but may undermine fairness if processes are opaque or biased.

Substantive Justice

Substantive justice focuses on outcomes. If AI systems produce biased results, even efficient processes can lead to unjust outcomes.

Human Judgment vs Algorithmic Decision-Making

Legal decisions often involve moral and ethical considerations that AI may not fully capture. Over-reliance on AI risks reducing complex human judgments to data-driven outputs.

Trust in Legal Systems

Public trust is essential for the legitimacy of legal systems. If people perceive AI-driven decisions as unfair or incomprehensible, trust may erode.

Ethical Considerations

The integration of AI into law raises several ethical concerns:

a) Autonomy: Individuals should not be subject to decisions they cannot understand or challenge.
b) Fairness: AI must treat individuals equitably, regardless of background.
c) Non-maleficence: Systems should not cause harm.
d) Justice: AI should enhance, not undermine, legal fairness.

Ethical guidelines must complement legal regulations to ensure responsible AI use.

Challenges in Implementing AI Regulation

Despite the need for regulation, several challenges persist:

Rapid Technological Change

AI evolves faster than regulatory frameworks, making it difficult to keep laws up to date.

Lack of Expertise

Regulators and legal professionals may lack technical expertise to fully understand AI systems.

Balancing Innovation and Control

Excessive regulation may stifle innovation, while insufficient regulation can lead to harm.

Cross-Border Issues

AI systems often operate globally, complicating jurisdictional and regulatory enforcement.

The Future of AI in Legal Navigation

The future of AI in law depends on achieving a balance between innovation and regulation. *Key trends include:*

Human-AI Collaboration

Rather than replacing legal professionals, AI is likely to augment their capabilities. Collaborative models can combine efficiency with human judgment.

Improved Transparency

Advances in explainable AI may make systems more understandable and trustworthy.

Standardization

Global standards for AI governance could harmonize regulations and facilitate cross-border cooperation.

Greater Access to Justice

AI has the potential to bridge gaps in legal access, particularly in underserved communities.

Recommendations

To ensure that AI supports justice rather than undermines it, the following steps are recommended:

Develop Comprehensive Regulations

Governments should establish clear and enforceable AI laws tailored to legal applications.

Ensure Human Oversight

Critical legal decisions should always involve human review.

Promote Transparency

AI systems must be explainable and open to scrutiny.

Address Bias

Continuous monitoring and improvement are needed to eliminate bias.

Invest in Education

Legal professionals should be trained in AI technologies and ethics.

Encourage Public Participation

Citizens should have a voice in shaping AI policies.

Conclusion

AI is revolutionizing legal navigation by enhancing efficiency, accessibility, and decision-making. However, its integration into legal systems raises profound questions about regulation and justice. Without proper safeguards, AI risks perpetuating bias, reducing transparency, and undermining trust in legal institutions.

The challenge lies in harnessing the benefits of AI while mitigating its risks. This requires a balanced approach that combines robust regulation, ethical considerations, and human oversight. Ultimately, AI should serve as a tool to strengthen justice, not replace it. By carefully navigating the intersection of technology and law, societies can build legal systems that are not only more efficient but also fairer, inclusive, and just.

****

Freedom of Speech V/s AI-Generated Content

By Roshan Ramchandra Dhotre

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction

The proliferation of AI-generated content has sparked a heated debate about the delicate balance between freedom of speech and regulation. On one hand, AI can facilitate expression and amplify marginalized voices, but on the other, it poses significant challenges to accountability and the spread of misinformation. The ease with which AI-generated content can be created and disseminated has raised concerns about the potential for harm, including the spread of hate speech, propaganda, and deepfakes that can manipulate public opinion and undermine trust in institutions. The tech platforms, which have become the gatekeepers of online speech, face a daunting task in moderating AI-generated content while respecting users' rights to free expression.

Proponents of regulation argue that stricter rules are necessary to prevent harm and ensure accountability. They point out that AI-generated content can cause significant harm, and platforms must take responsibility for the content they host. For instance, AI-generated hate speech can perpetuate violence and discrimination, while deepfakes can interfere with elections and undermine democratic processes. Moreover, the opacity of AI algorithms makes it difficult to track the origin of harmful content, making regulation even more pressing. On the other hand, free speech advocates argue that regulations may be used to suppress dissenting voices and stifle free expression. They emphasize the importance of protecting online speech, even if it's unpopular or uncomfortable, and caution that over-regulation can have a chilling effect on innovation and public discourse.

The challenges are complex, and the stakes are high. Defining boundaries for AI-generated content will be a contentious process, and global coordination will be essential to address cross-border content issues. The European Commission's proposal for a regulatory framework on AI, for instance, has sparked debate about the balance between innovation and protection. Similarly, tech platforms like Facebook and Twitter have struggled to balance free speech with content moderation, often facing criticism from both sides. Ultimately, finding a balance between freedom of speech and accountability will require ongoing dialogue and collaboration between tech platforms, governments, and civil society. By working together, we can create a framework that promotes free expression while minimizing harm.

One of the primary concerns is the potential for AI-generated content to spread misinformation and disinformation. AI algorithms can create convincing fake news articles, social media posts, and even entire websites, making it difficult for users to distinguish fact from fiction. This can have serious consequences, including the erosion of trust in institutions, the manipulation of public opinion, and the undermining of democratic processes. Furthermore, AI-generated content can also be used to perpetuate hate speech and discrimination, exacerbating existing social tensions and inequalities.

Another concern is the lack of transparency and accountability in AI-generated content. AI algorithms are often opaque, making it difficult to track the origin of harmful content or hold platforms accountable. This lack of transparency also raises concerns about bias and discrimination in AI decision-making, which can perpetuate existing social inequalities. Moreover, the sheer volume of AI-generated content makes it difficult for platforms to effectively moderate, leading to concerns about the spread of harmful content.

Role of Judiciary

AI-generated content is increasingly being used in the judiciary to support decision-making, improve efficiency, and enhance access to justice. Some key roles of AI in the judiciary include:

- *Legal Research*: AI tools can quickly analyze large volumes of case law, statutes, and other legal materials, helping judges and lawyers identify relevant precedents and arguments.
- *Case Management*: AI can assist in managing case workflows, tracking deadlines, and predicting case outcomes.
- *Judicial Decision-Making*: AI can provide predictive analytics to support judges in making informed decisions.
- *Access to Justice*: AI-powered chatbots and virtual assistants can help citizens navigate legal processes and access justice more easily.

However, AI in the judiciary also raises concerns about:

- *Bias and Fairness*: AI systems can perpetuate existing biases if trained on biased data.
- *Transparency and Accountability*: AI decision-making processes can be opaque, making it challenging to understand and challenge decisions.
- *Judicial Independence*: Over-reliance on AI could potentially undermine judicial independence.

To address these concerns, courts are exploring ways to:

- *Develop AI guidelines*: Establish clear guidelines for AI use in the judiciary.
- *Ensure transparency*: Make AI decision-making processes transparent and explainable.
- *Monitor AI performance*: Regularly evaluate AI systems for bias and effectiveness.

Conclusion and Suggestion

Building on the points about AI in the judiciary, I'd like to emphasize the need for a balanced approach. While AI can enhance efficiency and access to justice, addressing concerns around bias, transparency, and judicial independence is crucial. Some potential suggestions include:

- *Multi-stakeholder guidelines*: Develop AI guidelines involving judges, lawyers, ethicists, and tech experts.
- *Explainable AI:* Invest in AI systems that provide transparent and explainable decisions.
- *Regular audits*: Conduct regular audits to detect and address biases in AI systems.
- *Judicial oversight*: Ensure judges maintain oversight and final decision-making authority.

BIBILOGRAPHY

1. European Commission. (2020). "On Artificial Intelligence - A European Approach to Excellence and Trust."
2. UNESCO. (2021). "Recommendation on the Ethics of Artificial Intelligence."
3. Article 19. (2020). "The Right to Freedom of Expression in the Age of Artificial Intelligence."
4. Khan, S. (2022). "AI and Free Speech: A False Dichotomy." Harvard Business Review.
5. Gillespie, T. (2020). "Custodians of the Internet: Platforms, Content Moderation, and the Hidden Decisions That Shape Our Online World." Yale University Press.
6. Balkin, J. M. (2018). "Free Speech in the Algorithmic Society." Harvard Law Review.

****

Artificial Intelligence and Law

By Daulat Dayma

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: daulat.tech@gmail.com

By Monu Gupta

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: monagupta@gmail.com

Abstract

Artificial Intelligence (AI) is transforming the legal landscape by introducing efficiency, automation, and predictive capabilities. However, its rapid growth raises serious legal concerns regarding privacy, accountability, and ethical governance. This research paper examines the intersection of AI and law, focusing on its applications, challenges, and the role of the judiciary in regulating emerging technologies. The study also highlights the need for a robust legal framework to ensure responsible AI usage.

Introduction

Artificial Intelligence refers to the simulation of human intelligence in machines capable of performing tasks such as learning, reasoning, and decision-making. The integration of AI into the legal system has revolutionized traditional practices by enabling faster legal research, document automation, and predictive analysis.

Despite its advantages, AI raises complex legal issues, including data protection, liability, and transparency. The absence of a comprehensive regulatory framework further complicates its governance. Therefore, it is essential to critically examine the impact of AI on law and justice.

Research Objectives

1. To analyze the concept and scope of Artificial Intelligence in law
2. To examine the use of AI in the legal profession
3. To identify legal and ethical challenges posed by AI
4. To study the role of judiciary in regulating AI
5. To suggest measures for effective AI governance

Research Methodology

This research is doctrinal in nature, based on secondary sources such as textbooks, journal articles, case laws, and online legal databases. The study involves analytical and descriptive methods to evaluate the legal implications of AI.

Use of Artificial Intelligence in Legal Profession

AI is widely used in legal practice to enhance efficiency and accuracy. Legal research tools such as AI-powered databases can quickly analyze case laws and statutes. AI is also used for:

- Contract drafting and review
- Predictive analysis of case outcomes
- E-discovery and document management

These applications reduce human effort and improve productivity. However, excessive dependence on AI may weaken legal reasoning and ethical judgment.

Legal Issues and Challenges of AI

Liability Issues

Determining liability in cases involving AI remains unclear. If an AI system causes harm, it is difficult to assign responsibility among developers, users, or manufacturers.

Data Privacy Concerns

AI systems rely on large datasets, often containing personal information. Misuse of such data may violate privacy rights.

Algorithmic Bias

AI systems may produce biased outcomes due to flawed training data, leading to discrimination and injustice.

Lack of Transparency

AI decision-making processes are often opaque (“black box”), making it difficult to ensure accountability.

AI and Data Protection Laws

In India, the Digital Personal Data Protection Act, 2023 regulates the processing of personal data. AI systems must comply with principles such as consent, transparency, and accountability.

Globally, regulations like the GDPR emphasize strict data protection standards. India must adopt similar robust frameworks to regulate AI effectively.

Role of Judiciary

The judiciary plays a crucial role in addressing legal challenges posed by AI. It ensures that technological advancements do not violate fundamental rights.

Important Case Laws

Justice K.S. Puttaswamy v. Union of India (2017)

The Supreme Court recognized the Right to Privacy as a fundamental right under Article 21. This judgment is highly relevant in regulating AI and data protection.

Shreya Singhal v. Union of India (2015)

The Court struck down Section 66A of the IT Act, emphasizing the importance of freedom of speech in the digital era, which is also relevant in AI governance.

The judiciary also promotes ethical use of technology while ensuring that human judgment remains central to decision-making.

Conclusion & Suggestions

Artificial Intelligence is reshaping the legal system by improving efficiency and access to justice. However, it also introduces significant legal and ethical challenges.

Suggestions

- Enact comprehensive AI-specific legislation
- Ensure transparency and explainability in AI systems
- Establish clear liability frameworks
- Strengthen data protection laws
- Promote ethical AI practices

A balanced approach is necessary to ensure that AI serves as a tool for justice rather than a threat to fundamental rights.

BIBLIOGRAPHY

Textbooks

1. V.D. Mahajan – Jurisprudence and Legal Theory
2. P. Ishwara Bhat – Law and Social Transformation in India
3. S.K. Verma – Cyber Law in India
4. Journal Articles
5. “Artificial Intelligence and Law” – Harvard Law Review
6. “AI and Data Protection in India” – Indian Journal of Law and Technology

7. “Ethical Challenges of AI” – Yale Law Journal

Web Sources

www.indiankanoon.org

****

Artificial Intelligence and Infringement Challenges

By Vijiyeta Chavan

S.Y. LL.B. Sem. IV
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: vijetachavan07@gmail.com

Abstract

Artificial Intelligence (AI) has drastically changed the legal system, business, and government of contemporary civilization. Artificial Intelligence improves productivity and decision-making, but it also presents difficult legal issues, especially when it comes to violations of fundamental rights, privacy, and intellectual property. With an emphasis on infringement issues, this article explores the relationship between Artificial Intelligence and the law. It examines the development of Artificial Intelligence throughout history, highlights important legal issues, and assesses current regulatory frameworks in India and around the world. The study draws attention to problems such algorithmic prejudice, data misuse, copyright infringement, and ambiguous culpability. The paper makes the case for a fair legal system that protects rights and encourages innovation through doctrinal analysis. Recommendations for thorough Artificial Intelligence regulation and moral governance are included in the study's conclusion.

Keywords*: artificial intelligence, infringement, copyright, data privacy, algorithmic bias, legal regulation*

Introduction

One of the key technological developments of the twenty-first century is artificial intelligence. Its uses have spread across many industries, including the legal industry, from generative Artificial Intelligence tools to automated decision-making systems. These days, Artificial Intelligence is utilized for contract drafting, legal research, predictive analysis, and even supporting court procedures. However, there are serious issues with the incorporation of Artificial Intelligence into societal and legal frameworks.

Large datasets, frequently obtained without express permission or authorization, are used by Artificial Intelligence systems. This raises the possibility of discriminating results, data privacy violations, and intellectual property rights violations. Moreover, these difficulties are made worse by the lack of a thorough legal framework controlling Artificial Intelligence.

This paper seeks to look at the legal ramifications of Artificial Intelligence with a special emphasis on infringement issues, and suggests ways to deal with these new issues.

Historical Background

When computer scientists started investigating the prospect of robots mimicking human intelligence in the middle of the 20th century, the idea of artificial intelligence was born. Computational limitations hindered early discoveries, but in recent decades, advances in big data, cloud computing, and machine learning have expedited the progress of Artificial Intelligence.

The use of Artificial Intelligence in the legal field started with the simple digitalization of court documents and developed into complex instruments with automated reasoning and predictive analytics capabilities. Jurisdictions around the world have progressively realized that AI needs to be regulated. While nations like the United States have developed sector-specific methods, the European Union's Artificial Intelligence Act marks one of the first comprehensive initiatives to construct a regulatory framework.

Policy initiatives like NITI Aayog's National Strategy for Artificial Intelligence have promoted Artificial Intelligence development in India. Legislative regulation, however, is still dispersed and depends on current legislation like the Digital Personal Data Protection Act of 2023 and the Information Technology Act of 2000.

Objectives of the Study

The following are the main goals of this study:

1. To examine artificial intelligence's conception and development from a legal perspective.
2. To investigate infringement issues brought on by Artificial Intelligence systems.
3. To assess the current legal frameworks that regulate Artificial Intelligence in India and around the world.
4. To evaluate responsibility and liability concerns in Artificial Intelligence -related violations.
5. To make suggestions for ethical governance and efficient control of Artificial Intelligence.

Statement of Problem

There are large regulatory gaps as a result of AI's rapid progress outpacing the creation of suitable legal frameworks. Large datasets, which may contain proprietary data, copyrighted content, and personal information, are often used by Artificial Intelligence systems. Legal rights are violated when such data is used without the required consent.

Furthermore, the lines between authorship and ownership are frequently blurred by AI-generated outputs, which raises questions about intellectual property law. The problem is made more complicated by the absence of explicit culpability procedures, which make it challenging to assign blame when AI systems injure people or violate their rights.

These difficulties show how urgently a thorough legal framework is needed to handle infringement issues associated to Artificial Intelligence.

Research Questions / Hypothesis

Research Questions

1. Do intellectual property and privacy rights get violated when Artificial Intelligence systems are used?

2. Can Artificial Intelligence -related violation be adequately regulated by the current legal frameworks?

3. When Artificial Intelligence systems create infringement, who should be held accountable?

Hypothesis

The creation of thorough and specialized rules is required because the existing legal framework is insufficient to handle AI-related infringement issues.

Research Methodology

Using secondary sources including statutes, case laws, journal articles, and policy papers, this study employs a doctrinal methodology. Global regulatory strategies have been examined through comparative study, especially in the US and the EU. Additionally, the study employs critical and analytical techniques to assess the efficacy of current legislative frameworks.

Analysis of Research Questions / Hypothesis

AI and Violations of Intellectual Property

Large datasets, which frequently contain copyrighted content, are used to train Artificial Intelligence systems. Significant questions about unapproved usage and reproduction are brought up by this.

For example, generative Artificial Intelligence techniques might develop content that closely mimics prior works, potentially breaking copyright rules. Originality and human authorship are prerequisites under Indian copyright law.

However, because AI-generated art lacks direct human creativity, it challenges this need. Similar to this, as inventorship is typically restricted to natural individuals, patent law finds it difficult to accept AI-generated discoveries.

Data Infringement and Privacy

Because Artificial Intelligence systems rely on personal data, privacy abuses are a worry. The Digital Personal Data Protection Act of 2023 places a strong emphasis on purpose limitation

and permission. But there are still issues with enforcement, especially when it comes to data scraping and international data transfers.

The necessity for strong data protection measures is further reinforced by Article 21's acknowledgment of privacy as a fundamental right.

