

AI-powered Indian Judiciary - A boon or a bane

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Abstract- The utilisation of Artificial Intelligence (AI) in the legal sector and Indian Judiciary has shown significant growth over the last decade. AI technologies, such as machine learning algorithms, natural language processing, and computer vision, have been utilised in a range of legal activities, such as legal research, contract analysis, and forecasting case results. The utilisation of artificial intelligence (AI) in the field of law has the promise of enhancing operational effectiveness and diminishing expenses. However, it also gives rise to apprehensions over privacy, bias, and the obligation to answer for one's actions. This research paper presents a comprehensive examination of artificial intelligence (AI) and its various implementations within the legal sector. The article examines the advantages and difficulties of employing artificial intelligence (AI) in the field of law, while also delving into the ethical and legal consequences of implementing AI in the legal system.

Moreover, the study investigates the potential impact of AI on the legal profession and the evolving function of attorneys in the future. Ultimately, the paper provides suggestions to policymakers, legal practitioners, and researchers on how to effectively utilise the capabilities of AI while minimising its potential drawbacks. Consequently, it is now essential for any necessary advancement to be both socially acceptable and able to be justified. Utilising artificial intelligence in the legal system holds the capacity to enhance the availability of justice, diminish expenses, and elevate the calibre of legal services. Nevertheless, it is crucial to acknowledge and tackle the legal and ethical considerations associated with the utilisation of AI in the legal system. The Indian government is actively implementing measures to achieve this objective, and it is quite probable that we will witness an increase in the enactment of legislation and regulations that oversee the use of artificial intelligence in the judicial system in the forthcoming years. Currently, Artificial Intelligence (AI) is becoming increasingly popular due to its ability to effectively address numerous real-world problems. Artificial Intelligence (AI) plays a significant role in various domains, including healthcare, business, and manufacturing. Given the significant proliferation of AI in many domains, mere involvement in the legal system is insufficient. Numerous legal businesses continue to employ contemporary technology and software in their operations. They opt for alternative methods instead of

utilising emerging technology such as AI to enhance productivity and efficacy. Artificial intelligence enables lawyers to automate mundane duties, so liberating their time for more crucial and strategic responsibilities. This study elucidates the potential of artificial intelligence (AI) in enhancing the effectiveness and efficiency of law enforcement. The current generation has witnessed significant advancements in the realm of artificial intelligence. A significant portion of the population has become accustomed to interacting with chatbots and utilising virtual personal assistants such as Siri, Alexa, and Google Assistant, leading to a rapid increase in their usage. The current generation has witnessed significant advancements in the realm of artificial intelligence. Virtual personal assistants like Siri, Alexa, and Google are increasingly common, and India has achieved significant success in integrating artificial intelligence across its many businesses. Robots in Chennai and Hyderabad operated in robot-themed restaurants, providing service and engaging with guests in both English and Tamil. A robot was being utilised by the police for operational purposes. In 2018, a cardiologist in Ahmadabad conducted a telerobotic coronary intervention on a patient who was located 32 km away from the doctor's location. This study examines the legal status of artificial intelligence (AI), concerns regarding privacy, as well as the advantages and disadvantages of AI in the field of law.

The legal area has been significantly influenced by artificial intelligence, affecting almost every element of human existence. This study examines the convergence of artificial intelligence and law, encompassing the several implementations of AI in the legal sector, such as legal research, contract analysis, and predictive analytics. The study also explores the ethical ramifications of AI in the legal domain, including issues of prejudice, privacy, and security. This study examines the prospective advancements of artificial intelligence (AI) in the field of law and its ongoing impact on the transformation and evolution of the legal sector.

INTRODUCTION

The TV mini-series *Class of 09* depicts the profound consequences of Artificial Intelligence (AI) on the criminal justice system in the United States, presenting

a captivating narrative.¹ In the concluding episode, the artificial intelligence erroneously charges a champion of civil rights with a felony due to her opposition to artificial intelligence expressed in an unpublished book, which the AI perceived as a danger. During the trial, the advocate contends that human judges possess limited jurisdiction in determining her culpability or innocence due to the judiciary's veneration of AI computations. While AI is not currently utilized for decision-making, it may become a viable option in the future.