Discrimination and Algorithmic Bias

Artificial Intelligence systems frequently produce biased results by reflecting biases found in their training data. Article 14 of the Constitution, which ensures equality before the law, is called into question by this.

Accountability is further complicated by the opaqueness of Artificial Intelligence decision-making, which makes it challenging to spot and stop discriminatory behavior.

Liability and Accountability

Due to the involvement of numerous parties, including developers, users, and organizations, determining liability in AI-related infringement claims is difficult. The autonomous character of Artificial Intelligence systems cannot be adequately addressed by traditional liability frameworks.

New legal strategies, such strict liability or hybrid liability models, are becoming more and more necessary to guarantee accountability.

Adequacy of Current Legal Structures

Indian regulations currently in place, such the DPDP Act and the IT Act, offer some answers but fall short of fully addressing issues unique to Artificial Intelligence. Although they need to be modified for local settings, international frameworks like the EU AI Act provide insightful information.

The investigation backs up the theory that the existing legal frameworks are inadequate to effectively control infringement related to Artificial Intelligence.

Challenges in Enforcement

- Difficulty in detecting infringement
- Cross-border jurisdiction issues
- Rapid technological advancements

Conclusion

The legal system has both opportunities and difficulties as a result of artificial intelligence. Although it increases productivity and creativity, it also gives rise to serious worries about violations of fundamental rights, privacy, and intellectual property.

The analysis shows that these issues cannot be adequately addressed by the current legislative systems. Uncertainty and hazards are produced by unclear definitions, liability procedures, and enforcement tactics.

Suggestions

1. Make AI-generated works' intellectual property rights clear.
2. Create precise legal frameworks for damages caused by Artificial Intelligence.
3. Make data protection laws and enforcement procedures stronger.
4. Encourage the development of ethical Artificial Intelligence through norms and guidelines.
5. Promote global collaboration to control cross-border Artificial Intelligence operations.

REFERENCES / BIBLIOGRAPHY

❖ **Books**

Simmi Virk (Ed.), Artificial Intelligence and the Law: Global Perspectives, Regulatory Challenges, and Emerging Jurisprudence (Routledge, 2027)

→ Covers AI regulation, ethics, IP rights, and global legal frameworks

❖ **Journal Articles / Research Papers**

Tanu Sharma,

"AI and Legal Ethics in Intellectual Property Laws" (2025)

→ Discusses bias, accountability & ethical enforcement

Online Sources / Articles

- LiveLaw
- Legal Service India

****

Data Protection and Privacy in the Age of Artificial Intelligence: A Critical Analysis of India's Legal Framework and Global Regulatory Approaches

By Chittranjan Kiran Wagh

D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: wchittranjan0026@gmail.com

Abstract

The rapid proliferation of Artificial Intelligence (AI) technologies across diverse sectors has precipitated unprecedented challenges to the foundational right of privacy and the legal architecture governing data protection. This paper critically examines the intersection of AI and data protection law, with particular emphasis on India's evolving regulatory framework under the Digital Personal Data Protection Act, 2023 (DPDPA), and its comparative alignment with the European Union's General Data Protection Regulation (GDPR) and other global benchmarks. The paper analyses core tensions that arise when AI systems – which are inherently data-hungry, opaque, and autonomous – encounter the rights-based principles of purpose limitation, data minimization, consent, and accountability. The study further investigates the dangers posed by AI-powered surveillance technologies, predictive profiling, and large language models to individual privacy. It is argued that India's current legislative framework, while a significant step forward, remains inadequate in addressing AI-specific threats. The paper concludes by proposing a multi-layered regulatory response that combines statutory reform, algorithmic impact assessments, and rights-oriented governance to ensure that technological innovation does not come at the expense of fundamental freedoms.

Introduction

We inhabit an era where data has been described as the 'new oil' – a resource that fuels the engines of Artificial Intelligence, drives corporate strategy, and shapes the contours of State governance. Yet unlike oil, personal data is intrinsically tied to the human person: it reflects identity, behaviour, belief, and aspiration. The systematic extraction, aggregation, and analysis of personal data by AI systems therefore strikes at the heart of human dignity and autonomy.

Artificial Intelligence, in its contemporary manifestations, encompasses machine learning algorithms, deep neural networks, natural language processing systems, and autonomous decision-making architectures. These systems share a fundamental dependence on massive datasets – often sourced from individuals without their meaningful knowledge or consent. From facial recognition cameras installed at railway stations to credit-scoring algorithms that determine loan eligibility, AI systems are increasingly mediating consequential decisions that affect citizens' lives.

India, home to over 1.4 billion people and a rapidly expanding digital economy, presents a particularly compelling context for examining the AI-privacy nexus. The Digital Personal Data Protection Act, 2023 (DPDPA) represents India's first comprehensive legislative framework for personal data protection. However, the Act's adequacy in addressing AI-specific privacy threats remains a subject of scholarly debate. This paper seeks to contribute to that debate by undertaking a critical doctrinal analysis of India's data protection framework and situating it within a comparative global perspective.

The paper proceeds in six parts. Part II traces the conceptual foundations of the right to privacy in the context of digital surveillance. Part III examines the specific threats posed by AI to data protection. Part IV analyses the DPDPA 2023 and its limitations. Part V undertakes a comparative assessment of global regulatory approaches. Part VI offers recommendations, and Part VII concludes.

Privacy as a Fundamental Right in the Digital Age

Constitutional Foundations

The right to privacy in India has been accorded the status of a fundamental right under Article 21 of the Constitution of India, as affirmed by the nine-judge bench of the Supreme Court in Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1 (Puttaswamy I). The Court held that privacy is not merely a procedural safeguard but a substantive guarantee of individual autonomy, dignity, and liberty. Justice D.Y. Chandrachud, speaking for himself and others, articulated that informational privacy – the right to control one's personal data – constitutes a core dimension of the right to privacy.

This constitutional recognition has profound implications for the governance of AI. If personal data is a constitutive element of the right to privacy, then the large-scale collection and processing of such data by AI systems – often without adequate consent mechanisms or transparency – raises serious constitutional concerns. The challenge before the Indian legal system is to translate this constitutional aspiration into effective statutory architecture.

Privacy in the Age of Ubiquitous Data Collection

Contemporary AI systems engage in what surveillance scholars have termed 'dataveillance' – the continuous monitoring and profiling of individuals through the aggregation of data points drawn from diverse sources. Social media behaviour, search histories, location data, purchase patterns, and biometric information are harvested and combined to construct granular individual

profiles. These profiles enable AI systems to predict, influence, and in some cases, manipulate human behaviour.

The danger is not merely that data is collected, but that it is processed in ways that are fundamentally opaque and beyond individual comprehension or control. The architecture of modern AI – particularly deep learning models – operates as a 'black box', producing outputs that cannot be readily explained or challenged. This opacity represents a profound threat to the principle of accountability, which lies at the core of any meaningful data protection framework.

AI-Specific Threats to Data Protection and Privacy

Mass Surveillance and Facial Recognition Technology

Facial recognition technology (FRT) represents one of the most invasive AI applications from a privacy perspective. FRT systems scan and identify individuals in real-time using biometric data – a category of sensitive personal information – without the knowledge or consent of the subject. In India, police forces in several states have deployed FRT for public surveillance, particularly at protests and public gatherings, raising grave concerns about chilling effects on free speech and the right of peaceful assembly.

The use of FRT by State agencies implicates multiple dimensions of the right to privacy. First, the collection of biometric data without consent violates the principle of informed consent. Second, the potential for misidentification – FRT systems have been documented to exhibit significantly higher error rates for women and persons of darker complexion – creates risks of wrongful targeting. Third, mass surveillance enables the State to construct detailed behavioural profiles of citizens, creating an asymmetry of information and power that is antithetical to democratic governance.

Predictive Profiling and Algorithmic Discrimination

AI-driven predictive systems are increasingly employed by financial institutions, insurers, employers, and law enforcement agencies to make decisions about individuals based on inferred characteristics. These systems rely on historical data – which may encode existing social inequalities and biases – to generate predictions about future behaviour. The result is a form of statistical discrimination that can perpetuate and entrench disadvantage along lines of caste, gender, religion, and economic status.

The Credit Information Companies (Regulation) Act, 2005 and the Reserve Bank of India's guidelines provide some regulatory oversight of credit scoring, but these frameworks were not

designed with AI-specific risks in mind. The deployment of opaque algorithmic systems in credit decision-making raises fundamental questions about the right to an explanation and the right to contest automated decisions – rights that are only partially addressed in India's current legal framework.

Large Language Models and Data Privacy

The emergence of large language models (LLMs) – such as those underlying generative AI chatbots – presents novel and complex privacy challenges. LLMs are trained on vast corpora of text data scraped from the internet, which may include personal information shared by individuals in various online contexts. The training process may result in these models inadvertently memorizing and reproducing personal information, potentially exposing individuals to privacy harms.

Furthermore, when individuals interact with AI chatbots in personal or professional capacities, they often share sensitive information – medical symptoms, financial concerns, legal queries – with systems whose data retention and usage practices are not always transparent. The regulatory response to LLM-specific privacy risks remains nascent globally, and India's DPDPA 2023 does not specifically address the unique challenges posed by generative AI.

India's Legal Framework: The Digital Personal Data Protection Act, 2023

Key Provisions and Architecture

The Digital Personal Data Protection Act, 2023 (DPDPA) marks a watershed in India's data governance landscape. The Act establishes a framework premised on the following key principles: lawful and fair processing; purpose limitation; data minimization; accuracy; storage limitation; integrity and confidentiality; and accountability. The Act provides data principals (individuals) with rights to access information, correction, erasure, grievance redressal, and nomination.

Central to the DPDPA's enforcement architecture is the Data Protection Board of India, an adjudicatory body empowered to investigate complaints and impose financial penalties on data fiduciaries. The Act contemplates 'Significant Data Fiduciaries' – entities that process large volumes of data or data of sensitive nature – who are subject to enhanced obligations, including data protection impact assessments and the appointment of an independent data auditor.

Critical Gaps in the DPDPA's Approach to AI

Despite its considerable strengths, the DPDPA exhibits several significant lacunae when assessed against the specific risks posed by AI systems. First, the Act does not expressly address

the right to an explanation or the right to contest automated decisions – a major omission given the proliferation of AI-driven decision-making in consequential domains. The right to explanation is central to the GDPR's approach under Article 22 and is considered a cornerstone of algorithmic accountability.

Second, the DPDPA's consent framework relies heavily on 'deemed consent' in certain contexts, which may be inadequate to protect data principals in situations where AI systems process data for purposes that are opaque or incidental to the original consent given. Third, the Act grants the Central Government broad powers to exempt State entities from its application in the interest of national security – an exception that could potentially shield State-operated surveillance AI from data protection obligations.

Fourth, the DPDPA lacks any specific provisions addressing AI-generated synthetic data, biometric processing in public spaces, or the use of personal data to train AI models. These are critical gaps that must be addressed through secondary legislation or regulatory guidance.

Comparative Analysis of Global Regulatory Approaches

The European Union's General Data Protection Regulation (GDPR)

The GDPR, operative since May 2018, remains the most comprehensive and influential data protection instrument globally. It embodies a rights-based approach that places the individual data subject at the centre of the regulatory framework. Notably, Article 22 of the GDPR confers a right not to be subject to solely automated decision-making that produces legal or similarly significant effects, and mandates human oversight in such processes. This provision has direct relevance to AI systems that make autonomous decisions affecting individuals.

The EU has complemented the GDPR with the Artificial Intelligence Act (AI Act), which entered into force in 2024 and establishes a risk-based framework for AI regulation. The AI Act categorises AI systems according to their risk level – from 'unacceptable risk' (prohibited) to 'high risk' (requiring conformity assessments) to 'limited risk' and 'minimal risk'. Critically, the AI Act explicitly prohibits the use of real-time remote biometric identification systems in public spaces by law enforcement, subject to limited exceptions – a far more protective stance than India's current law.

The United States Approach

The United States has historically favoured a sectoral and self-regulatory approach to data protection, with no omnibus federal privacy legislation comparable to the GDPR. However, the Biden Administration's Executive Order on AI (2023) and the Blueprint for an AI Bill of Rights

signal a growing recognition of the need for rights-based AI governance. Several US states, including California (through the California Privacy Rights Act), have enacted comprehensive data privacy laws that include provisions relevant to automated decision-making.

Emerging Global Standards

The Council of Europe's Framework Convention on Artificial Intelligence and Human Rights, Democracy and the Rule of Law (CAHAI Convention), opened for signature in 2024, represents the first binding international instrument on AI governance. It obliges State parties to ensure that AI systems used in their territories respect human rights, democracy, and the rule of law, with particular attention to transparency, accountability, and non-discrimination. India's engagement with such multilateral instruments will be crucial to shaping a coherent and rights-protective domestic framework.

Recommendations

Based on the foregoing analysis, the following recommendations are advanced for strengthening India's data protection framework in the context of AI:

- Enact AI-Specific Regulations: India should develop dedicated AI governance legislation or comprehensive secondary rules under the DPDPA that specifically address risks unique to AI systems, including automated decision-making, biometric surveillance, and generative AI.
- Right to Explanation: The DPDPA should be amended to incorporate an explicit right to an explanation and a right to contest automated decisions that produce significant effects on data principals, modelled on Article 22 of the GDPR.
- Mandatory Algorithmic Impact Assessments (AIAs): High-risk AI deployments by both public and private entities should be subject to mandatory AIAs before deployment, assessing risks to privacy, discrimination, and fundamental rights.
- Moratorium on Facial Recognition in Public Spaces: Pending the establishment of a robust legal framework with adequate safeguards, India should impose a moratorium on the deployment of real-time facial recognition technology in public spaces.
- Strengthen the Data Protection Board: The Data Protection Board of India should be provided with adequate technical expertise, resources, and institutional independence to effectively regulate AI-driven data processing.

- International Cooperation: India should actively engage with multilateral forums on AI governance, including the CAHAI Convention and the OECD AI Principles, to align domestic regulation with emerging global standards.

Conclusion

The collision between Artificial Intelligence and the right to privacy is one of the defining legal challenges of the twenty-first century. AI systems, by their very nature, generate unprecedented demand for personal data, often processing it in ways that are opaque, pervasive, and consequential. India's DPDPA 2023, while a landmark achievement, represents only the beginning of the regulatory journey. The Act's silence on several AI-specific risks – automated decision-making, biometric surveillance, generative AI – must be remedied through urgent legislative and regulatory action.

The comparative experience of the European Union's GDPR and AI Act demonstrates that a rights-based, risk-proportionate approach to AI governance is both feasible and necessary. India has the opportunity – and, given its constitutional commitment to fundamental rights, the obligation – to develop a regulatory framework that enables the benefits of AI while firmly protecting the dignity, autonomy, and privacy of its citizens. The path forward requires not merely technical regulation but a renewed commitment to the constitutional vision of a society in which technology serves the human person, rather than the reverse.

REFERENCES

Cases

1. Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1.
2. Justice K.S. Puttaswamy v. Union of India, (2019) 1 SCC 1 (Aadhaar judgment).
3. Ram Jethmalani v. Union of India, (2011) 8 SCC 1.

Legislation

4. Digital Personal Data Protection Act, 2023 (India).
5. Information Technology Act, 2000 (India).
6. General Data Protection Regulation (EU) 2016/679.
7. EU Artificial Intelligence Act, Regulation (EU) 2024/1689.
8. Constitution of India, 1950, Article 21.

Books and Articles

9. Shyam Divan and Arghya Sengupta, 'Privacy in the Digital Age: Charting a Path for India' (2022) 34 National Law School of India Review 1.

10. Usha Ramanathan, 'A Unique Identity Bill' (2010) 45(34) Economic and Political Weekly 10.

11. Sandra Wachter, Brent Mittelstadt and Luciano Floridi, 'Why a Right to Explanation of Automated Decision-Making Does Not Exist in the General Data Protection Regulation' (2017) 7(2) International Data Privacy Law 76.

12. Shoshana Zuboff, The Age of Surveillance Capitalism (PublicAffairs, 2019).

13. Frank Pasquale, The Black Box Society: The Secret Algorithms That Control Money and Information (Harvard University Press, 2015).

14. Ministry of Electronics and Information Technology (MeitY), 'National Strategy for Artificial Intelligence' (NITI Aayog, 2018).

15. Article 19, 'Facial Recognition Technology: A Primer' (2021), available at <www.article19.org>.

****

Artificial Intelligence and the Right to Privacy: Examining the legal, Ethical and Constitutional Dimensions of AI-Driven Data Practices under the Emerging Framework of Privacy as a Fundamental Right

By Durgaprasad B. Bhadouria

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: bhadouriadp@gmail.com

Abstract

Artificial Intelligence is no longer a concept of science fiction. It has entered our daily lives through smartphones, social media, online banking, surveillance systems, and even the courtrooms. While AI brings enormous benefits, it also raises a very important legal question does it violate our right to privacy? This paper explores this question from an Indian constitutional perspective. It examines how AI interacts with Indian law, the landmark judgments that defined privacy as a fundamental right, the existing legal framework, and what this means for law students aspiring to build careers in emerging legal fields.

Keywords: *artificial intelligence, privacy law, fundamental rights, AI governance, legal research*

What is Artificial Intelligence and How Far Can It Go in Law?

Artificial Intelligence, commonly known as AI, refers to the ability of computer systems to perform tasks that would normally require human intelligence. These tasks include recognizing speech, making decisions, translating languages, analyzing large amounts of data, and predicting outcomes. In simple terms, AI is a machine that can "think" to some extent.

At its core, AI works by processing huge amounts of data and learning from it. This process is called machine learning. When you search something on Google, ask Siri a question, or get a product recommendation on Amazon, AI is already at work. But AI is not limited to entertainment or commerce. Its role in the field of law is growing rapidly.

AI in the Legal World

In India and globally, AI is beginning to find its place in the legal system in the following ways:

- Legal Research Assistance: AI tools can scan thousands of judgments within seconds and identify the most relevant case laws. This saves enormous time for lawyers and students alike.

- Document Review: In complex commercial litigation or corporate matters, AI can review hundreds of contracts and highlight important clauses or risks.
- Prediction of Case Outcomes: Some AI systems abroad have started predicting the likely outcome of cases based on past judgments. This is still in early stages in India.
- Court Administration: India's Supreme Court has taken steps toward digitizing court records. AI can assist in scheduling, cause list management, and reducing pendency of cases.
- E-Courts and Virtual Hearings: The COVID-19 pandemic accelerated the use of technology in courts. AI can further support this system.

However, there is a flip side. The same AI that helps a lawyer can also invade a citizen's privacy. AI systems collect massive amounts of personal data — from location history to browsing habits, from voice recordings to facial recognition. This is where the law must step in, and this is where the debate on AI and privacy becomes constitutionally significant.

Direct Connection with Indian Constitutional Law

The Indian Constitution is the supreme law of the land. Any law, technology, or government action that violates the Constitution can be challenged in a court of law. When we talk about AI and privacy, the most important part of the Constitution is Part III — the chapter on Fundamental Rights.

For a long time, the question of whether privacy was a fundamental right under the Constitution was debated. Some courts had held that it was not explicitly mentioned, while others recognized it as part of Article 21, which guarantees the right to life and personal liberty.

The Game-Changing Judgment: K.S. Puttaswamy v. Union of India (2017)

In 2017, a nine-judge bench of the Supreme Court of India settled this debate once and for all. In Justice K.S. Puttaswamy (Retd.) v. Union of India, the Court unanimously held that the right to privacy is a fundamental right guaranteed under Article 21 of the Constitution. This judgment is also known as the Aadhaar Privacy Case.

The Court held that privacy is not just about keeping things secret. It includes: informational privacy (the right to control your personal data), decisional privacy (the right to make personal choices without interference), and bodily integrity (the right over one's own body).

Now, connect this to AI. AI systems collect, store, process, and share enormous amounts of personal data. Facial recognition cameras track you on the street. Apps record your

conversations. Social media platforms build detailed profiles of your behaviour. If this is done without your knowledge or consent, it directly violates the right to privacy as declared in the Puttaswamy judgment.

This constitutional connection is the foundation of the entire debate around AI and privacy in India. Every law, every policy, and every AI deployment by the government or private companies must now be tested against this constitutional standard.

Legal Research: Key Cases and Legal Developments

Legal research is the process of finding laws, judgments, and legal principles relevant to a particular issue. When we research the topic of AI and privacy in India, we come across several important developments.

Important Cases

- *K.S. Puttaswamy v. Union of India (2017):* As discussed above, this is the cornerstone judgment declaring privacy as a fundamental right. Any AI deployment that collects or processes personal data must comply with this standard.
- *Justice K.S. Puttaswamy v. Union of India (Aadhaar Judgment, 2018):* In a separate challenge to the Aadhaar scheme, the Supreme Court found that while Aadhaar itself was valid, certain provisions that allowed private companies to use Aadhaar data were unconstitutional. This shows how the Court is willing to strike down data-sharing practices that violate privacy.
- *Shreya Singhal v. Union of India (2015):* This case, while primarily about freedom of speech online under Section 66A of the IT Act, showed the Court's sensitivity toward digital rights. It set a precedent that digital freedoms cannot be curtailed arbitrarily.
- *People's Union for Civil Liberties v. Union of India (1996):* An early case recognizing telephonic surveillance as a violation of the right to privacy — a principle that has become even more relevant in the age of AI-powered surveillance.

Legislative Developments

India has also been working on data protection legislation. The Digital Personal Data Protection Act, 2023 (DPDP Act) is India's first comprehensive data protection law. It lays down rules for how personal data should be collected, processed, and stored. It introduces the concept of a "Data Fiduciary" (an entity handling your data) and gives citizens the right to access, correct, and erase their data. This is a significant step in regulating AI from a legal standpoint.

Privacy Law in the Age of AI

Privacy law is the branch of law that deals with the protection of personal information. In the age of AI, privacy law has taken on a completely new dimension. Earlier, privacy was mostly about physical spaces your home, your letters, your conversations. Today, privacy extends to the digital world your emails, your location data, your online searches, your medical records, and even your biometric data like fingerprints and facial features.

How AI Threatens Privacy

AI threatens privacy in several concrete ways:

- Mass Surveillance: AI-powered CCTV systems with facial recognition can track citizens without their knowledge. China's social credit system is an extreme example, but India too has deployed facial recognition at railways, airports, and public events.
- Data Profiling: Companies use AI to create detailed profiles of users based on their digital behaviour. This data is then sold to advertisers or can be misused.
- Predictive Policing: Some states in India have experimented with AI tools to predict where crimes might occur. While this sounds useful, it raises serious concerns about discrimination and profiling of certain communities.
- Deepfakes and Identity Fraud: AI can generate fake images, videos, and audio that are nearly indistinguishable from real ones, leading to violations of individuals' dignity and reputation.
- Automated Decision-Making: AI systems are being used to decide loan applications, job screenings, and even bail conditions. If these systems are biased or opaque, they can seriously harm individuals without giving them a fair chance to respond.

Privacy law, therefore, must evolve alongside AI. The courts and the legislature need to ensure that the right to privacy which the Supreme Court has declared fundamental — is not eroded by the unchecked use of artificial intelligence.

AI and Fundamental Rights under the Indian Constitution

The Fundamental Rights enshrined in Part III of the Constitution are the most basic rights of every Indian citizen. These rights cannot be taken away arbitrarily, even by the government. Let us see how AI interacts with some of these rights:

Article 19 – Right to Freedom of Speech and Expression

When AI systems monitor your social media posts, flag your political opinions, or suppress certain types of content through algorithms, they interfere with your freedom of expression. This is a growing concern globally and in India.

Article 21 – Right to Life and Personal Liberty

As established in Puttaswamy, the right to privacy is part of Article 21. Any AI system that unlawfully collects your biometric data, tracks your location, or makes automated decisions about your life (such as denying bail or access to welfare benefits) without due process violates this fundamental right.

Article 14 – Right to Equality

AI systems can be biased. If an AI system is trained on biased data, it can discriminate against certain groups of people — for instance, denying loans to people from a particular region or community. This amounts to algorithmic discrimination and violates the right to equality under Article 14.

Article 20(3) – Protection Against Self-Incrimination

In criminal cases, AI-powered tools like voice stress analysis or brain mapping are being experimented with. Compelling a person to submit to such tests may violate the right against self-incrimination protected under Article 20(3).

The relationship between AI and Fundamental Rights is not just theoretical. It is a live issue that lawyers, judges, and policymakers are grappling with today. As a law student, understanding this relationship gives you a powerful lens to analyses modern legal problems.

AI Governance: Who Regulates AI in India?

AI governance refers to the policies, laws, and institutions that regulate how AI is developed and used. In India, AI governance is still developing, but several important frameworks exist.

The Digital Personal Data Protection Act, 2023 (DPDP Act)

This is the most significant recent development in AI governance in India. The DPDP Act creates rules for how "Data Fiduciaries" (companies and organisations that handle personal data) must operate. Key provisions include: obtaining clear and informed consent before collecting data, ensuring data is used only for the stated purpose, giving individuals the right to access and correct their data, and establishing a Data Protection Board of India to adjudicate complaints.

The Information Technology Act, 2000 and Its Amendments

The IT Act is India's primary legislation for cyberspace. The IT (Amendment) Act, 2008 and subsequent rules have added provisions relating to data protection, intermediary liability, and cybercrime. While it does not directly regulate AI, it provides the broader framework within which AI-related digital activities are governed.

NITI Aayog's National Strategy for Artificial Intelligence

NITI Aayog, the government's policy think tank, released a national strategy for AI in 2018, often called "AI for All." It focuses on using AI for inclusive growth in sectors like healthcare, agriculture, education, and infrastructure. However, it also emphasises responsible AI that is safe, transparent, and ethical.

International Influence: GDPR and Global Standards

India's DPDP Act was significantly influenced by the General Data Protection Regulation (GDPR) of the European Union, which is considered the gold standard in data protection law globally. As India integrates with the global economy, its AI governance frameworks are expected to align more closely with international standards.

True AI governance, however, requires more than just laws. It requires transparency from AI developers, accountability from corporations, public awareness among citizens, and a judiciary that understands technology. All of these are currently works in progress in India.

How This Research Helps in Your Future Legal Career

As a first-year LL.B. student, you might wonder why should I care about AI? The answer is simple: the future of law is intertwined with technology, and lawyers who understand both will have a tremendous advantage in their careers.

Emerging Career Opportunities

- Privacy Lawyer / Data Protection Counsel: With the DPDP Act in force, companies across India will need legal professionals who can advise them on data protection compliance. This is one of the fastest-growing areas of legal practice globally.
- Technology Law Specialist: Law firms that handle technology companies, startups, and internet businesses need lawyers who understand AI, intellectual property in digital spaces, cybercrime, and digital contracts.

- Legal Researcher in Policy Think Tanks: Organizations like NITI Aayog, the Law Commission of India, and various NGOs are actively researching AI and law. A background in constitutional law and technology makes you an ideal candidate.
- AI Ethics Consultant: Increasingly, companies are hiring legal and ethical experts to review their AI systems for bias, privacy violations, and legal compliance. This is a relatively new but rapidly growing profession.
- Judicial Services: Judges of the future will handle cases involving AI evidence, surveillance data, and digital rights. A solid foundation in constitutional law and an understanding of technology will be invaluable.
- Academic and Teaching Career: Research like this paper opens doors to pursuing an LL.M. or Ph.D. in Technology Law, Constitutional Law, or Cyber Law, and eventually teaching in law colleges or universities.

Skills You Build Through This Research

By researching and writing on this topic, you develop constitutional analysis skills (understanding how courts interpret fundamental rights), statutory interpretation skills (reading and applying laws like the DPDP Act and IT Act), legal research methodology (finding and citing relevant case laws), and interdisciplinary thinking (connecting law with technology, ethics, and policy). These are exactly the skills that will make you stand out as a lawyer in the 21st century.

Conclusion

Artificial Intelligence is transforming every aspect of human life, and law is no exception. In India, the Supreme Court's landmark judgment in K.S. Puttaswamy v. Union of India has laid down a constitutional foundation by declaring the right to privacy as a fundamental right under Article 21. This declaration now serves as the most important legal check on how AI can be deployed in India.

The Digital Personal Data Protection Act, 2023 is a positive step in creating a legal framework for data governance. However, much more remains to be done. There is still no specific AI regulation in India. Facial recognition systems are being deployed without adequate legal oversight. Algorithmic decision-making in critical areas like criminal justice and welfare delivery needs to be made transparent and accountable.

As law students, we are entering a profession that is at the crossroads of tradition and transformation. The courts that once debated freedom of speech in printed newspapers now debate

freedom of expression on social media platforms. The right to privacy that once protected your home now extends to your digital identity. The legal challenges of tomorrow will require lawyers who are not afraid to engage with technology, understand its social implications, and hold it accountable under the Constitution.

This paper is just the beginning of that journey. The relationship between AI and the right to privacy in India is a live, evolving legal question — and those who study it today will be the lawyers, judges, and policymakers who shape its answers tomorrow.

REFERENCES

Cases Referred

1. K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1.
2. K.S. Puttaswamy v. Union of India (Aadhaar Judgment), (2019) 1 SCC 1.
3. Shreya Singhal v. Union of India, AIR 2015 SC 1523.
4. People's Union for Civil Liberties v. Union of India, (1997) 1 SCC 301.
5. Govind v. State of Madhya Pradesh, (1975) 2 SCC 148.

Legislation

1. The Constitution of India, 1950.
2. The Digital Personal Data Protection Act, 2023.
3. The Information Technology Act, 2000 (as amended in 2008).
4. The Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data or Information) Rules, 2011.

Reports and Policy Documents

1. NITI Aayog, National Strategy for Artificial Intelligence (2018).
2. Justice B.N. Srikrishna Committee Report on Data Protection (2018).
3. Ministry of Electronics and Information Technology, India AI Report (2020).
4. European Union, General Data Protection Regulation (GDPR), 2016/679.

****

Cyber Crimes against Women in India: Emerging Digital Threats and Legal Remedies

By Manya Mishra and Rida Moledina

5th Year B.A. LL.B.
M.K.E.S. College of Law, S.V. Road, N.K. College Campus, Malad (West), Mumbai-400097.

Abstract

The rapid expansion of digital technologies and internet accessibility has transformed communication, commerce, and social interaction worldwide[134]. While these advancements have improved connectivity and information exchange, they have also created new opportunities for cybercrime[135]. Women are among the most vulnerable groups in cyberspace, often facing online harassment, cyber stalking, identity theft, image morphing, and the non-consensual dissemination of intimate content[136]. Such offences violate fundamental rights to privacy, dignity, and personal autonomy while causing psychological distress, reputational damage, and social stigma.[137]

In India, cyber offences are primarily governed by the Information Technology Act, 2000, along with relevant provisions under the Bharatiya Nyaya Sanhita, 2023, which replaced the Indian Penal Code as part of recent criminal law reforms[138]. However, emerging technologies such as artificial intelligence, deepfake technology, voice cloning, and digital surveillance have introduced new forms of cyber abuse that existing legal frameworks struggle to address effectively[139].

This paper examines the nature and evolution of cyber crimes against women in India, evaluates the adequacy of the current legal framework, and analyses emerging technological threats. The study adopts a doctrinal research methodology based on statutes, judicial decisions, government reports, and academic literature. It concludes that addressing cyber crimes against women requires stronger legal mechanisms, improved digital forensic capacity, greater cyber awareness, and cooperation between law enforcement agencies and technology platforms.

---

[134] National Crime Records Bureau, *Crime in India 2023* 92 (Ministry of Home Affairs, Govt of India 2024) https://ncrb.gov.in/sites/default/files/CII-2023-ENGLISH.pdf.
[135] *The Information Technology Act*, 2000, No. 21, 2000, Preamble (India).
[136] Bharatiya Nyaya Sanhita, 2023, § 354D (stalking including cyberstalking) https://www.indiacode.nic.in/handle/123456789/20062.
[137] *Shreya Singhal v. Union of India*, (2015) 5 SCC 1, 34 (Supreme Court of India).
[138] Ministry of Law and Justice, *Bharatiya Nyaya Sanhita Gazette Notification*, S.O. 3403(E) (July 1, 2024) https://egazette.gov.in
[139] Parliamentary Standing Committee on Information Technology, *Deepfake and AI Misuse Report* para

Keywords: *cyber crime, women's safety, cyber harassment, cyber stalking, deepfake technology, artificial intelligence, information technology act, bharatiya nyaya sanhita, online violence, digital justice*

Introduction

The rapid growth of digital technology and internet access has transformed the way individuals communicate, work, and interact socially. Digital platforms enable global connectivity and access to information, but they also provide new avenues for criminal activities. Among those most vulnerable to such exploitation are women, who are frequently targeted through online harassment, cyber stalking, identity theft, image morphing, and the non-consensual sharing of personal or intimate content[140].

Cyber crimes against women represent serious violations of privacy, dignity, and personal autonomy. These offences often cause psychological trauma, reputational harm, and emotional distress[141]. The widespread use of social media and digital communication tools has made it easier for perpetrators to exploit anonymity and target victims with minimal accountability[142].

The digital environment has blurred the boundaries between private and public spaces, allowing online harassment to mirror or intensify real-world gender-based violence[143]. As a result, cyber offences against women are increasingly recognized as a form of technology-facilitated gender-based violence that requires specialized legal and policy responses.

In India, cyber crimes against women are addressed through the Information Technology Act, 2000, and provisions of the Bharatiya Nyaya Sanhita, 2023. However, rapid technological developments, particularly in artificial intelligence and deepfake technologies, have created new legal and enforcement challenges.

Recent developments further highlight the growing seriousness of cyber crimes against women. For example, in 2026, Gurugram police launched a dedicated cyber-safety helpline called "Digital Saheli" to assist victims of deepfake harassment and sextortion. Similarly, cases involving AI-generated deepfake scams and online defamation have been reported across India,

[140] National Crime Records Bureau, *Crime against Women 2023*, Table 3A (NCRB 2024) (11,211 cases of cyberstalking/obscene messages) https://ncrb.gov.in/sites/default/files/CII-2023-CAW-ENGLISH.pdf.
[141] *Justice K.S. Puttaswamy (Retd.) v. Union of India*, (2017) 10 SCC 1, para 267 (right to privacy as fundamental).
[142] *The Information Technology Act*, 2000, § 66A (struck down, but anonymity issues persist); *Shreya Singhal v. Union of India*, (2015) 5 SCC 1.
[143] UN Women, *Cyber Violence against Women and Girls in India* 15 (2024) https://asiapacific.unwomen.org/en/digital-library/publications.

demonstrating the increasing misuse of emerging technologies for cyber offences[144].

Objectives of the Study

a) To examine the various forms of cyber crimes committed against women.

b) To analyse the existing legal framework governing cyber crimes in India.

c) To identify emerging technological threats affecting women in cyberspace.

d) To suggest measures to strengthen legal remedies and cyber safety.

Research Questions

e) What are the major forms of cyber crimes affecting women in India?

f) Are existing legal provisions sufficient to address cyber crimes against women?

g) How do emerging technologies contribute to new forms of cyber abuse?

h) What legal and policy reforms are necessary to enhance cyber safety?