Currently, artificial intelligence is causing unease and disruption in almost every occupation and sector. Currently, AI is primarily utilized in the legal industry in India for tasks such as automated contract assessment, legal research, and transcribing services. The paper endeavors to investigate the benefits of incorporating AI technology into the legal sector, while also analyzing its effects, the legislation governing its implementation, and the potential challenges that may arise.

This study paper provides a comprehensive examination of the notion of artificial intelligence and its influence on the current dominant legal system. This paper examines the potential impact of artificial intelligence on legal systems worldwide. At first glance, the authors assert that the implementation of Artificial Intelligence (AI) in the legal system would undergo transformation. Artificial intellect (AI) is the development of computer systems that can perform tasks typically associated with human intellect, such as sensing, thinking, and decision-making. It has a broad range of applications, including virtual assistants, fraud detection, and driverless cars. Artificial Intelligence (AI) has the capacity to transform the Indian Legal system by enhancing its efficiency through the use of streamlined processes and reducing costs associated with the existing legal system. AI has the ability to change the paradigm of the Indian Legal System, particularly in the area of legal research. Artificial intelligence can aid judges and lawyers in efficiently analyzing extensive amounts of literature, data, cases, and precedents. The significant investment of time and effort is minimized when utilizing AI, since it efficiently delivers pertinent information on a certain subject.

It is a technological subject that involves machine learning, which is akin to human learning, and the capacity to adapt to specific situations. AI is constructed using a multitude of algorithms that aid the system in identifying the most probable solution, thereby instructing the system on what to anticipate and how to operate correctly. The integration of artificial intelligence (AI) with law is essential for enhancing the efficiency, comprehensibility, convenience, effectiveness, accessibility, and understandability of the justice system. Integrating Artificial Intelligence into the judicial system would streamline administrative tasks, allowing judicial personnel to devote more attention to the substantive aspects of the case.

Furthermore, Artificial intelligence can also contribute to intelligent analytics and research, hence improving the effectiveness of litigators. In addition, the computational worth of a case can be determined by analysing historical data and considering other pertinent factors using sophisticated computational techniques. Legal bots can aid litigants in determining legal matters and facilitate educated decision-making regarding legal rights in a cost-efficient manner, while maintaining the quality of legal assistance. Conversely, the convergence of law and artificial intelligence raises substantial apprehensions. How can we guarantee that AI models be trained using reliable data that is free from mistakes or biases? Within the courtroom, artificial intelligence (AI) presents both opportunities and challenges. Therefore, it is crucial to examine the advancements that have been made thus far.

The AI algorithms possess the capability to scrutinize previous court cases and are very probable to forecast the outcome of ongoing instances. This would prove advantageous for jurists in rendering more knowledgeable judgments and diminishing the number of cases that proceed to trial. In India, it is common knowledge that numerous languages are spoken, therefore it is not unexpected that certain essential papers may be written in regional or vernacular languages, rendering them incomprehensible to a majority of people. AI has the potential to assist in the translation of legal documents between different languages. This could be especially

¹ Berman, Judy, "Class of '09 Is an Ambitious AI Thriller With a Great Brian Tyree Henry Performance," Time (December 25, 2023).

advantageous in instances pertaining to international law. Artificial intelligence (AI) can effectively facilitate the resolution of disputes in online hearings as an alternative to actual court proceedings. Nevertheless, AI presents several issues including employment displacement, data bias, safety and security risks, as well as privacy and ethical concerns. An exhaustive examination of the aforementioned topics has been carried out utilising pertinent literature and corresponding legislation.

LITERATURE REVIEW

For the purpose of this study the researcher has delved into multiple sources to gather the required materials which are relevant to this study and substantiate the things asserted in the paper, and provide a quality research over the said topic in the form of this dissertation. For this the author has referred multiple books, papers, articles, and other sources.

The first paper is *“Artificial Intelligence and the Transformation of Humans, Law and Technology Interactions in Judicial Proceedings”*² written by Francesco Contini, The study links the possible disruption of AI in justice administration to the historical development of court technology. The framework integrates Luhmann's technology theory with actor-network theory to examine how the digital environment impacts judicial agency. The study examines the relationship between law and technology to determine the criteria for legal technology application in court processes. The methodology is used to examine both traditional digital technologies (e.g., online forms and e-justice platforms) and AI-based systems (e.g., speech-to-text and recidivism assessment). The example comparison highlights AI and traditional technology commonalities and dramatic differences. While traditional system creators and owners are legally responsible for their functioning, AI shifts this responsibility to users. Judges, or users, are responsible for the repercussions of their actions supported by opaque and autonomous systems. If not addressed with additional

accountability measures, AI usage may be limited without compromising judicial credibility.

Then, *“Demystifying the Role of Artificial Intelligence in Legal Practice”*³ by Darshan Bhora and Kuldeep Shraavan, This study investigates the legal issues AI can solve and its uses. Artificial intelligence can replace paralegals in law. It can be used to research precedents, construct a contract for a firm or between two people, or review the terms of a contract. AI will decrease errors to a minimum. This paper also discusses legal AI like ROSS intelligence, KiraSystems, LawGeex, and eBrevia. This study examines AI's legal applications. This paper should provide a quick overview of AI and its use in law.

The paper titled *“Balancing the Scales of Justice through Artificial Intelligence”*⁴, by Uday Shankar and Shubham Pandey both being professor and research scholar at Rajiv Gandhi School of Intellectual Property Law, Indian Institute of Technology, Kharagpur, West Bengal respectively tried to examine and map state-of-the-art AI techniques using Indian and international cases to assess the general applicability of AI systems in the court. and answered the question of “what is AI and how it is used in the administration and governance of law in the legal system by providing a realistic analysis of AI systems and their major processes that reflect state-of-the-art AI technology. Non-technical people can understand the technical features of AI systems since they are explained clearly.” They attempted to make it easy to understand the underlying mechanism of current AI technology and emphasise its potential and limitations so that AI processes and approaches can be realistically used in the legal realm to solve real-world challenges. The authors will explain how lawyers and law firms, judges, and law-governed users like ordinary people and corporations are using or proposing to employ AI systems in the paper's latter portion.

The Article titled *“Artificial Intelligence: Facilitating Legal Eco-System in Courts in India”* by Abhishek Dixit and Shashank Shekhar, one being a practicing advocate in High Court of Judicature at Lucknow and

² Contini, F., 2020. Artificial intelligence and the transformation of humans, law and technology interactions in judicial proceedings. *Law, Technology and Humans*, 2(1), pp.4-18.

³ Demystifying the Role of Artificial Intelligence in Legal Practice, [2019] 8.2 NULJ 1

⁴ Balancing the Scales of Justice through Artificial Intelligence, 63 JILI (2021) 190

other being Assistant Professor (Law), Dr Ram Manohar Lohiya National Law University, Lucknow, tried to discuss the utility of the Artificial Intelligence and other modern technologies in solving the real time issues and challenges faced by Indian Judicial settlement. They have also cited the example of various AI tools which are currently employed in the legal industry and how it is making the things easier for the professionals.

The Paper titled *“Redefining the Paradigm of the Indian Legal System Through Artificial Intelligence”* by Boddu Harshith Sai and Naveen Sharma both with the help of this article, addresses crucial themes to explain AI and its relationship to law practice and administration. The report argues that while the legislation is inflexible, artificial intelligence could change it soon, changing the country's legal system. It studies the pros and cons of artificial intelligence and how it affects other fields of law utilising doctrinal research methods. There is no explicit regulation controlling artificial intelligence in India, but the writers have reviewed US and UK AI laws, the Personal Data Protection Bill, 2019, and the challenges of AI takeover.

HYPOTHESIS

The incorporation of AI and modern technology in the legal industry and judicial system is going to be a boon for the legal industry and there will not be any concerns which could be proved as bane.

RESEARCH OBJECTIVE

The study is done with the following objectives

1. Current challenges and issues in Indian judiciary
2. AI and its relevance in solving those issues
3. Adoption of AI in legal industry
4. Extent to which the AI can be incorporated in Legal industry
5. Challenges and hurdles in adoption of AI in legal industry

RESEARCH QUESTIONS

The study endeavors to answer the following research question

1. What are the challenges and issues faced by the Indian Judiciary, and can AI solves any of the issues among them?

2. What is AI and how does it works how it can be used in the area of Law?
3. How AI has developed in the legal industry, and where it is going?
4. How the jurisdictions across the world have adopted the AI in there judicial systems?
5. What are the issues and challenges which could arise while adopting AI in legal industry?
6. Last but not least whether it is boon or bane in justice delivery system of country?

SCOPE OF THE STUDY

The study exclusively focuses on Artificial Intelligence, with some limited comments on Machine Learning. However, it does not encompass any other modern technologies.