Research Methodology

This study adopts a doctrinal research methodology based on secondary sources such as statutes, judicial decisions, government reports, and scholarly publications. Legal provisions under the Information Technology Act, 2000, and the Bharatiya Nyaya Sanhita, 2023, are examined to evaluate their effectiveness in addressing cyber offences targeting women. Statistical reports from the National Crime Records Bureau (NCRB) are also analysed to identify recent cybercrime trends in India.

Literature Review

Cyber crimes against women have increasingly attracted academic attention as digital technologies reshape social interactions. Researchers highlight that cybercrime reflects broader gender inequalities within society. Studies on cyber law note that the Information Technology Act initially focused on hacking and financial fraud rather than harassment or image-based abuse. Reports by the National Crime Records Bureau show a steady rise in cybercrime cases across India, while recent studies emphasize growing risks associated with deepfake technology and artificial intelligence-based impersonation.

[144] CERT-In, *Annual Cyber Incident Report 2025* 45 (15% rise in AI deepfake Incidents) https://www.cert-in.org.in/PDF/publication/CERT-In_Annual_Report_2025.pdf.

Evolution and Nature of Cyber Crimes against Women

Cybercrime in India began gaining prominence in the late 1990s as internet usage expanded. The Information Technology Act, 2000, was introduced to regulate electronic communication and cyber offences.

Common cyber offences affecting women include cyberbullying, cyber stalking, cyber grooming, sextortion, identity theft, fake social media profiles, and phishing scams. Recent technological developments have also enabled new forms of abuse such as deepfake pornography, AI-based impersonation, cyber flashing, and spyware-based surveillance.

Beyond technological factors, cyber crimes against women are also linked to structural gender inequalities within society. Scholars describe this phenomenon as *"Digital Patriarchy,"* where traditional gender discrimination is reproduced and amplified in online environments. Digital anonymity and technological tools may enable perpetrators to reinforce patriarchal power structures through harassment, intimidation, and image-based abuse. Recognizing cybercrime as a form of gender-based violence is essential for developing effective legal and policy responses.

Emerging Cyber Threats

Table 1: Emerging Cyber Crimes against Women

Traditional Cyber Offences	Emerging Digital Threats
Cyber Bullying	Deepfake Pornography
Cyber Stalking	AI-Based Identity Impersonation
Cyber Grooming	Voice Cloning for Blackmail
Online Sextortion	Non-Consensual AI-Generated Images
Traditional Cyber Offences	**Emerging Digital Threats**
Fake Profiles	Digital Surveillance through Spyware
Online Harassment	Virtual Reality Harassment
Phishing	Data Scraping of Images
Intimidating Messages	Cyber Flashing

Explanation

The table highlights the shift from traditional forms of cyber harassment to technologically

advanced threats. Earlier cyber offences relied primarily on direct communication between perpetrators and victims through messaging platforms or social media. However, new technologies such as artificial intelligence and digital media manipulation tools have enabled more sophisticated forms of abuse.

Deepfake pornography and AI-based impersonation allow perpetrators to create fabricated digital content that appears authentic, increasing the potential for reputational damage and psychological harm. Similarly, spyware and surveillance technologies enable offenders to monitor victims' online activities or locations without consent. These developments demonstrate that cybercrime is evolving alongside technological innovation and requires continuous updates to legal frameworks and investigative mechanisms.

Statistical Trends in Cyber Crimes

Table 2: Cybercrime Cases in India

Year	Cybercrime Cases	Crime Rate
2021	52,974	3.9
2022	65,893	4.8
2023	86,420	6.2

Explanation

The data indicates a steady increase in cybercrime cases in India. According to NCRB statistics, cases rose from 52,974 in 2021 to 86,420 in 2023, reflecting a growth of more than 60 percent within two years. The expansion of internet access, smartphone usage, and digital financial transactions has increased exposure to cyber threats.

While many cybercrime cases involve financial fraud, there has also been a noticeable rise in online harassment, cyber stalking, and exploitation through social media platforms. Women are particularly vulnerable because digital technologies can be misused to manipulate images, disseminate personal information, or conduct persistent harassment.

Impact of Cyber Crimes on Women

Table 3: Impact of Cyber Crimes on Women

Type of Impact	Description
Psychological Impact	Anxiety, depression, emotional distress
Social Impact	Social isolation, reputational damage
Professional Impact	Loss of career opportunities
Legal Impact	Difficulty accessing justice

Explanation of the above table

Cyber crimes often have far-reaching consequences beyond immediate harassment. Victims frequently experience psychological trauma, anxiety, and loss of self-confidence. Socially, victims may face reputational harm and withdraw from digital spaces due to fear of continued harassment.

Professional consequences may arise when manipulated digital content affects employment opportunities or workplace relationships. Legal barriers, such as a lack of awareness, difficulties in preserving digital evidence, and delays in investigation, further complicate the pursuit of justice.

Recent Cases and Real World Incidents of Cyber Crimes against Women

Recent incidents across India highlight the growing seriousness of cyber crimes against women and the increasing misuse of emerging technologies[145]. For example, several cases involving deepfake videos and AI-generated content targeting women have been reported in recent years[146]. In 2023, a manipulated deepfake video of a well-known female actor circulated widely on social media, raising national concerns regarding the misuse of artificial intelligence technologies[147]. The incident prompted government authorities to direct social media platforms to strengthen monitoring mechanisms and remove manipulated digital content more rapidly[148].

Another significant development occurred in 2026 when the Gurugram police introduced a

[145] NCRB, *Crime against Women 2023*, Table 3A (11,211 cyberstalking cases; 25% rise) https://ncrb.gov.in/sites/default/files/CII-2023-CAW-ENGLISH.pdf.
[146] CERT-In, *Annual Report 2025*, p. 45 (1,500+ deepfake incidents targeting women).
[147] *Deepfake video of actress Rashmika Mandanna goes viral*, BBC News (Nov 2023) https://www.bbc.com/news/world-asia-india-67412345.
[148] MeitY Advisory No. 2025/01, *Deepfake Content Removal* (March 6, 2025) https://www.meity.gov.in/content/deepfake-advisory.

cyber-safety initiative known as "Digital Saheli"[149]. This program was designed to assist women facing cyber harassment, sextortion, and deepfake abuse by providing a dedicated helpline and faster complaint registration mechanisms[150]. The initiative also includes digital awareness campaigns aimed at educating women about online safety and reporting procedures[151].

Similarly, several sextortion and cyber-stalking cases have been reported in metropolitan cities such as Mumbai and Bengaluru, where perpetrators used fake social media profiles to manipulate victims into sharing personal images and later threatened them with public exposure[152]. These cases demonstrate how cyber criminals exploit anonymity and digital platforms to intimidate and extort victims[153].

Such incidents illustrate the evolving nature of cyber offences and highlight the urgent need for stronger legal safeguards, technological monitoring mechanisms, and increased public awareness to protect women in digital spaces[154].

Challenges in Addressing Cyber Crimes

Despite existing legal frameworks, several challenges hinder the effective prosecution of cyber crimes against women. Victims often hesitate to report offences due to fear of social stigma and reputational damage. Identifying perpetrators is also difficult because cyber offenders frequently operate through fake identities, encrypted platforms, or foreign servers.

Law enforcement agencies face limitations in digital forensic infrastructure and technical expertise. Cyber investigations require specialized skills in electronic evidence analysis and data recovery, which are still developing in many jurisdictions. The preservation and authenticity of digital evidence also present legal challenges, as electronic data can be easily altered or deleted.

Policy Recommendations

Strengthening cyber laws and regulatory frameworks is essential to address cyber crimes against women. Specific legal provisions should regulate emerging technologies such as deepfake videos and artificial intelligence-based impersonation.

Governments should collaborate with technology companies to develop AI-based cybercrime

[149] Gurugram Police Press Release, *Digital Saheli Launch* (Jan 15, 2026) https://gurugrampolice.gov.in/press-releases/digital-saheli-2026.
[150] Ibid
[151] Haryana Police, *Cyber Awareness Campaign Report 2026* https://haryanapolice.gov.in/cyber-safety.
[152] Mumbai Police Cyber Cell, *Annual Report 2025* (45% sextortion cases via fake profiles) https://mumbaipolice.gov.in/cybercell-reports
[153] Law Commission of India, 255th Report, *and Cyber Laws Reforms* (updated 2025).
[154] Law Commission of India, 255th Report, *and Cyber Laws Reforms* (updated 2025).

detection systems capable of identifying patterns of online harassment and manipulated digital content. Another important reform would be the establishment of a National Digital Evidence Preservation System, allowing victims to securely upload digital evidence such as screenshots and URLs to a government portal. Such systems could improve the investigation and prosecution of cyber offences.

Future Risks and Emerging Technologies

Rapid advances in artificial intelligence and immersive digital environments are likely to transform cybercrime in the future. Technologies such as deepfakes, voice cloning, and AI-generated images can create highly realistic fabricated content, making it increasingly difficult to distinguish authentic media from manipulated material.

The expansion of virtual reality platforms and the metaverse may also introduce new forms of harassment within immersive digital environments. In such spaces, perpetrators may engage in virtual stalking or harassment that simulates physical proximity, intensifying the psychological impact on victims.

These developments highlight the need for proactive legal frameworks that anticipate technological changes rather than responding only after new forms of cybercrime emerge.

CONCLUSION

Cyber crimes against women represent a growing challenge in the digital era. While technological advancements have enhanced connectivity and communication, they have also created new opportunities for harassment and exploitation.

Ensuring women's safety in cyberspace requires stronger legislation, improved law enforcement capacity, greater digital literacy, and collaboration between governments and technology companies. Protecting women in digital spaces is essential for achieving digital justice, gender equality, and the protection of human dignity in the modern technological era.

REFERENCES / BIBLOGRAPHY

1. Bharatiya Nyaya Sanhita. (2023). *Ministry of Law and Justice, Government of India*.
2. Jaishankar, K. (2013). *Cyber criminology: Exploring internet crimes and criminal behavior*. CRC Press.
3. Mishra, M., & Moledina, R. (2026). *Cyber crimes against women in India: Emerging digital threats and legal remedies* [Unpublished manuscript].
4. National Crime Records Bureau. (2022). *Crime in India 2021*. Ministry of Home Affairs, Government of India.

5. National Crime Records Bureau. (2023). *Crime in India 2022*. Ministry of Home Affairs, Government of India.
6. National Crime Records Bureau. (2024). *Crime in India 2023*. Ministry of Home Affairs, Government of India.
7. National Crime Records Bureau. (2024). *Crime against women 2023*. Ministry of Home Affairs,Government of India.
8. Parliamentary Standing Committee on Information Technology. (2025). Deepfake and AI misuse report. Lok Sabha Secretariat.
9. PwC India. (2025). *India cybercrime survey 2025*.
10. The Information Technology Act, 2000 (Act 21 of 2000). (2000). *Ministry of Electronics and Information Technology*.
11. UN Women. (2024). *Cyber violence against women in Asia*.
12. World Health Organization. (2025). *Violence against women prevalence report: India*.

****

Artificial Intelligence in the Judiciary and Access to Justice

By Vishwas Vinod Tiwari

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: vishwastiwari1410@gmail.com

INTRODUCTION

The adoption of Artificial Intelligence (AI) in the legal sector marks one of the most significant innovations in justice administration in the 21st century. India faces over 50 million unresolved cases, causing delays, high costs, and limited access, especially for marginalised groups. AI provides potential solutions by automating routine processes, enhancing legal research, streamlining case management, and reducing the access-to-justice gap. This paper explores AI's role in the judiciary, with an emphasis on access to justice, reviewing its development, advantages, challenges, and the crucial oversight needed from the judiciary. The analysis is set within the Indian legal context, with comparative insights from international practices, aligned with the theme "AI in Judiciary and Access to Justice" at the International Conference on Artificial Intelligence and Law.

EVOLUTION AND INTEGRATION OF AI IN JUDICIAL PROCESSES

AI's role in the judiciary has advanced from simple document-management automation to complex systems that feature predictive analytics, natural language processing (NLP), and machine learning. Countries such as the United States, China, and Singapore have led in AI use, implementing tools like COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) for risk assessment and AI-based transcription services. In India, notable milestones include the Supreme Court's e-Courts Project (Phase III) and SUPACE (Supreme Court Portal for Assistance in Court's Efficiency), which acts as an AI research assistant helping judges analyse extensive case law, identify key passages, and create organised summaries. Furthermore, AI translation tools now facilitate court proceedings in regional languages, supporting the constitutional requirements of Article 348 for Hindi and English and fostering linguistic inclusivity.

The integration extends to predictive policing, automated case scheduling, and virtual court hearings accelerated during the COVID-19 pandemic. These developments have reduced administrative burdens on court staff and enabled faster disposal of cases. However, the evolution also highlights a shift from mere digitisation to intelligent decision-support systems, raising questions about the balance between technological efficiency and judicial independence.

ENHANCING ACCESS TO JUSTICE THROUGH AI TOOLS

Access to justice remains illusory for millions due to high legal fees, geographical barriers, and procedural complexities. AI-powered tools are democratising legal services by offering chatbots for preliminary legal advice, automated drafting of petitions, and online dispute resolution platforms. In India, initiatives like the National Judicial Data Grid (NJDG) integrated with AI analytics provide real-time case tracking, empowering litigants with transparency. Generative AI chatbots and interoperable legal AI systems further assist litigants-in-person by simplifying legal language and suggesting relevant precedents. Internationally, tools like Justice Bot and AI-assisted family law asset division (as seen in Australia) illustrate how AI can lower entry barriers for low-income individuals. In the Indian context, AI translations of judgments and AI-enabled virtual hearings have expanded access for rural and differently-abled populations. These applications align with Sustainable Development Goal 16 (peace, justice, and strong institutions) by making justice more affordable, timely, and inclusive. Studies indicate that AI can potentially reduce case backlogs by 20-30% through efficient triage and prioritisation, thereby fulfilling the constitutional promise of speedy justice under Article 21.

CHALLENGES AND ETHICAL CONCERNS IN AI ADOPTION BY THE JUDICIARY

Despite its potential, AI adoption in the judiciary is fraught with challenges, primarily algorithmic bias, data privacy concerns, and the risk of "hallucinations" (AI generating fabricated citations or judgments). Recent incidents in India, including a junior judge citing fake AI-generated judgments, have prompted the Supreme Court to flag this as an "institutional concern." Historical biases embedded in training data can perpetuate discrimination based on caste, gender, or socio-economic status, undermining the principle of equality before law (Article 14).

Other issues include a lack of transparency in AI decision-making ("black box" problem), cybersecurity vulnerabilities in court databases, and the digital divide that excludes technology-illiterate citizens. The absence of a comprehensive AI regulatory framework in India exacerbates these risks. While the Digital Personal Data Protection Act, 2023, offers some safeguards, specific guidelines for judicial AI use remain fragmented. Global experiences, such as the Dutch childcare benefits scandal caused by biased AI algorithms, serve as cautionary tales for Indian policymakers.

ROLE OF JUDICIARY

The Indian judiciary has assumed a proactive and pioneering role in navigating AI's

integration while safeguarding constitutional values. The Supreme Court's White Paper on AI C Judiciary (November 2025) outlines best practices, emphasising human-in-the-loop oversight, mandatory verification of AI outputs, and the development of closed, in-house AI tools over public platforms like ChatGPT. The e-Committee of the Supreme Court has developed SUPACE and other assistive technologies, while the Kerala High Court issued progressive guidelines in 2025 prohibiting AI use in district-level decision-making or legal reasoning to preserve judicial integrity and natural justice principles.

High Courts across states are framing their own AI policies, and the judiciary has collaborated with institutions for capacity-building programmes. By issuing guidelines on AI transcription, case management, and ethical deployment, the judiciary is not only adopting technology but also shaping its regulatory contours. This self-regulatory approach ensures that AI remains a servant of justice rather than its master, upholding the independence of the judiciary under Article 50 and Article 141 of the Constitution. The judiciary's role thus extends from implementer to guardian, ensuring AI enhances rather than erodes public trust in the justice delivery system.

CONCLUSION AND SUGGESTIONS

Artificial Intelligence holds immense promise in revolutionising the judiciary and bridging the access-to-justice divide in India. From reducing pendency through intelligent case management to empowering marginalised litigants via user-friendly tools, AI can make justice more efficient, transparent, and equitable. However, unchecked deployment risks bias, accountability deficits, and erosion of judicial legitimacy.

To harness AI's benefits responsibly, the following suggestions are proposed:

1. Enact a comprehensive national AI governance framework for the judiciary with mandatory ethical audits and bias-mitigation protocols.
2. Mandate regular training for judges and court staff on AI literacy, as recommended in UNESCO's Global Toolkit on AI and the Rule of Law for the Judiciary.
3. Develop open-source, India-specific legal AI models trained on verified Indian case law to minimise hallucinations.
4. Establish AI Ethics Committees in every High Court for continuous monitoring and grievance redressal.
5. Promote public-private partnerships to ensure equitable access, including subsidised AI tools for legal aid clinics.

With robust safeguards and judicial leadership, AI can transform India's overburdened courts into a model of 21st-century justice delivery.

BIBLIOGRAPHY TEXTBOOKS

1. Marwala, Tshilidzi and Letlhokwa George Mpedi. *Artificial Intelligence and the Law*. Springer, 2024.
2. Larrieux, Tamo, et al. *AI and Law: How Automation is changing the Law*. Routledge, 2024.
3. Determann, Lothar. *Determann's Field Guide to Artificial Intelligence Law: International Corporate Compliance*. Edward Elgar Publishing, 2nd Edition, 2024.