RESEARCH METHODOLOGY

A research technique refers to a structured and organized approach employed in the execution of research activities. A preliminary investigation of the subject matter has provided us with a reasonable understanding that employing analytic research methods would be a suitable approach for comprehending the project and its objectives in the future. The current study primarily adopts a doctrinal approach, focusing on an expressive inquiry. Both primary and secondary data have been utilized to incorporate essential and auxiliary information, which are examined comprehensively in order to present detailed facts to the public.

The present analysis has been conducted by referring to academic sources such as journals, committee reports, articles, legal judgments, case reports, and case digests. In order to establish a correlation between historical elements and the present era, and to conduct a comparative examination of the two, the researcher has extensively examined scholarly papers, theses, and dissertations that are readily accessible, while duly acknowledging the original authors.

I: INDIAN JUDICIARY: ISSUES & CHALLENGES

The Indian judiciary, as an essential element of democracy, plays a vital role in upholding the authority of the law and safeguarding the rights and liberties of the population. However, the system is

vulnerable to hindrances that hinder its efficient functioning.⁵

The Indian judiciary encounters numerous obstacles that have an impact on its efficiency, efficacy, and public reputation. The purpose of this article is to provide a thorough examination of the obstacles impacting the judicial system in India.⁶

1. The occurrence of delays in the Judicial System

The Indian judiciary has a significant impediment in the shape of prolonged court delays. The delay in the administration of justice might be linked to the overburdened judicial system and the buildup of unresolved cases.⁷ The substantial volume of legal matters, coupled with inadequate infrastructure and limited judicial resources, places a stress on the legal system. Consequently, litigants endure extended periods of waiting, which erodes trust in the court system and denies justice to those in need.

India's court system currently has a backlog of up to 30 million cases. The High Court is involved in almost 4 million cases, whereas the Supreme Court is involved in 60,000 cases. The continuous increase of this statistic serves as evidence of the deficiencies within the legal system.

The problem of protracted court processes can be ascribed to a myriad of variables. The problem is exacerbated by the restricted accessibility of judges. India is currently facing a chronic shortage of judges, leading to an unfavorable ratio of judges to population. The present condition of the High Courts and lower courts regarding the number of vacant seats is worrisome, since it worsens the already existing backlog of unresolved cases. Urgent measures are required to address this issue, such as expediting the appointment process and increasing the number of judges to ensure timely administration of justice.⁸

The age of litigation procedures and the complexity of the legal system are other factors that contribute to the lengthening of court delays. The Indian legal system has challenges in its proper functioning due to ineffective procedural hurdles and outdated rules.

There are numerous laws that have not been repealed or altered, resulting in unnecessary complexities and obstacles. Moreover, the intricacies of procedures can lead to technicalities being prioritized over the achievement of substantial justice. Enhancing legal procedures and updating legislation are crucial steps for reducing the burden on courts and improving the efficiency of the judiciary.⁹

2. Lack of specialization and expertise

The absence of specialized courts or tribunals for distinct legal domains places additional burden on the judicial system. Specialized judges are essential for resolving economic conflicts, intellectual property issues, environmental challenges, and other specialized areas.¹⁰

The absence of expertise leads to inefficiency and inadequate management of complex problems. Establishing specialized courts and providing continuous training for judges with specific competence has the potential to enhance the efficiency and effectiveness of the justice system.

3. Judicial Appointments

The collegium method, which involves the appointment of judges by a panel of seasoned judges, has been a subject of debate and examination.

Critics argue that the process lacks transparency and could result in favoritism or the exclusion of deserving candidates.¹¹ Exploring different methods of appointing judges, which involve more diverse participants and the application of clear selection criteria, has the capacity to improve the integrity and openness of the judicial system.

Moreover, the matter of judicial responsibility is a pivotal factor to contemplate. While ensuring the utmost significance of judicial independence, it is crucial to establish proper mechanisms for addressing allegations of impropriety or malfeasance. Enhancing the existing systems for judicial accountability, through the implementation of effective investigative and disciplinary procedures, has the capacity to

⁵ Anand, A.S., *Indian Judiciary and Challenges of 21st Century*, 45 *Indian J. Pub. Admin.* 287 (1999)

⁶ Kaur, A., *Judicial Accountability in India: Challenges and Perspectives* (2019).