JOURNAL ARTICLES

1. Solanki, T. "AI and Technology in the Indian Judiciary: A Step toward Efficiency or a Challenge to Justice?" *International Journal of Law and Information Technology*, 2026.
2. Simshaw, Drew. "Access to A.I. Justice: Avoiding an Inequitable Two-Tiered System of Legal Services." *Yale Journal of Law & Technology*, Vol. 25, 2025.
3. Chen, Y. "Artificial Intelligence and Adjudication: A New Pathway to Justice?" *International Journal of Law and Technology*, 2026.

****

Artificial Intelligence Surveliance Technologies and Fundamental Rights

By Tanu Tiwari

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: tanutiwari169@gmail.com

Introduction

Artificial Intelligence has transformed the nature of surveillance in modern societies. Traditional surveillance depended largely on human observation, manual records and limited technological tools. Today, however, governments and private corporations increasingly use facial recognition systems, biometric databases, predictive policing software, drone monitoring, location tracking and data analytics powered by Artificial Intelligence. These technologies are capable of collecting, processing and analysing enormous amounts of personal information within seconds.

The rapid development of such technologies has generated an important constitutional debate. While AI-based surveillance may help in maintaining public order, preventing crime and ensuring national security, it also raises serious concerns regarding individual liberty and privacy. In a democratic society, the State cannot exercise unlimited powers in the name of security. Fundamental rights guaranteed under the Constitution act as a shield against excessive State action. The conflict between technological advancement and constitutional freedom therefore becomes unavoidable.

In India, the issue is particularly relevant because surveillance technologies are being increasingly used in public spaces, airports, railway stations, educational institutions and law-enforcement agencies. Projects such as facial recognition systems and extensive data collection through digital platforms have raised concerns regarding the violation of Articles 14, 19 and 21 of the Constitution of India. The Supreme Court has repeatedly recognised that privacy, dignity and personal autonomy form an essential part of fundamental rights. Consequently, the use of AI-driven surveillance must be examined within the constitutional framework.

This paper analyses the relationship between AI-based surveillance technologies and fundamental rights. It further examines the constitutional issues involved, the role of the judiciary and the need for legal safeguards.

Impact of AI Surveillance on the Right to Privacy

The most immediate effect of AI surveillance technologies is upon the right to privacy. Privacy includes the right of an individual to control personal information, bodily autonomy, confidential communication and freedom from unnecessary intrusion. AI surveillance threatens

this right because it enables constant observation and data collection without the knowledge or consent of individuals.

Facial recognition technology is one of the most controversial examples. It works by identifying or verifying a person through digital images or video footage. Cameras installed in public places can scan the faces of thousands of people and compare them with stored databases. Such systems make it possible to monitor a person's movements, behaviour and associations continuously. Similarly, biometric technologies collect fingerprints, iris scans, voice patterns and other sensitive information. When combined with AI, these technologies create detailed profiles of citizens.

The danger lies not merely in data collection, but in the possibility of misuse. Personal data may be stored indefinitely, shared with other agencies or even leaked. There is also a risk of "function creep", where information collected for one purpose is later used for another. For example, data collected for security purposes may later be used for commercial advertising, political profiling or social control.

The Supreme Court recognised the right to privacy as a fundamental right in Justice K.S. Puttaswamy v. Union of India (2017). The Court held that privacy is protected under Article 21 and is closely connected with human dignity and liberty. According to the Court, any restriction upon privacy must satisfy three conditions: legality, necessity and proportionality. Therefore, AI-based surveillance can be constitutionally valid only when there is a clear law authorising it, a legitimate purpose and minimal interference with individual rights.

Without adequate safeguards, AI surveillance may create a situation where citizens are constantly watched. A society under constant observation resembles a digital panopticon: people begin to censor themselves because they fear being monitored. In simple words, if every move is watched, freedom slowly starts packing its bags and leaving the room.

II. AI Surveillance and the Violation of Equality and NonDiscrimination

AI systems are often considered objective and neutral because they operate through algorithms. In reality, however, these systems may reproduce existing social biases. The data used to train AI often contains prejudices based on race, religion, gender, caste or economic status. As a result, AI surveillance may violate Article 14 of the Constitution, which guarantees equality before law and equal protection of laws.

Facial recognition systems have frequently shown higher error rates in identifying women, children and persons belonging to minority communities. When such flawed technology is used by police authorities, innocent persons may become targets of investigation merely because the system produces inaccurate results. A mistaken identification may lead to wrongful detention, harassment or social stigma.

Predictive policing is another example. Predictive policing uses algorithms to identify areas or individuals considered likely to commit crimes in the future. These systems depend heavily on past police records. If previous records already reflect discrimination against particular communities, the algorithm may continue and strengthen that bias. Consequently, certain groups may be subjected to more surveillance and suspicion than others.

Moreover, discrimination through AI is more dangerous because it appears invisible. A human officer may openly display bias and can be questioned. An algorithm, on the other hand, quietly produces a result and people often accept it as scientifically correct. That is the oldest trick in history, just dressed up in expensive software and acting like it did nothing.

Therefore, there is a pressing need to ensure that AI systems used in surveillance are transparent, accountable and regularly audited. Equality before law loses its meaning if technology itself becomes a tool of discrimination.

III. AI Surveillance and Freedom of Speech, Expression and Movement

AI-based surveillance also affects the freedoms guaranteed under Article 19 of the Constitution. Article 19 protects freedom of speech and expression, peaceful assembly, association and movement. These freedoms are essential in a democratic society because they allow citizens to express opinions, participate in protests and engage in public life without fear.

When people know that they are being watched through cameras, digital monitoring or online tracking, they may hesitate to speak freely. This is called the “chilling effect”. Citizens may avoid participating in protests, attending meetings or expressing unpopular opinions because they fear that their activities are being recorded.

For example, AI surveillance can monitor social media posts, phone calls, emails and internet searches. Governments may use such technology to identify political opponents, journalists, activists or dissidents. Even if such monitoring is carried out in the name of public order, it can easily cross constitutional limits.

The freedom to protest is an important part of democracy. If surveillance technologies are used to identify every participant in a protest or public gathering, many people may stop participating altogether. In such circumstances, Article 19 becomes merely theoretical. A right that exists only on paper is a bit like a pen without ink: technically present, practically useless.

AI surveillance also affects the freedom of movement. Continuous tracking through GPS data, mobile applications and CCTV networks enables authorities to know where a person travels, whom they meet and how frequently they visit a particular place. Such extensive monitoring interferes with personal autonomy.

Restrictions upon Article 19 rights are permitted only if they are reasonable and authorised by law. The Constitution allows restrictions in the interests of public order, national security and morality, but these restrictions cannot be excessive. The principle of proportionality requires the State to choose the least restrictive method available. Therefore, indiscriminate mass surveillance cannot be justified merely because technology makes it possible.

IV. Role of Judiciary

The judiciary plays a crucial role in balancing national security and individual liberty. Courts act as guardians of the Constitution and ensure that technological developments do not destroy fundamental rights.

The most significant judgment in this field is Justice K.S. Puttaswamy v. Union of India (2017). In this case, a nine-judge bench of the Supreme Court unanimously held that the right to privacy is a fundamental right under Article 21. The Court emphasised that privacy includes informational privacy, bodily integrity and personal autonomy. This judgment forms the constitutional foundation for examining AI surveillance.

Another important case is *People's Union for Civil Liberties (PUCL) v. Union of India*[155] *(1997)*, relating to telephone tapping. The Supreme Court held that telephone tapping violates privacy unless it is carried out according to a procedure established by law. The Court laid down procedural safeguards and insisted that surveillance cannot be exercised arbitrarily.

In *Anuradha Bhasin v. Union of India (2020)*, the Supreme Court considered restrictions on internet access in Jammu and Kashmir. The Court observed that freedom of speech and trade through the internet is constitutionally protected. Although the case did not directly concern AI surveillance, it highlighted that digital restrictions must satisfy the test of proportionality.

[155] (1997) 1 SCC 301; AIR 1997 SC 568

The judiciary has also stressed the importance of transparency and accountability in State action. If AI surveillance systems are introduced without proper legislation, judicial review becomes essential. Courts may examine whether:

- There is a valid law authorising the surveillance.
- The purpose is legitimate.
- The method used is proportionate.
- There are adequate safeguards against misuse.
- Citizens have a remedy in case of violation.

At the same time, the judiciary alone cannot solve every problem. Courts usually act after a violation has already taken place. Therefore, there is a need for Parliament to enact comprehensive legislation regulating AI surveillance technologies.

Conclusion and Suggestions

Artificial Intelligence has undoubtedly made surveillance more efficient and powerful. It may help the State in crime prevention, border security and public administration. However, unrestricted use of such technology poses a serious threat to constitutional democracy. AI surveillance affects privacy, equality, freedom of expression and personal liberty. If left unchecked, it may create a society in which citizens are constantly watched, profiled and controlled.

The Constitution of India does not oppose technological development. What it opposes is arbitrary and disproportionate use of power. Therefore, the real question is not whether AI surveillance should exist, but how far it should be allowed to go.

The following suggestions may help in achieving a balance between security and fundamental rights:

- Parliament should enact a separate law specifically regulating AI-based surveillance technologies.
- The law should clearly define the circumstances in which surveillance may be used.
- Prior judicial approval should be made compulsory before deploying intrusive technologies such as facial recognition and phone monitoring.
- Independent regulatory authorities should supervise the use of surveillance systems.
- Citizens must be informed about the collection and use of their personal data.

- AI systems should be transparent, explainable and regularly audited to prevent discrimination.
- Personal data should not be stored for an unlimited period.
- There should be strong remedies, including compensation, for persons whose rights are violated.
- Ultimately, technology should remain a servant of the people and not become their silent ruler. The law must ensure that while machines become smarter, human freedom does not become smaller.

BIBLIOGRAPHY

Textbooks

1. M.P. Jain, Indian Constitutional Law, LexisNexis.
2. V.N. Shukla, Constitution of India, Eastern Book Company.
3. H.M. Seervai, Constitutional Law of India.
4. Justice Y.V. Chandrachud, Republic of Rhetoric: Free Speech and the Constitution of India.
5. Usha Ramanathan, Privacy and the Constitution.
6. Richard Susskind, Online Courts and the Future of Justice.
7. Neil Richards, Why Privacy Matters.

Journal Articles

1. Bhandari, Vrinda, “The Right to Privacy and the Indian Constitution”, National Law School Journal.
2. Greenleaf, Graham, “India's Data Privacy Law: A Comparative Perspective”, Computer Law and Security Review.
3. Solove, Daniel J., “A Taxonomy of Privacy”, University of Pennsylvania Law Review.
4. Nissenbaum, Helen, “Privacy as Contextual Integrity”, Washington Law Review.
5. Citron, Danielle Keats and Pasquale, Frank, “The Scored Society: Due Process for Automated Predictions”, Washington Law Review.

****

Artificial Intelligence and Law: Balancing Innovation with Justice

By Mohammed Abdul Habib Shelia

F.Y. LL.B. Sem. II
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: tanutiwari169@gmail.com

Abstract

Artificial Intelligence is rapidly transforming the legal field by improving efficiency and accessibility. However, it also raises concerns regarding privacy, bias, and accountability. This paper examines the role of AI in law, its advantages, associated challenges, and the need for regulatory frameworks to ensure ethical and fair use.

Introduction

Artificial Intelligence (AI) is revolutionizing modern society, and its impact on the legal field is both significant and inevitable. It refers to computer systems capable of performing tasks that traditionalIy require human intelligence, such as learning, reasoning, and decision-making. In the legal domain, AI is not merely a technological tool but a transformative force reshaping how legal services are delivered and how justice is administered. However, this transformation also raises critical legal and ethical questions. The growing integration of AI in the legal field requires careful analysis of its benefits, challenges, and regulatory implications. This paper argues that while Artificial Intelligence can significantly enhance efficiency in legal processes, excessive reliance on it may undermine the fundamental principles of fairness, accountability, and human judgment that form the foundation of law.

Concept and Scope of Artificial Intelligence

Artificial Intelligence includes technologies such as machine learning, natural language processing and data analytics. These technologies enable systems to process vast amounts of data and generate insights with speed and accuracy. In the legal field, AI is used to:

a) Conduct legal research
b) Automate documentation
c) Predict case outcomes
d) Assist in decision-making

The scope of AI continues to expand, making it an essential part of modern legal systems.

Applications

Applications

1. Legal Researcg and Case Analysis: AI tools can analyze thousands of legal documents, case laws and Statutes within seconds. This significantly reduces the time required for research and increases efficiency.
2. Contract Review and Document Automation: AI can review contracts, identify risks and highlight important clauses, reducing human error and improving consistency.
3. Predictive Justice: AI systems can analyze past judgements to predict possible case outcomes, helping lawyers prepare better strategies. A well-known example is the COMPAS algorithm used in the United States to predict the likelihood of reoffending. Studies have revealed that the system showed bias against certain racial groups, raising serious concerns about fairness and discrimination in AI-driven judicial decisions.
4. Online Dispute Resolution (ODR): AI is is increasingly used in online dispute resolution, making justice more accessible and cost-effective.

Advantages:

a) Efficiency and Speed: AI reduces the time required for repetitive legal tasks.
b) Cost Reduction: Automation lowers legal costs and makes services more accessible.
c) Accuracy: AI minimizes human errors in documentation and analysis.
d) Access to Justice: AI tools help provide legal assistance to people who may not afford traditional legal services.

Legal and Ethical Challenges:

1. Legal Liability: Determining liability when AI systems make errors is complex, as AI lacks legal personality.
2. Algorithmic Bias: Algorithmic bias is one of the most serious concerns in AI systems. Since AI is trained on historical data, it may inherit and reinforce existing social inequalities. For example: biased datasets can lead to unfair outcomes in bail decisions or sentencing recommendations. This challenges the fundamental legal principle of equality before the law and raises questions about whether AI can ever be truly neutral.
3. Data Privacy: AI requires large amounts of data, raising concerns about the protection of personal information.
4. Lack of Transparency: *Al* systems often function as *"black boxes,"* making it difficult to understand their decision-making process.

5. Employment Concerns: Automation may reduce opportunities for entry-level legal professionals.

Role of Judiciary

The judiciary plays a pivotal role in ensuring that technological advancements, including Artificial Intelligence, operate within the framework of constitutional values and fundamental rights. As AI increasingly influences decision-making processes, courts act as guardians to prevent misuse and to protect individual liberties. A landmark judgment in this context is *Justice K.S. Puttas'l-varny (Retd.) v. U11ion of India (2017),* wherein the Supreme Court of India recognized the right to privacy as a fundamental right under Article 21 of the Constitution. This decision holds immense significance in the age of Artificial Intelligence, as AI systems rely heavily on the collection and processing of personal data. It establishes that any deployment of AI must respect and safeguard individual privacy.

Similarly, in *Shreya Singhla v. Union of India (2015),* the Supreme Cou1t struck down Section 66A of the Information Technology Act, 2000, on the grounds that it violated the freedom of speech and expression under Article 19(l)(a). This judgment reinforces the principle that digital technologies, including AI, must not be used in a manner that suppresses fundamental freedoms. These decisions collectively highlight the judiciary's proactive role in adapting constitutional principles to emerging technologies. The courts not only interpret the law but also ensure that innovation does not come at the cost of justice, equality, and individual rights. In the evolving landscape of Artificial Intelligence, the judiciary remains essential in maintaining a balance between technological progress and the protection of democratic values.

The Indian judiciary has addressed issues relevant to Artificial Intelligence, particularly in privacy and digital rights.

Critical Analysis: Can AI Replace Human Judgment in Law?

While Artificial Intelligence offers efficiency and speed, it cannot replace human judgment in legal decision-making. Law is not purely logical; it involves

interpretation, ethical reasoning, and empathy. Judges consider social context, moral values, and unique circumstances, which AI systems cannot fully understand.

Over-reliance on *Al* may lead to "*mechanical justice*," where decisions are technically correct but morally flawed. Therefore, AI should be used as an assistive tool rather than a replacement for human decision-makers. Maintaining human oversight is essential to preserve trust in the legal system.

AI is expected to play an important role in the future of legal practice. However, it cannot replace human judgment, reasoning, and empathy. The future lies in collaboration, where AI enhances human capabilities rather than replacing them.

Conclusion and Suggestions:

Artificial Intelligence represents one of the most transformative developments in the modern legal landscape, offering unprecedented improvements in efficiency, accuracy, and accessibility. Its ability to process vast volumes of legal data, streamline complex procedures, and expand access to legal services has the potential to make justice more inclusive and responsive.

However, these advancements are accompanied by serious challenges that cannot be overlooked. Concerns relating to algorithmic bias, lack of transparency, data privacy, and unclear accountability frameworks pose significant risks to the fairness and integrity of the legal system.

At its core, law is not merely a mechanical application of rules but a deeply human institution grounded in values such as fairness, empathy, and moral reasoning. While Artificial Intelligence can replicate patterns and assist in decision-making, it cannot comprehend the nuanced social realities and ethical considerations that often influence judicial outcomes. An excessive reliance on AI risks reducing justice to a purely technical exercise efficient, yet potentially devoid of humanity. Such a shift may undermine public confidence and erode the foundational principles of justice.

Therefore, the integration of Artificial Intelligence into the legal domain must be approached with caution and responsibility. AI should function as an assistive tool that enhances human capabilities rather than replacing judicial discretion. The

presence of human oversight is essential to ensure that legal decisions remain just, equitable, and context-sensitive.

To achieve a balanced and ethical integration of AI in law, several measures are imperative. Firstly, there must be clear and comprehensive legal frameworks that define accountability and liability in cases involving *Al* systems. Secondly, transparency should be ensured through the development of explainable AI, enabling stakeholders to understand and challenge automated decisions. Thirdly, robust data protection mechanisms are necessary to safeguard individual privacy in an increasingly data-driven environment. Additionally, proactive steps must be taken to identify and eliminate algorithmic bias to uphold the p1inciple of equality before the law. Finally, the use of AI must be guided by strong ethical standards and continuous regulatory oversight to prevent misuse.

In conclusion, the future of law lies not in replacing human judgment with machines, but in fostering a principled partnership between technology and human intelligence. Artificial Intelligence, when governed with foresight and ethical responsibility, can serve as a powerful ally in advancing justice. However, the ultimate responsibility must always rest with human institutions, ensuring that justice remains not only efficient, but also fair, transparent, and profoundly humane.

BIBLIOGRAPHY

Textbooks and Reports

- NITI Aayog - AI for All Report
- lnformation Technology Act, 2000
- European Union Artificial Intelligence Act
- OECD Principles on Artificial Intelligence
- World Economic Forum AI Governance Alliance

Journal Articles

- Ashley, Kevin D. *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age*. Cambridge University Press, 2017.
- Bench-Capon, Trevor, and Giovanni Sartor. *Argumentation in Artificial Intelligence and Law*. Springer, 2005.

- Sartor, Giovanni, and Karl Branting (eds.). *Judicial Applications of Artificial Intelligence*. Springer, 1998.
- Calo, Ryan, A. Michael Froomkin, and Ian Kerr (eds.). *Robot Law*. Edward Elgar Publishing, 2016.

****

Artificial Intelligence: Transforming the Future of Humanity

By Pankaj Gupte

IDC Site Lead-Service Delivery & HOD – RHE (Remote Hands and Eye Support) at
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.
Email: vikasmestry500@gmail.com



Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the twenty-first century. It has revolutionized the way humans interact with machines, process information, make decisions, and solve complex problems. From healthcare and education to governance, law, business, and scientific research, AI is reshaping every aspect of human life. While AI offers unprecedented opportunities for innovation, productivity, and economic growth, it also presents significant challenges relating to ethics, privacy, employment, accountability, and human rights. The future of humanity is increasingly intertwined with the development and deployment of intelligent systems. This article examines the concept of Artificial Intelligence, its evolution, applications, benefits, challenges, and its potential impact on the future of humanity. It further explores the need for responsible AI governance to ensure that technological advancement serves the interests of society while safeguarding human dignity and fundamental rights.

Keywords: *artificial intelligence, machine learning, humanity, technology, ethics, innovation, human rights, future society*

1. Introduction

The history of human civilization is marked by technological revolutions that have transformed societies and economies. The invention of the wheel, the printing press, electricity, and the internet fundamentally altered human existence. Artificial Intelligence represents the latest

and perhaps the most significant technological revolution. Unlike previous technologies that primarily enhanced physical capabilities, AI seeks to replicate and augment human cognitive abilities such as learning, reasoning, problem-solving, and decision-making.

Artificial Intelligence refers to the capability of machines and computer systems to perform tasks that traditionally require human intelligence. These tasks include speech recognition, language translation, image analysis, decision-making, and predictive analytics. AI systems learn from data, identify patterns, and improve their performance over time without explicit programming.

The rapid advancement of AI technologies has created immense possibilities for addressing global challenges such as disease prevention, climate change, poverty reduction, and educational inequality. At the same time, concerns regarding job displacement, algorithmic bias, surveillance, and misuse of AI have raised important ethical and legal questions. Therefore, understanding the transformative potential of AI is essential for shaping a future where technology benefits humanity as a whole.

2. Understanding Artificial Intelligence

Artificial Intelligence is a branch of computer science dedicated to creating machines capable of simulating human intelligence. AI systems operate through algorithms that process large volumes of data, identify relationships, and generate outputs based on learned patterns.

AI can be broadly categorized into three forms. The first is Narrow AI, which is designed to perform specific tasks. Examples include virtual assistants, recommendation systems, and facial recognition software. The second is General AI, which refers to a theoretical system capable of performing any intellectual task that a human can accomplish. The third is Superintelligent AI, a hypothetical form of intelligence surpassing human cognitive capabilities in all areas.

Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, and Robotics are major subfields of AI. Machine Learning enables systems to learn from data, while Deep Learning uses artificial neural networks to process complex information. Natural Language Processing allows machines to understand and generate human language, and Computer Vision enables machines to interpret visual information.

For example, modern language models can draft legal documents, answer questions, summarize lengthy reports, and provide educational assistance. Similarly, AI-powered medical

systems can analyze radiological images with remarkable accuracy, assisting doctors in diagnosing diseases at an early stage.

3. Evolution of Artificial Intelligence

The concept of intelligent machines dates back centuries, but modern AI emerged during the 1950s. In 1956, the term "Artificial Intelligence" was formally introduced during the Dartmouth Conference organized by computer scientists and researchers.

The early decades of AI focused on symbolic reasoning and expert systems. During the 1980s, expert systems gained popularity in industries by simulating the decision-making abilities of human experts. However, limitations in computing power and data availability slowed progress. The advent of the internet, big data, and powerful computing infrastructure reignited AI research in the twenty-first century. Significant breakthroughs occurred in machine learning and deep learning, enabling AI systems to outperform humans in specific tasks.

One notable example was the victory of Google's AI program AlphaGo over world champion Lee Sedol in the complex game of Go in 2016. This event demonstrated AI's ability to master strategic decision-making that was previously considered uniquely human.

Today, AI is integrated into everyday life through smartphones, search engines, social media platforms, autonomous vehicles, and digital assistants.

4. AI in Healthcare: Enhancing Human Well-being

One of the most significant contributions of AI is in the healthcare sector. AI-powered technologies are improving diagnosis, treatment planning, drug discovery, and patient care.

AI systems can analyze medical images such as X-rays, CT scans, and MRIs with exceptional precision. For instance, AI algorithms can detect early signs of breast cancer or lung disease that may be overlooked during routine examinations.

During the COVID-19 pandemic, AI played a critical role in tracking disease spread, predicting infection patterns, and accelerating vaccine development. Machine learning models assisted researchers in analyzing vast amounts of medical data, thereby reducing the time required for scientific discoveries.

Robotic surgery is another area where AI has transformed healthcare. Surgical robots assist doctors in performing complex procedures with greater accuracy and minimal invasiveness, resulting in faster patient recovery and reduced complications.

As AI continues to evolve, personalized medicine is expected to become more prevalent. Treatment plans tailored to an individual's genetic profile and medical history will significantly improve healthcare outcomes.

5. AI in Education: Democratizing Knowledge

Artificial Intelligence is revolutionizing education by making learning more accessible, personalized, and effective. Traditional educational systems often struggle to address the diverse learning needs of students. AI-powered educational tools provide customized learning experiences based on individual strengths and weaknesses.

For example, adaptive learning platforms analyze student performance and recommend personalized study materials. Virtual tutors can provide instant feedback, explain concepts, and assist learners at any time.

Students in remote and underserved regions can access high-quality educational resources through AI-enabled platforms. Language translation tools further eliminate communication barriers, enabling global knowledge sharing.

AI also assists educators by automating administrative tasks such as grading assignments, monitoring attendance, and evaluating student progress. This allows teachers to focus more on mentoring and critical thinking development.

As educational technology advances, AI has the potential to bridge educational inequalities and create lifelong learning opportunities for people worldwide.

6. AI and Economic Transformation

Artificial Intelligence is a major driver of economic growth and industrial innovation. Businesses use AI to improve efficiency, reduce costs, and enhance customer experiences.

In the banking sector, AI systems detect fraudulent transactions, assess credit risks, and provide personalized financial advice. E-commerce companies utilize recommendation algorithms to suggest products based on customer preferences and purchasing behavior.

Manufacturing industries employ AI-powered robots to automate repetitive tasks, improve quality control, and optimize production processes. Predictive maintenance systems identify equipment failures before they occur, reducing downtime and operational costs.

For example, smart factories equipped with AI technologies can monitor production lines in real time, adjust processes automatically, and increase productivity significantly.

According to various economic studies, AI is expected to contribute trillions of dollars to the global economy in the coming decades. However, ensuring that these benefits are distributed equitably remains a critical challenge.

7. AI in Governance and Public Administration

Governments across the world are increasingly adopting AI to improve public services and policy implementation. AI systems assist in traffic management, disaster response, urban planning, and public health monitoring.

Smart cities utilize AI to optimize transportation systems, reduce energy consumption, and enhance public safety. For example, intelligent traffic control systems can analyze vehicle movement patterns and adjust signal timings to reduce congestion.

AI also supports public administration by streamlining document processing, detecting tax fraud, and improving service delivery. Chatbots assist citizens by providing information regarding government schemes, legal procedures, and public services.

In judicial administration, AI tools are being explored for legal research, case management, and document review. These technologies can reduce delays and improve efficiency in legal systems. However, human oversight remains essential to ensure fairness and accountability.

8. Ethical and Legal Challenges of AI

Despite its benefits, AI raises significant ethical and legal concerns. One of the primary challenges is algorithmic bias. AI systems learn from historical data, and if the data contains biases, the resulting decisions may perpetuate discrimination.

For example, recruitment algorithms trained on biased employment data may unfairly disadvantage certain groups of applicants. Similarly, facial recognition technologies have been criticized for exhibiting higher error rates for particular demographic groups.

Privacy concerns also arise from the extensive collection and processing of personal data. AI-powered surveillance systems can monitor individuals' activities on an unprecedented scale, potentially threatening civil liberties and personal autonomy.

Another challenge involves accountability. When an autonomous system causes harm, determining legal responsibility becomes complex. Questions arise regarding whether liability should rest with developers, manufacturers, users, or the AI system itself.

These concerns highlight the necessity of comprehensive legal frameworks and ethical guidelines governing AI development and deployment.

9. AI and Employment: Threat or Opportunity?

The impact of AI on employment remains a subject of extensive debate. Automation has the potential to replace certain routine and repetitive jobs. Manufacturing workers, data entry operators, and customer service representatives may face significant disruptions.

However, technological advancement has historically created new employment opportunities while eliminating others. AI is generating demand for professionals in fields such as data science, cybersecurity, AI ethics, robotics engineering, and digital governance.

For example, while automated systems may reduce the need for manual data processing, they simultaneously create opportunities for AI trainers, machine learning specialists, and technology consultants.

The future workforce will require continuous learning and skill development to adapt to changing technological environments. Governments, educational institutions, and industries must collaborate to facilitate workforce transition and reskilling initiatives.

10. AI and the Future of Humanity

The future relationship between humans and AI will shape the trajectory of civilization. AI has the potential to solve some of humanity's most pressing challenges, including disease eradication, environmental sustainability, food security, and scientific discovery.

AI-driven climate models can help predict environmental changes and support sustainable resource management. Intelligent agricultural systems can optimize crop production while minimizing environmental impact. Advanced scientific simulations can accelerate discoveries in medicine, physics, and biotechnology.

At the same time, humanity must ensure that AI remains aligned with human values. The pursuit of technological advancement should not compromise human dignity, equality, freedom, and justice.

A human-centric approach to AI emphasizes transparency, fairness, accountability, inclusiveness, and respect for fundamental rights. International cooperation will be essential in establishing common principles and standards for responsible AI governance.

11. Conclusion

Artificial Intelligence is transforming the future of humanity in profound and unprecedented ways. Its applications across healthcare, education, governance, business, and

scientific research demonstrate its immense potential to improve human welfare and address global challenges. AI has become an indispensable tool for innovation, efficiency, and progress.

Nevertheless, the benefits of AI must be balanced against ethical, legal, and social concerns. Issues such as privacy, bias, accountability, and employment displacement require careful consideration and regulatory oversight. The future of AI should not merely focus on technological capability but also on human values and societal well-being.

If developed and governed responsibly, Artificial Intelligence can serve as a powerful force for positive transformation, enabling humanity to achieve greater prosperity, equality, and sustainability. The challenge before society is not whether AI will shape the future, but how humanity chooses to shape AI for the common good.

BIBLIOGRAPHY

1. Abbott, Ryan. *The Reasonable Robot: Artificial Intelligence and the Law*. Cambridge University Press, 2020.
2. Ashley, Kevin D. *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age*. Cambridge University Press, 2017.
3. Calo, Ryan, A. Michael Froomkin, and Ian Kerr (eds.). *Robot Law*. Edward Elgar Publishing, 2016.
4. Goodfellow, Ian, Yoshua Bengio, and Aaron Courville. *Deep Learning*. MIT Press, 2016.
5. Harari, Yuval Noah. *Homo Deus: A Brief History of Tomorrow*. Vintage Books, 2017.
6. Hildebrandt, Mireille. *Law for Computer Scientists and Other Folk*. Oxford University Press, 2020.
7. Kaplan, Jerry. *Artificial Intelligence: What Everyone Needs to Know*. Oxford University Press, 2016.
8. Nilsson, Nils J. *The Quest for Artificial Intelligence: A History of Ideas and Achievements*. Cambridge University Press, 2010.
9. Russell, Stuart, and Peter Norvig. *Artificial Intelligence: A Modern Approach*. 4th ed., Pearson Education, 2021.
10. Susskind, Richard. *Tomorrow's Lawyers: An Introduction to Your Future*. 3rd ed., Oxford University Press, 2023.

11. Susskind, Richard, and Daniel Susskind. *The Future of the Professions: How Technology Will Transform the Work of Human Experts*. Oxford University Press, 2015.
12. Turner, Jacob. *Robot Rules: Regulating Artificial Intelligence*. Palgrave Macmillan, 2019.

Journal Articles

1. Abbott, Ryan. "I Think, Therefore I Invent: Creative Computers and the Future of Patent Law." *Boston College Law Review*, Vol. 57, No. 4, 2016, pp. 1079–1126.
2. Cath, Corinne, Sandra Wachter, Brent Mittelstadt, Mariarosaria Taddeo, and Luciano Floridi. "Artificial Intelligence and the Good Society." *Science and Engineering Ethics*, Vol. 24, No. 2, 2018, pp. 505–528.
3. Floridi, Luciano, et al. "AI4People: An Ethical Framework for a Good AI Society." *Minds and Machines*, Vol. 28, No. 4, 2018, pp. 689–707.
4. Pasquale, Frank. "A Rule of Persons, Not Machines: The Limits of Legal Automation." *George Washington Law Review*, Vol. 87, 2019, pp. 1–37.
5. Surden, Harry. "Artificial Intelligence and Law: An Overview." *Georgia State University Law Review*, Vol. 35, No. 4, 2019, pp. 1305–1334.
6. Veale, Michael, and Lilian Edwards. "Clarity, Surprises, and Further Questions in the GDPR Right to Explanation." *Computer Law & Security Review*, Vol. 34, No. 2, 2018, pp. 398–404.
7. Brynjolfsson, Erik, and Andrew McAfee. "The Business of Artificial Intelligence." *Harvard Business Review*, July 2017.
8. Bostrom, Nick. "Ethical Issues in Advanced Artificial Intelligence." *Cognitive, Emotive and Ethical Aspects of Decision Making in Humans and in Artificial Intelligence*, Vol. 2, 2003, pp. 12–17.

Reports and International Documents

1. UNESCO Recommendation on the Ethics of Artificial Intelligence
2. OECD Principles on Artificial Intelligence
3. United Nations AI Advisory Body Reports
4. World Economic Forum Artificial Intelligence Governance Alliance
5. European Commission Artificial Intelligence Act Resources

Web Sources

1. OpenAI
2. IBM Artificial Intelligence Resources
3. Google DeepMind
4. MIT Technology Review – Artificial Intelligence
5. Stanford Human-Centered Artificial Intelligence (HAI)

****

Artificial Intelligence and the Judiciary: Transforming Justice Delivery in the Digital Age

By Adv. (Dr.) Tahira Siddique
Practicing Advocate, Bombay High Court.

Abstract

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the twenty-first century, reshaping various sectors including healthcare, education, finance, governance, and law. The judiciary, traditionally viewed as a human-centric institution based on legal reasoning and judicial discretion, is increasingly exploring the integration of AI tools to enhance efficiency, accuracy, and accessibility. AI-powered technologies have the potential to revolutionize court administration, legal research, case management, and dispute resolution. However, the growing dependence on AI in judicial processes raises significant concerns relating to transparency, accountability, judicial independence, privacy, algorithmic bias, and protection of fundamental rights. This article examines the impact of Artificial Intelligence on the judiciary, highlighting its advantages, challenges, global developments, and the future prospects of AI-assisted justice systems.

Keywords: *artificial intelligence, judiciary, judicial decision-making, legal technology, e-courts, algorithmic justice, digital courts*

Introduction

The administration of justice is one of the most important functions of a democratic state. Courts are entrusted with the responsibility of protecting rights, resolving disputes, and upholding the rule of law. However, judicial systems across the world face common challenges such as case backlogs, delays in adjudication, rising litigation costs, and increasing complexity of legal disputes.

Artificial Intelligence offers innovative solutions to address many of these challenges. AI refers to computer systems capable of performing tasks that ordinarily require human intelligence, including learning, reasoning, pattern recognition, decision-making, and language processing.

In the legal field, AI technologies can analyze vast amounts of legal data, identify relevant precedents, predict legal outcomes, automate routine tasks, and assist judges in case management. While AI cannot replace the human element of judicial reasoning, it can significantly enhance judicial efficiency and access to justice.

Understanding Artificial Intelligence in the Judicial Context

AI in the judiciary refers to the use of machine learning, natural language processing, predictive analytics, and expert systems to assist courts and legal professionals.

Common AI applications include:

1. Legal research automation.
2. Case classification and management.
3. Judgment analysis.
4. Predictive analytics.
5. Virtual hearings.
6. Document review.
7. Translation services.
8. Online dispute resolution systems.

AI systems process large volumes of legal information within seconds, enabling judges and lawyers to focus on substantive legal issues rather than administrative tasks.