⁷ Ghosh, Y., "Indian Judiciary: An Analysis of the Cyclic Syndrome of Delay, Arrears and Pendency," 5 *Asian J. Legal Educ.* 21 (2018).

⁸ Kumar, V.A., "Judicial Delays in India: Causes & Remedies," *JL Pol'y & Globalization*, 4, 16 (2012).

⁹ Kumari, M., "Justice Delayed Is Justice Denied: Status of Indian Judicial System," *NyaayShastra Law Rev.*, 2(1), <https-www> (2021).

¹⁰ Kumar, S., "A New Managerial Approach to the Judiciary in India: Critical Review of the Irrational Bureaucratic Structure and a Call for Change," *Eur. J.L. & Pol. Sci.*, 1(1), 27-36 (2022).

¹¹ Aggarwal, T. and Singh, N.B., "Appointment of Judges in Indian Higher Judiciary," *J. Positive Sch. Psychol.*, 2642-2652 (2022).

strengthen the confidence of the general public in the legal system.¹²

4. Enhancing the “Access to justice”

The concept of equitable access to justice is seen as a fundamental principle of every democratic society. However, specific underprivileged communities, economically disadvantaged persons, and residents of distant areas have challenges when seeking access to the legal system.

Inequities in the administration of justice occur as a result of restricted legal knowledge, exorbitant expenses, and geographical limitations. The current difficulty can be tackled by implementing strategies such as expanding legal aid programs, promoting alternative conflict resolution procedures, and utilizing technology to improve access to justice.¹³

Ensuring the availability of legal assistance is crucial in promoting fair and equal access to justice for disadvantaged groups in society. Despite the presence of legal aid services, there is an urgent requirement to improve their accessibility and effectiveness. To reduce the inequality and provide fair access to justice, it is important to improve the legal aid system, increase knowledge about legal rights, and encourage the involvement of volunteer lawyers.¹⁴

Alternative conflict resolution techniques, such as mediation and arbitration, can alleviate the burden on judicial systems and provide expedited settlement for particular types of disputes. By promoting the use of the described procedures and raising awareness of legal knowledge, individuals can gain the ability to take action and reduce the strain on the judicial system. Moreover, the integration of technology has the capacity to revolutionize the accessibility of legal services. By incorporating digital technology like online case management systems, virtual hearings, and the digitization of court operations, it is possible to overcome geographical limitations and facilitate remote participation. By harnessing technology, the court system may enhance accessibility and ensure expeditious administration of justice to all citizens.¹⁵

¹² Srivastava, A., "Appointment of Judges in India," *Jus Corpus LJ*, 3, 689 (2022).

¹³ Nathiya, K. and Prabhakaren, S., "Mechanisms Taken by Indian Judiciary to Access Justice," *NeuroQuantology*, 20(15), 6987 (2022).

¹⁴ Sridhar, M., "Accessing the Judiciary and Achieving the Justice," *Indian J. Pub. Admin.*, 55(3), 374-405 (2009).

5. Judicial infrastructure and technology

The judiciary's efficacy and efficiency are hindered by insufficient judicial infrastructure and weak technological integration. Insufficient amenities plague numerous courts in India, causing inconvenience for litigants, lawyers, and judges.

Moreover, the utilization of technology in court procedures and case management systems is not fully maximized, leading to inefficiencies. Allocating ample resources to improve infrastructure and integrating technology extensively could expedite the modernization of the court system and hasten the resolution of legal issues.¹⁶

Improving the judicial infrastructure involves providing an ample number of courtrooms, well-equipped libraries, and modern facilities for judges, solicitors, and litigants. Enhancing the physical infrastructure not only enhances the overall efficiency of the court system but also establishes a conducive environment for the administration of justice.

Furthermore, technology has the capacity to induce a substantial transformation in streamlining court procedures. The adoption of digital technologies, such as the conversion of case records into digital format, the use of online filing systems, and the utilization of e-bench platforms, has the capacity to reduce the volume of paperwork in legal procedures, enhance overall efficiency, and provide more efficient case administration.¹⁷

The utilization of video conferencing technology in judicial processes and the integration of virtual court systems have the capacity to efficiently reduce case processing delays and improve inclusiveness.