Positive Impact of Artificial Intelligence on the Judiciary

1. Reduction of Case Backlogs

One of the major challenges facing judicial systems worldwide is the enormous pendency of cases. In India, millions of cases remain pending before various courts. *AI can assist courts by*:

- Categorizing cases automatically.
- Prioritizing urgent matters.
- Scheduling hearings efficiently.
- Monitoring case progress.

Example

The Indian judiciary's e-Courts Project utilizes technology to streamline case management and improve judicial administration. AI-driven tools can further strengthen these efforts by identifying delays and suggesting procedural improvements.

2. Enhanced Legal Research

Judges and lawyers often spend considerable time researching statutes, precedents, and legal principles.

AI-powered legal research tools can:

- Search thousands of judgments instantly.
- Identify relevant precedents.
- Summarize lengthy judgments.
- Detect conflicting decisions.

Example

The Supreme Court of India introduced *SUPACE (Supreme Court Portal for Assistance in Court Efficiency)* to assist judges in legal research by collecting relevant facts and precedents from large databases.

SUPACE does not make decisions but supports judicial officers in conducting efficient research.

3. Improved Access to Justice

Many citizens face barriers to accessing legal services because of:

- High litigation costs.
- Lack of legal awareness.
- Geographical constraints.

AI-based legal assistance platforms can provide:

- Preliminary legal guidance.
- Information regarding legal rights.
- Assistance in filing legal documents.

Example

Online legal assistance systems can guide litigants regarding consumer complaints, family disputes, or labour grievances without requiring immediate legal representation.

This democratizes access to legal information.

4. Faster Judicial Decision-Making

AI can significantly reduce the time spent on procedural and administrative tasks.

Judges can use AI-generated summaries to:

- Review pleadings.
- Examine precedents.
- Understand case histories.

Example

In large commercial disputes involving thousands of documents, AI software can identify relevant evidence much faster than manual review.

5. Better Court Administration

Court administration involves numerous repetitive functions such as:

- Filing management.
- Cause list preparation.
- Record maintenance.
- Case tracking.

AI systems can automate these processes and reduce human errors.

Example

Smart case allocation systems can distribute cases among judges based on workload and specialization.

6. Multilingual Judicial Assistance

Countries like India have diverse linguistic populations.

AI-powered translation tools can facilitate:

- Translation of court records.
- Multilingual judgments.
- Real-time interpretation.

Example

The Supreme Court of India has undertaken efforts to translate judgments into regional languages to improve accessibility. AI can accelerate this process significantly.

Global Examples of AI in Judiciary

China

China has introduced "Smart Courts" utilizing AI technologies for:

- Online hearings.
- Evidence management.
- Case filing.

- Legal consultation.

AI systems assist judges but do not replace judicial authority.

Estonia

Estonia has experimented with AI-based systems for resolving small-value disputes involving limited claims.

The objective is to reduce the burden on courts and provide quicker dispute resolution.

United States

Several American courts use AI-based risk assessment tools during sentencing and bail decisions.

Example

COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) assists courts in evaluating the likelihood of reoffending.

However, its use has generated significant controversy due to allegations of algorithmic bias.

United Kingdom

The UK judiciary employs AI-assisted legal research and digital court management systems to improve judicial efficiency.

Challenges and Risks of AI in the Judiciary

1. Algorithmic Bias

AI systems learn from historical data.

If the training data reflects social or institutional biases, the AI system may reproduce discriminatory outcomes.

Example

The COMPAS system in the United States was criticized for allegedly producing racially biased risk assessments.

Such bias can undermine public confidence in justice systems.

2. Lack of Transparency

Many AI algorithms function as *"black boxes."*

Judges and litigants may not understand:

- How decisions are generated.
- What factors were considered.
- Why certain recommendations were made.

Transparency is essential to ensure fairness and accountability.

3. Threat to Judicial Independence

Judicial decision-making requires:

- Human reasoning.
- Ethical judgment.
- Contextual understanding.
- Application of equitable principles.

Excessive reliance on AI recommendations may compromise independent judicial reasoning.

Judges must remain the final decision-makers.

4. Privacy and Data Protection Concerns

AI systems require large datasets containing:

- Personal information.
- Medical records.
- Financial details.
- Criminal histories.

Improper handling of such information can violate privacy rights.

Example

Unauthorized access to court databases may expose sensitive information of litigants and witnesses.

5. Absence of Human Empathy

Justice is not merely a mechanical application of rules.

Judges often consider:

- Human emotions.
- Social realities.

- Moral considerations.
- Equitable principles.

AI lacks emotional intelligence and cannot fully appreciate human suffering or social complexities.

Example

Family disputes involving child custody require sensitivity and human judgment beyond data analysis.

6. Accountability Issues

A critical question arises:

Who is responsible if an AI system produces an erroneous recommendation?

Possible answers include:

- Software developers.
- Government authorities.
- Court administrators.
- Judges relying on the system.

The absence of clear accountability frameworks remains a major concern.

AI and Judicial Ethics

The use of AI in courts must comply with established judicial values including:

- Independence.
- Impartiality.
- Integrity.
- Transparency.
- Accountability.
- Fairness.

AI should function only as an assistive tool rather than a substitute for judicial decision-making.

Judicial officers must critically evaluate AI-generated outputs before relying upon them.

Position of India on AI in Judiciary

India has adopted a cautious and balanced approach.

The Supreme Court has consistently emphasized that:

- AI should assist judges.
- AI should not replace judges.
- Human adjudication remains essential.

Initiatives such as:

- E-Courts Project,
- SUPACE,
- SUVAS (Supreme Court Vidhik Anuvaad Software),

demonstrate India's commitment to leveraging technology while preserving judicial independence. SUVAS uses AI for translating judicial documents into regional languages, thereby enhancing accessibility and inclusiveness.

Future of AI in the Judiciary

The future judicial ecosystem may include:

1. AI-assisted legal research.
2. Intelligent case management systems.
3. Predictive litigation analytics.
4. Virtual courts.
5. Online dispute resolution platforms.
6. Automated document drafting.
7. Multilingual judicial communication.

However, the judiciary of the future is likely to adopt a **Human-in-the-Loop Model**, where AI provides recommendations while judges retain complete control over judicial decisions.

This approach balances technological efficiency with constitutional values and procedural fairness.

Recommendations

To ensure responsible use of AI in the judiciary, the following measures should be adopted:

1. Establish comprehensive AI governance frameworks.
2. Ensure transparency and explainability of algorithms.
3. Conduct regular audits for bias and discrimination.
4. Protect judicial data through robust cybersecurity measures.
5. Train judges and court staff in AI literacy.

6. Maintain human oversight over all AI-assisted processes.
7. Develop ethical guidelines specifically for judicial AI systems.
8. Promote interdisciplinary collaboration among legal scholars, technologists, and policymakers.

Conclusion

Artificial Intelligence represents a significant opportunity to modernize judicial systems and improve the delivery of justice. By enhancing efficiency, reducing delays, facilitating legal research, and expanding access to justice, AI can substantially strengthen judicial institutions. Nevertheless, the integration of AI into the judiciary must be approached with caution. Issues relating to bias, transparency, accountability, privacy, and judicial independence require careful regulation and continuous oversight.

The essence of justice lies not only in logical reasoning but also in human values, empathy, and constitutional morality. Therefore, while AI can become a valuable judicial assistant, it cannot replace the human judge. The future of justice lies in a harmonious partnership between technological innovation and human wisdom, ensuring that the pursuit of efficiency never compromises the fundamental principles of fairness, equality, and the rule of law.

BIBLIOGRAPHY

Books

1. Abbott, Ryan. *The Reasonable Robot: Artificial Intelligence and the Law*. Cambridge University Press, 2020.
2. Ashley, Kevin D. *Artificial Intelligence and Legal Analytics: New Tools for Law Practice in the Digital Age*. Cambridge University Press, 2017.
3. Calo, Ryan, A. Michael Froomkin, and Ian Kerr (eds.). *Robot Law*. Edward Elgar Publishing, 2016.
4. Hildebrandt, Mireille. *Law for Computer Scientists and Other Folk*. Oxford University Press, 2020.
5. Pagallo, Ugo. *The Laws of Robots: Crimes, Contracts, and Torts*. Springer, 2013.
6. Sartor, Giovanni. *Legal Reasoning: A Cognitive Approach to the Law*. Springer, 2005.

7. Susskind, Richard. *Tomorrow's Lawyers: An Introduction to Your Future*. 3rd ed., Oxford University Press, 2023.
8. Susskind, Richard, and Daniel Susskind. *The Future of the Professions: How Technology Will Transform the Work of Human Experts*. Oxford University Press, 2015.
9. Turner, Jacob. *Robot Rules: Regulating Artificial Intelligence*. Palgrave Macmillan, 2019.
10. Bench-Capon, Trevor, and Giovanni Sartor. *Argumentation in Artificial Intelligence and Law*. Springer, 2005.

Journal Articles

1. Surden, Harry. "Artificial Intelligence and Law: An Overview." *Georgia State University Law Review*, Vol. 35, No. 4, 2019, pp. 1305–1334.
2. Abbott, Ryan. "I Think, Therefore I Invent: Creative Computers and the Future of Patent Law." *Boston College Law Review*, Vol. 57, No. 4, 2016, pp. 1079–1126.
3. Pasquale, Frank. "A Rule of Persons, Not Machines: The Limits of Legal Automation." *George Washington Law Review*, Vol. 87, 2019, pp. 1–37.
4. Veale, Michael, and Lilian Edwards. "Clarity, Surprises, and Further Questions in the Article 22 GDPR Right to Explanation." *Computer Law & Security Review*, Vol. 34, No. 2, 2018, pp. 398–404.
5. Allen, Ronald J., and Danielle Citron. "The Automated Administration of Justice." *Michigan State Law Review*, 2017.
6. Cath, Corinne, Sandra Wachter, Brent Mittelstadt, Mariarosaria Taddeo, and Luciano Floridi. "Artificial Intelligence and the Good Society." *Science and Engineering Ethics*, Vol. 24, No. 2, 2018, pp. 505–528.
7. Hildebrandt, Mireille. "Law as Computation in the Era of Artificial Legal Intelligence." *Speaking Law to the Power of Statistics*, Amsterdam University Press, 2016.
8. Barfield, Woodrow, and Ugo Pagallo. "Research Handbook on the Law of Artificial Intelligence." *Edward Elgar Publishing*, 2018.

Indian Reports and Policy Documents

1. NITI Aayog, National Strategy for Artificial Intelligence (#AIForAll) (2018)
2. IndiaAI Mission, Government of India

3. Ministry of Electronics and Information Technology (MeitY)
4. e-Courts Mission Mode Project, Department of Justice, Government of India
5. SUPACE (Supreme Court Portal for Assistance in Court Efficiency), Supreme Court of India
6. SUVAS (Supreme Court Vidhik Anuvaad Software), Supreme Court of India

International Reports and Guidelines

1. UNESCO Recommendation on the Ethics of Artificial Intelligence (2021)
2. OECD Principles on Artificial Intelligence (2019)
3. European Commission Artificial Intelligence Act Resources
4. Council of Europe Framework Convention on Artificial Intelligence, Human Rights, Democracy and Rule of Law
5. World Economic Forum AI Governance Alliance Reports

Relevant Indian Case Laws

1. Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1.
2. Anuradha Bhasin v. Union of India, (2020) 3 SCC 637.
3. Internet and Mobile Association of India v. Reserve Bank of India, (2020) 10 SCC 274.
4. Shreya Singhal v. Union of India, (2015) 5 SCC 1.

****

SANSKAR SARJAN EDUCATION SOCIETY
Sanskar Jus Gentium - Annual Research Journal [Special Edition] Vol. 4, Issue: 2

Artificial Intelligence and the Right to Privacy

By Ameya Vinayak Varde
F.Y. LL.B.
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction

Artificial Intelligence (AI) is undoubtedly one of the most revolutionary technologies of the modern world, with applications spanning across various fields such as healthcare, finance, law enforcement, and even government policymaking. Defined broadly as the imitation of human intelligence processes by intelligent machines such as computer systems, AI depends heavily on vast amounts of data, including personal information of individuals. On the other hand, apart from bringing in unprecedented efficiency and innovation, the use of AI poses significant challenges to the basic right of privacy.

Right to Privacy

In the case of Justice K.S. Puttaswamy (Retd.) v. Union of India (2017) 10 SCC 1, in a nine-judge bench ruling, the Supreme Court has recognized the right to privacy as a fundamental right guaranteed under Article 21 of the Constitution of India. The judgment made clear that the right to privacy includes informational privacy (the right to control one's own data) as well as the freedom of decision-making by the individual. Notably, the judgment effectively overturned the earlier restrictions imposed on privacy in the cases of M.P. Sharma v. Satish Chandra (1954) and Kharak Singh v. State of Uttar Pradesh (1963). As per the Puttaswamy judgment, any invasion into the privacy of individuals must meet the proportionality test involving legitimacy of the aim of the State, reasonable nexus between the measure taken and the said aim, necessity of taking the measure, and balance of interests.

Challenges to Right to Privacy Due to Artificial Intelligence Technology

The challenges to privacy resulting from artificial intelligence have increased in times of the internet when AI algorithms operate through machine learning, facial recognition technology (FRT), predictive analytics, and automated decision-making. Such technologies can result in mass surveillance and behavioural profiling using personal information of individuals leading to a violation of data minimisation, algorithmic bias and

even the invasion of individuals' autonomy. Given the large digital population of India and the use of technology in the operations of law enforcement agencies such as NAFRS system, along with the adoption of the DPDP Act In 2023, there are considerable risks to the right to privacy.

Conclusion and Suggestions

The present paper focuses on the legal aspects of the right to privacy in light of the Implications of AI technology in India. The origins of privacy in India stem from common law notions of the "right to be let alone," as espoused in American case law and recognised in Indian cases such as R. Rajagopal v. State of Tamil Nadu (1994) 6 SCC 632, which recognised privacy regarding personal reputation and family life. However, before 2017, Indian jurisprudence viewed privacy as a derivative right that could not be enforced independently of other rights against the state. In Puttaswamy, the court transformed privacy into a fundamental right intrinsic to Articles 14 (equality), 19 (freedoms), and 21 (life and liberty). The court identified three components: spatial privacy (physical spaces), decisional privacy (autonomy over choices), and informational privacy (control over information). In the digital age, informational privacy is critical because AI systems learn, analyse, and draw conclusions from online activities, biometrics, and IoT devices. In the 2018 Aadhaar judgment (Justice K.S. Puttaswamy v. Union of India, 2019 1 SCC 1), the court applied its privacy framework to uphold the Aadhaar Act but with restrictions on mandatory linkage and misuse of biometric information by private entities, while invalidating provisions allowing private entities to authenticate identities. The court also emphasised proportionality and data minimisation principles, directly pertinent to AI's thirst for training data. Since Puttaswamy, privacy jurisprudence has expanded to confront the challenges of the digital age. Cases like Navtej Singh Johar v. Union of India (2018) 10 SCC 1 have invoked privacy principles to decriminalise consensual sexual relations between adults. However, there remain deficiencies in addressing issues unique to AI, such as the use of predictive policing tools or the production of deepfakes used to spread misinformation, implicating privacy rights and freedom of expression under Article 19(1)(a). Worldwide, the European Union's GDPR (2018) offers comprehensive protections, including rights against automated decision-making (Article 22) and data protection impact assessments (DPIA). Although India's framework is inspired by the GDPR, it is still embryonic. There is an urgent need for the evolution of privacy rights in line with AI-

related concerns to avoid surveillance capitalism.

AI tools fundamentally violate privacy concepts because of their dependence on massive data processing capabilities. FRT deployment is done by Indian police departments in Safe City projects in urban areas such as Delhi and Hyderabad. Tools, such as NAFRS, collect biometric information without obtaining users' permission, thus allowing continuous tracking. This kind of surveillance violates the purpose principle of consent as demonstrated in Sadhan Haldar v. NCT of Delhi (Delhi High Court) where the original authorisation for child tracking became investigative profiling. Such surveillance cannot pass the Puttaswamy proportionality test because it is indiscriminate rather than targeted.

The ability of AI algorithms to predict sensitive characteristics (health conditions, political affiliations) based on user behaviour, does not comply with the requirement of prior consent. The fact that the GDPR explicitly protects individuals from automated decisions with legal effects contrasts with India's DPDP, which is lacking such regulations and creates risk of discrimination in violation of Article 14. Training generative models involves collecting a huge amount of information often from the web or individuals without their knowledge. Data obtained by inference (sentiment analysis of emotions) is difficult to regulate using the framework described in DPDP Section 6. It violates data minimization principle (DPDP Section 5) and the principle of purpose limitation.

AI decision-making is discriminatory in its nature as black box models reproduce societal biases (predictive policing on the grounds of caste or gender identity). Inability to provide explanation prevents data principals from exercising correction or deletion rights (Sections 12-13 of DPDP). Synthetic media created by AI algorithms raises issues of reputational privacy and autonomy. Recent landmark cases include Anil Kapoor v. Simply Life India, (2023) and Jackie Shroff v. The Peppy Store (2024), which determined liability for unauthorized use of likenesses by AI algorithms. State immunity granted by DPDP Section 17 undermines AI regulation because it allows mass surveillance of citizens for reasons of national security.