II: ARTIFICIAL INTELLIGENCE: AN INTRODUCTION

The emergence of novel artificial intelligence technologies is revolutionizing the modeling of new processes and establishing higher benchmarks for job efficiency and effectiveness. Numerous sectors

¹⁵ Balakrishnan, K.G., "Judiciary in India: Problems and Prospects," *J. Indian L. Inst.*, 50(4), 461-467 (2008).

¹⁶ Chalakkal, K. and Prabhakaran, A., "The Importance of Structural Reforms for an Efficient Indian Judiciary," *IUP L. Rev.*, 11(3) (2021).

¹⁷ Verma, K., "e-Courts Project: A Giant Leap by Indian Judiciary," *J. Open Access L.*, 6(1) (2018).

worldwide are embracing these transformative innovations and technology.

“The inception of AI may be traced back to 1955, when the phrase was initially proposed by John McCarthy. Marvin L. Minsky, Nathaniel Rochester, and Claude E Shannon authored the paper titled 'A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence'.¹⁸ The technique has been widely utilised since its inception. Artificial intelligence (AI) is a field of study that involves creating complex algorithms that mimic human thinking and logic.” It is considered a branch of science, engineering, and technology. AI encompasses a broad spectrum of jobs, ranging from general-purpose activities such as observation and logical reasoning to more specialized ones like playing chess, proving mathematical theorems, generating poetry, and diagnosing diseases.¹⁹

Defining artificial intelligence can be a complex endeavour due to the broad scope of the discipline, which encompasses any device capable of human-like thinking. According to authors like Haugeland, AI is defined as entities that contain a cognitive mind and have the ability to engage in thinking processes.²⁰ Bellman's definition of AI encompasses the automation of cognitive processes such as thinking, decision-making, problem-solving, and learning.²¹ Various authors have attempted to elucidate the concept of AI, but a common thread can be discerned among these definitions. AI refers to systems or machines capable of emulating human intelligence to perform tasks such as problem-solving, automated decision-making, and forecasting.

“Artificial intelligence is the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past

experience.” --- By Copeland, B.J., Artificial Intelligence

“Artificial Intelligence as the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.” ---By Oxford Dictionary

“An area of computer science that deals with giving machines the ability to seem like they have human intelligence.”--- By Merriam Dictionary

“Artificial intelligence is a type of computer technology which is concerned with making machines carry out work in an intelligent way, similar to the way a human would.”--- By Collins Dictionary

1. Artificial intelligence technology: Primary artificial intelligence methodologies

AI is regarded as a subfield of computer science.²² However, the recent expansion of AI research suggests that AI is not confined to a single branch of computer science. Instead, it is an interdisciplinary endeavor that integrates concepts, methods, and procedures from diverse fields such as statistics, linguistics, mathematics, robotics, electrical engineering, logic, neuroscience, economics, and philosophy.²³

“Artificial Intelligence (AI) is a collection of many technologies that are grouped together under the title 'Artificial Intelligence'. Several fundamental technologies are involved when an AI system is utilised to automate intricate duties like as providing guidance to judges on sentencing and bail requests, interpreting court languages, and aiding lawyers in e-discovery and e-reviews of court papers.” Artificial intelligence technology techniques that have achieved the greatest success can be categorised into two main groups:

1. logical rules and knowledge representation, and

¹⁸ John McCarthy et al., A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence, 27 (4) AI MAGAZINE 12 (2006).

¹⁹ S. Russel and P. Norvig, Artificial Intelligence: A Modern Approach (1 edn, Prentice Hall of India Pvt. Ltd., 1995)

²⁰ John haugeland, *Mind design ((MIT Press Massachusetts, 1981)*

²¹ R.E. Bellman, An Introduction to Artificial Intelligence: Can Computers Think? (Boyd and Fraser Publishing Company, San Francisco, 1978)

²² Bernard Marr, "The Key Definitions of Artificial Intelligence (AI) That Explain Its Importance," Forbes (Feb. 14, 2018), available at: <https://www.forbes.com/sites/bernardmarr/2018/02/14/the-key-definitions-of-artificial-intelligence-ai-that-explain-its-importance/#139a6a954f5d> (last visited Dec. 29, 2023).

²³ R. Desai, "Artificial Intelligence (AI)," Rajiv Desai: An Educational Blog (Mar. 23, 2017), available at: <http://drrajivdesaimd.com/2017/03/23/artificial-intelligence-ai/> (last visited Dec. 24, 2023).

2. machine learning.²⁴ Let us examine each strategy in depth.