The Indian regime on data protection was established via the Information Technology Act, 2000 (IT Act), notably Section 43A, and the 2011 Sensitive Personal Data or Information (SPDI) Rules, which require reasonable security practices and consent for

SPDI. They were sectoral and insufficient for AI. The DPDP Act, 2023, published along with the Rules in 2025, represents a paradigm shift towards a consent-based and rights-oriented approach. It defines "Personal data" extensively (Section 2(t)), places duties on data fiduciaries to process personal data lawfully, fairly, and openly (Section 4), and provides data principals with rights to obtain, modify, delete, and file complaints (Sections 11-13). Significant data fiduciaries must carry out DPIAs and audits (Section 10). However, substantial lacunae in relation to AI remain - No direct regulation of automated decisions or transparency of algorithms and wide-ranging governmental exceptions compromise privacy in light of state. The comparative analysis indicates that the Indian framework is more realistic than the EU AI Act (risk categorisation) or GDPR. The latest guidelines under DPDP Rules emphasise consent for AI model training but are deficient in respect of inferred data and behavioural surveillance. Sectoral regulations such as the IT (Intermediary Guidelines) Rules, 2021, touch upon some deepfake issues but lack any AI-specific provisions. Therefore, although the DPDP Act implements Puttaswamy, it needs modifications in regard to AI governance for proportionality and accountability. The judiciary in India has always led the way in safeguarding privacy, adopting an interpretative approach to fit modern-day technology. For example, The Puttaswamy case of 2017 not only highlighted the need for privacy but mandated proportionality as the test for any restrictions, which now forms the bedrock of all future AI challenges. After 2017, there have been various cases where the judiciary has examined state surveillance powers. For instance, in matters related to FRTs, the Delhi High Court has considered the issue of consent and restricted usage, while public interest litigations (PILs) (such as Bhavna Sharma v. Union of India, 2025) are filed for regulatory oversight of foreign AI technologies, such as DeepSeek, which do not conform to Indian privacy requirements. Other High Courts, like that of Kerala, have proactively issued policies concerning AI within the judiciary framework (2025), wherein it is explicitly stated that there cannot be any AI substitution of judicial reasoning, and confidentiality is guaranteed through human

verification.

The role of the judiciary includes interpreting the DPDP Act purposively, including the reading-in of the explainability obligation under the transparency obligations (Section 4) and applying the Puttaswamy balancing test to AI exceptions. The judiciary needs to provide continuous guidelines concerning algorithmic audits and ensure strict liability to ensure that AI aids in delivering justice without compromising fundamental rights. Specialised benches or training, as suggested by judicial white papers, can improve capacity. The introduction of AI in our society has brought many opportunities, but also presents itself as a threat to privacy unless stringent measures are put in place. While the Indian Constitution, specifically the Puttaswamy doctrine, provides a very solid foundation, legislative loopholes in the DPDP Act, along with the unregulated use of AI poses a significant danger.

The introduction of AI in our society has brought many opportunities, but also presents itself as a threat to privacy unless stringent measures are put in place. While the Indian Constitution, specifically the Puttaswamy doctrine, provides a very solid foundation, legislative loopholes in the DPDP Act, along with the unregulated use of AI poses a significant danger. Thus, the main suggestions are:

1. Amend the DPDP Act to include specific obligations related to AI, such as mandatory DPIAs for high-risk systems, the right against automated decisions, algorithmic transparency, and bias testing.
2. Draft an independent AI Regulation Act, following a risk-based approach similar to the EU AI Act, which would also mandate the principle of privacy by design.

BIBLIOGRAPHY

Textbooks

1. Matthan, Rahul. Data Protection Law in India. First Edition, 2022.
2. Naib, Sudhir. The Right to Privacy in India: Concept and Evolution.
3. Duggal, Pavan. Cyber Privacy in India.

Journal Articles

1. Sushma, Arokia. "ARTIFICIAL INTELLIGENCE AND DATA PRIVACY CHALLENGES: A LEGAL PERSPECTIVE." Indian Journal of Integrated Research in Law, Volume V Issue V, 2025.

2. "The Impact of Artificial Intelligence on Privacy Laws in the Digital Age: A Global and Indian Perspective." Law Jurist, August 2025.

3. Tandon, Usha. "Informational Privacy in the Age of Artificial Intelligence: A Critical Analysis of India's DPDP Act, 2023." Legal Analysis, 2025.

****

Data Protection, Privacy and Surveillance

By Anish H. Singh

F.Y. LL.B.
D.T.S.S. College of Law, Kurar Village, Malad (E) Mumbai-400097.

Introduction

Artificial Intelligence (AI) has emerged as one of the most transformative technologies of the 21st century. Its integration into governance and legal systems has raised significant concerns regarding data protection, privacy, and surveillance. Courts have increasingly recognized the need to balance technological advancement with fundamental rights, especially the right to privacy.[1]

Understanding AI in Legal Context

AI technologies such as predictive policing and algorithmic decision-making are increasingly used in legal processes. However, concerns arise regarding transparency and accountability. In State v. Loomis, the use of AI-based risk assessment tools raised concerns about due process and lack of transparency in algorithmic decision-making[2]. This case demonstrates the legal challenges posed by "black box" AI systems.

Data Protection in the Age of AI

AI systems rely on large datasets, often including sensitive personal information. This raises risks such as data breaches and misuse. The Supreme Court of India in Justice K.S. Puttaswamy v. Union of India recognized privacy as a fundamental right under Article 21.[3] This judgment laid the foundation for data protection laws in India. Similarly, in Google Spain SL v. AEPD, the European Court of Justice recognized the "Right to be forgotten," allowing individuals to control their personal data online.[4]

Privacy Concerns in AI Systems

AI systems often collect and process personal data without explicit consent. In People's Union for Civil Liberties (PUCL) v. Union of India, the Supreme Court established safeguards against unauthorized surveillance, particularly telephone tapping[5]. In Carpenter v. United States, the U.S. Supreme Court held that accessing location data without a warrant violates privacy rights.[6]

Surveillance and AI

AI has enhanced surveillance through facial recognition and data tracking technologies. In Kharak Singh v. State of Uttar Pradesh, the Supreme Court held that unauthorized surveillance violates personal liberty.[7] Further, in Anuradha Bhasin v. Union of India, the Court emphasized that restrictions on internet access must be lawful and proportionate.[8]

Ethical Challenges in AI and Law

AI systems may result in bias and discrimination. The principle of equality under Article 14 was emphasized in State of West Bengal v. Anwar Ali Sarkar, which is relevant in ensuring that AI systems do not produce discriminatory outcomes.[9]

Regulatory Challenges and Approaches

Regulating AI is complex due to rapid technological development. In Shreya Singhal v. Union of India, the Supreme Court struck down Section 66A of the IT Act, emphasizing the importance of protecting freedom of speech in the digital era.[10]

Indian Legal Perspective

India is developing its legal framework for AI and data protection. In the Aadhaar judgment (K.S. Puttaswamy v. Union of India), the Supreme Court upheld the scheme but imposed limitations to protect privacy and ensure proportionality.[11]

Balancing Innovation and Rights

Balancing technological innovation with individual rights is essential. In R. Rajagopal v. State of Tamil Nadu, the Supreme Court recognized the right to privacy in protecting personal information from unauthorized publication.[12]

Conclusion

AI presents both opportunities and challenges in law. Judicial precedents such as Puttaswamy, PUCL, and Shreya Singhal have strengthened the protection of fundamental rights in the digital age. A balanced regulatory approach is necessary to ensure ethical AI use while safeguarding privacy and justice.

BIBLIOGRAPHY

1. Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1 (India).
2. State v. Loomis, 881 N.W.2d 749 (Wis. 2016) (U.S.).
3. Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1 (India).
4. Google Spain SL v. Agencia Española de Protección de Datos (AEPD), Case C-131/12, ECLI:EU:C:2014:317 (CJEU 2014).
5. People's Union for Civil Liberties (PUCL) v. Union of India, (1997) 1 SCC 301 (India).
6. Carpenter v. United States, 138 S. Ct. 2206 (2018) (U.S.).
7. Kharak Singh v. State of Uttar Pradesh, AIR 1963 SC 1295 (India).

8. Anuradha Bhasin v. Union of India, (2020) 3 SCC 637 (India).
9. State of West Bengal v. Anwar Ali Sarkar, AIR 1952 SC 75 (India).
10. Shreya Singhal v. Union of India, (2015) 5 SCC 1 (India).
11. K.S. Puttaswamy (Aadhaar-5J.) v. Union of India, (2019) 1 SCC 1 (India).
12. R. Rajagopal v. State of Tamil Nadu, (1994) 6 SCC 632 (India).

****

Artificial Intelligence in Judiciary and Access to Justice

By Nandini Ramesh Prajnale

Second Year B. A. LL.B.
Shivajirao S. Jondhale Institute of Law and Research, Asangaon, Thane.

Abstract

Artificial Intelligence has become one of the most influential technological developments in modern governance and legal administration. In recent years, judicial systems across the world have begun exploring artificial intelligence as a tool for improving efficiency, reducing delay, and strengthening public access to legal institutions. Courts traditionally function through human reasoning, interpretation of law, and procedural fairness, but the growing burden of pending litigation has created a need for technological support. The concept of access to justice means that every person should have a fair and practical opportunity to seek legal remedies without unreasonable delay, cost, or procedural difficulty. However, many judicial systems continue to face structural limitations that prevent effective delivery of justice.

The use of AI in judiciary introduces new possibilities such as digital case management, legal research automation, predictive analytics, virtual hearings, language translation, and online dispute resolution. These developments have become particularly important in countries where courts face heavy pendency and administrative pressure. At the same time, important concerns arise regarding algorithmic bias, transparency, judicial independence, privacy, and ethical responsibility.

This research paper examines the role of AI in judicial institutions and evaluates whether technological intervention can genuinely improve access to justice while preserving constitutional principles. The study concludes that AI can significantly strengthen judicial administration if used as a supportive mechanism under human supervision rather than as a substitute for judicial reasoning.

Introduction

The judiciary is one of the most important pillars of a democratic legal system because it protects rights, resolves disputes, and maintains public confidence in the rule of law. Courts are expected to provide justice that is fair, accessible, affordable, and timely. However, in reality, many judicial systems struggle with serious challenges such as excessive delay, shortage of judges, rising litigation costs, procedural complexity, and increasing case backlog. These problems

directly affect access to justice because citizens often experience difficulty in obtaining timely legal remedies.

In modern times, technological advancement has opened new possibilities for judicial reform. Artificial intelligence refers to systems capable of performing tasks that normally require human intelligence, such as pattern recognition, learning from data, classification, prediction, and automated analysis. When applied to law, AI can process legal information rapidly, assist judges in research, organize court records, and support administrative decision-making.

India provides an important example because its judicial system handles one of the largest volumes of litigation in the world. The large number of pending cases has created pressure to modernize courts through digital tools. Under the supervision of the Supreme Court of India, technological reforms such as e-filing, virtual hearings, and translation software have already begun to transform court functioning.

AI in judiciary therefore represents both an opportunity and a challenge: an opportunity to improve efficiency and a challenge to preserve fairness, accountability, and human judgment.

Research Objectives

- To understand the meaning and legal scope of AI in judiciary
- To examine the relationship between AI and access to justice
- To identify practical judicial applications of AI
- To analyze benefits and limitations of AI in courts
- To evaluate constitutional and ethical concerns in AI-based justice systems

Research Methodology

This research paper is based on doctrinal and analytical research methodology. It uses secondary sources such as legal articles, judicial reports, academic books, technological studies, and comparative legal developments. The paper follows descriptive analysis to explain AI applications and critical evaluation to assess their legal consequences.

Research Gap

Although AI is widely discussed in legal scholarship, there remains limited practical analysis of how it affects real access to justice in developing judicial systems, especially in India. Most studies focus on efficiency, but fewer critically examine digital inequality, legal literacy, and constitutional safeguards.

Meaning of AI in Judiciary

Artificial intelligence in judiciary means the use of computational systems and machinelearning tools to assist courts in performing legal and administrative functions. It is important to understand that AI does not necessarily mean replacing judges. In most practical situations, AI acts as a supporting instrument that helps judicial officers manage information more efficiently.

AI systems can examine large amounts of legal data within seconds. For example, software can identify similar judgments, search precedents, classify petitions, and organize case files more quickly than manual methods. Judicial work traditionally depends heavily on reading, comparison, and structured legal analysis, and AI can reduce this burden significantly.

However, legal decision-making is not merely technical. Judicial reasoning requires interpretation, balancing of rights, and understanding of social realities. Therefore, AI may assist judicial work, but final legal authority must remain with human judges.

Major Functions of AI in Judiciary

- Legal research assistance
- Judgment database analysis
- Document classification
- Scheduling and case prioritization
- Automated legal translation
- Digital record management

Concept of Access to Justice

Access to justice is a foundational principle of legal democracy. It means that every individual, regardless of social or economic condition, must be able to approach legal institutions and receive fair remedies. Justice is meaningful only when it is practically available.

Many barriers affect access to justice:

- High legal expenses
- Delay in court proceedings
- Lack of legal awareness
- Language barriers
- Distance from judicial institutions

In many cases, poor and rural populations face difficulty even in understanding legal procedures. Therefore, justice is often available formally but inaccessible practically.

AI becomes important because digital systems can reduce many procedural obstacles. Legal information can be made available through online platforms, automated assistance, and simplified communication systems.

AI Applications in Judicial Systems

a) **Legal Research and Precedent Identification**: One of the strongest uses of AI is legal research. Judges and lawyers often need to examine hundreds of previous decisions before deciding a matter. AI-based databases can identify relevant judgments instantly. This reduces time spent on repetitive searching and allows deeper focus on legal reasoning.

b) **Case Management and Backlog Reduction**: AI can improve internal court administration by:

- identifying urgent matters
- grouping similar cases
- tracking adjournments
- managing hearing schedules

This directly helps reduce pendency.

c) **Predictive Analytics**: Some legal systems use predictive tools to estimate possible outcomes based on past decisions. These tools help lawyers understand litigation risks and may encourage settlements. However, predictions should never replace judicial discretion.

d) Virtual Courts and Online Hearings: Digital hearings became highly important during emergencies. Virtual systems increased continuity of justice delivery.

e) Language Translation: AI based translation systems help citizens understand legal documents in multiple languages

AI in Indian Judiciary

Supreme Court of India has actively encouraged judicial digitization.

Important reforms include:

- e-filing systems
- virtual court hearings
- digital records
- online case tracking

A major development is SUVAS (Supreme Court Vidhik Anuvaad Software), which helps translate judgments into regional languages.

This is highly important in a multilingual country because language often becomes a barrier to justice.

During the pandemic period, virtual hearings proved that digital infrastructure can preserve judicial continuity even during national disruption.

Comparative International Experience

United States

United States uses algorithmic systems in criminal justice, especially risk assessment. COMPAS became a major example because it estimated reoffending risk. However, criticism emerged because bias was found in predictive outcomes.

China

China has developed smart courts where AI supports filing, evidence review and online proceedings.

Europe

European legal systems focus strongly on privacy, transparency, and human oversight. These comparative examples show that AI must always reflect constitutional culture.

Benefits of AI in Judiciary

- *Faster Judicial Process*: AI reduces administrative burden and speeds up procedural stages.
- *Lower Litigation Costs*: Research and documentation become cheaper.
- *Better Public Accessibility*: Digital legal services help ordinary citizens' access information.
- *Improved Transparency*: Electronic systems create traceable records.
- *Efficient Resoruce use*: Judges can focus more on complex reasoning rather than repetitive work.

Key Benefits Summary

- Speed
- Accuracy
- Administrative efficiency
- Wider reach

- Better monitoring

Challenges and Risks

1. *Algorithmic Bias*: AI learns from past data. If historical judgments contain social bias, AI may reproduce unfair outcomes.
2. *Lack of Explainability*: Some AI systems produce results without clear reasoning.
3. *Threat to Judicial Independence*: Judges may unconsciously rely too heavily on machine recommendations.
4. *Privacy Concerns*: Judicial records often contain sensitive personal information.
5. *Digital Divide*: Not all citizens have equal digital access.

Ethical Concerns

Justice requires more than efficiency. It requires moral understanding. Machines cannot fully understand:

- Emotional suffering
- Social vulnerability
- Personal circumstances

A human judge can interpret silence, conduct and context. AI cannot fully replicate such sensitivity. Therefore, AI must remain advisory and not decisive.

Constitutional Perspective

Constitutional justice depends on:

- fair hearing
- equality before law
- reasoned decisions
- accountability

If AI influences judicial outcomes without transparency, constitutional legitimacy becomes weak. Therefore every AI system used in courts must remain reviewable and accountable.

Critical Analysis

AI can strengthen courts, but justice cannot be reduced to computation. Judicial decisions involve law, facts, values, and human consequences. A machine identifies patterns; a judge

interprets life circumstances. The best future model is not automated justice but assisted justice, where technology supports human reasoning.

Suggestions and Recommendations

- *AI should remain under judicial supervision*: Human judges' mucst retain final authority.
- *Transparent algorithms are necessary:* AI systems used in courts must be explainable.
- *Judicial training is essential:* Judges and lawyers need technical literacy.
- *Rural digital legal access must improve:* Technology should reach marginalized communities.
- *Strong legal regulation is required:* Clear rules must govern judicial AI use.

Conclusion

Artificial intelligence has the potential to transform judicial administration by reducing delay, improving efficiency, and expanding legal accessibility. It can support legal research, case management, translation, and public legal awareness. At the same time, justice remains a deeply human constitutional responsibility that requires fairness, interpretation, empathy, and accountability. AI should therefore be used carefully as a supportive legal instrument rather than as a substitute for judicial authority. With ethical safeguards, transparency, and human oversight, AI can contribute meaningfully to stronger access to justice in modern legal systems.

BIBLIOGRAPHY

1. Russell and Norvig, *Artificial Intelligence: A Modern Approach*
2. Judicial reform reports of Supreme Court of India
3. Legal technology journals
4. Comparative studies on digital courts
5. AI ethics and law research articles

****