A. Principles of logic and the organization of information

Logical principles and knowledge representation techniques are utilised in AI to model real-world processes and events in a format that can be understood by computers.²⁵ The programmer furnishes the machine with a collection of rules that encapsulate the fundamental logic and knowledge of the task that the machine is intended to simulate or automate.²⁶ Prior to processing, the machine is intentionally given knowledge in a format that can be read by a computer. This knowledge is then used by the machine to process and logically reason about it.²⁷ Knowledge representation is the most ancient form of artificial intelligence that is in active use and continues to be pertinent. It serves as the fundamental procedure in contemporary expert systems.²⁸ An exemplary instance of an expert system in the legal domain that employs logical rules and a knowledge representation system is TurboTax.²⁹ "Legal expert systems, such as TurboTax, are developed by software developers in collaboration with tax attorneys and other experts in the field of personal income tax laws. These experts assist in converting the logical interpretation of tax regulations into a set of formal rules that can be utilised by a computer." Most laws, regardless of their source (legislature, courts, agencies, etc.), can be interpreted as conditional assertions in the form of if-then statements.³⁰ Once the rule is incorporated into the system, the computer can utilise it to extract pertinent information from the data and compute the clients' accurate income tax burden. This technique has been effective in the United States and a

comparable tool is also being utilised in Europe to compute income tax obligations.³¹ The tax authorities rely on the calculations made by these legal "expert systems" in their daily proceedings.

Here, we may provide a concise summary of the key elements of a knowledge representation system. "Initially, this programming style is characterised by the programmer encoding the logical rules into the computer software in advance. In contrast to the bottom-up strategy of ML software, which involves the system training itself to recognise and utilise patterns for complicated tasks, this technique is different." Furthermore, after the rules have been included into the system, the computer utilises these principles to establish logical connections in order to derive insightful conclusions about the world.³² The method also employs intricate sequences of computer-based logical deduction that pose significant challenges for human comprehension.³³ Furthermore, knowledge-based systems leverage the computational ability to uncover inconspicuous features, such as contradictions and latent patterns in the data, that may not be readily apparent to human observation.³⁴ The logical rules and knowledge representation system are highly potent tools in contemporary AI systems.

2. Machine learning

Machine learning (ML) encompasses a set of artificial intelligence (AI) methodologies that exhibit similar attributes. Most machine learning approaches utilise pattern discovery in huge datasets. These patterns are subsequently utilised to do intricate jobs and generate valuable outcomes, like as operating vehicles, identifying faces and speech, translating languages, or

²⁴ R. Buest, "Artificial Intelligence Is About Machine Reasoning—or When Machine Learning Is Just a Fancy Plugin," CIO (Nov. 3, 2017), available at: <https://www.cio.com/article/3236030/artificial-intelligence-is-about-machine-reasoning-or-when-machine-learning-is-just-a-fancy-plugin.html> (last visited on Dec. 24, 2023).

²⁵ H. Surden, "The Variable Determinacy Thesis," 12 Colum. Sci. & Tech. L. Rev. 1 (2011), 20.

²⁶ J. Krupansky, "Untangling the Definitions of Artificial Intelligence, Machine Intelligence and Machine Learning," Medium (Jun. 13, 2017), available at: <https://medium.com/@jackkrupansky/untangling-the-definitions-of-artificial-intelligence-machine-intelligence-and-machine-learning-7244882f04c7> (last visited on Dec. 24, 2023).

²⁷ Supra at 23

²⁸ R. E. Susskind, "Expert Systems in Law: A Jurisprudential Approach to Artificial Intelligence and Legal Reasoning," 49 Mod. L. Rev. 168 (1986).

²⁹ Supra at 25

³⁰ W. Farnsworth, *The Legal Analyst: A Toolkit for Thinking About the Law* (Univ. of Chicago Press 2007).

³¹ P. S. Sajja and R. Akerkar (eds.), *Advanced Knowledge-Based Systems: Models, Applications and Research* (2010).

³² Supra at 23

³³ M. Hutson, "Computers Are Starting to Reason Like Humans," *Science* (Jun. 14, 2017), available at: <http://www.sciencemag.org/news/2017/06/computers-are-starting-reason-humans> (last visited on Dec. 26, 2023).

³⁴ MC de Marneffe et al., "Finding Contradictions in Text," 46th Annual Meeting of the Association for Computational Linguistics: Human Language Technologies 1039 (2008).

detecting fraudulent activities, among others.³⁵ ML is a major methodology in the field of AI, utilising techniques such as neural networks/deep learning, naive Bayes classifier, logistic regression, and random forests.³⁶ Nevertheless, the capacity of AI to "learn" does not indicate that these systems are duplicating the more complex neurological processes that take place in human brains when an individual is engaged in the learning process. The term "learning" in machine learning is employed as a loose analogy to human learning.³⁷

To enhance comprehension of machine learning, it can be elucidated through the use of a ubiquitous technology employed in our everyday interactions for communication, namely, email. The majority of email platforms utilise machine learning algorithms to automatically identify and redirect spam emails (unsolicited private or commercial messages) into a designated spam folder. The ML software use word probability analysis to identify terms and phrases that have a higher frequency in spam emails compared to regular emails. However, in order for this process to initiate, the software must undergo a process of training. The training commences upon the users' receipt of an email, at which point they are presented with the choice to classify the email as spam or not.³⁸ Whenever the user designates an email as spam, the machine learning programme identifies and examines the patterns inside the email and subsequently generates automated choices based on its analysis.³⁹ Spam emails are automatically sorted from regular emails and delivered to the spam folder without the user's awareness.

There are two crucial characteristics of machine learning software. Firstly, the software acquires a pattern autonomously, without requiring a programmer to explicitly pre-program the pattern.⁴⁰ Furthermore, the software acquires knowledge gradually by analysing a larger amount of data and

identifying further patterns. The machine's capacity to acquire knowledge and enhance its performance over time has been metaphorically likened to human learning. However, it is evident from the image that machine 'learning' does not entail the replication of complex brain functions and cognitive processes found in the human mind. Instead, it entails the identification of valuable patterns by means of statistical analysis of extensive data.⁴¹

An further constraint of machine learning arises from the subsequent conversation. The machine learning programme requires data in order to train itself in accurately recognising meaningful patterns. The capacity and performance of the system rely on the availability of substantial quantities of high-quality, structured, and machine-readable data. It is unable of performing effectively in an environment characterised by limited or low-quality data.⁴² This becomes particularly significant when machine learning software is applied in the field of law, as law is one of the domains where there is a relative scarcity of high-quality machine-readable data available in the public domain. Recent technical advancements, such as the digitization of court systems and the establishment of online databases, particularly in countries like India, have sparked optimism for the increased use of AI systems to enhance the administration and governance of law in society.

3. Hybrid Systems: Systems that combine or integrate different elements or components.

"A hybrid system, as the name implies, is a fusion of either machine learning or knowledge representation systems, or a mix of human intelligence with artificial intelligence hybrids. The authors will delve into these two systems with further scrutiny."

A. AI hybrid : Combination of knowledge based representation and ML

Contemporary artificial intelligence (AI) systems no longer rely solely on machine learning (ML) or

³⁵ B. Marr, "The Top 10 AI and Machine Learning Use Cases Everyone Should Know About," *Forbes* (Sept. 30, 2016), available at: <https://www.forbes.com/sites/bernardmarr/2016/09/30/what-are-the-top-10-use-cases-for-machine-learning-and-ai/#6e7f4c3094c9>.

³⁶ M. Sidana, "Types of Classification Algorithms in Machine Learning," *Medium* (Feb. 28, 2017), available at: <https://medium.com/@Mandysidana/machine-learning-types-of-classification-9497bd4f2e14>.

³⁷ H. Surden, "Artificial Intelligence and Law: An Overview," 35 *Ga. St. U. L. Rev.* 1305 (2019).

³⁸ N. Moline, "Combating Spam Emails and Contact Forms," *Justia Legal Marketing & Technology Blog* (Dec. 4, 2018), available at: <https://onward.justia.com/2018/12/04/combating-spam-emails-and-contact-forms/> (last visited on Mar. 27, 2021).

³⁹ *ibid*

⁴⁰ *Supra* at 37

⁴¹ *Supra* at 23

⁴² *ibid*

knowledge representation systems in isolation. Instead, they employ a fusion of these two methods.⁴³ For instance, a self-driving automobile use a combination of knowledge representation and machine learning algorithms to operate. The system acquires the ability to operate autonomously by undergoing a sequence of training sessions, during which it continuously enhances its performance by repeatedly training in suitable behaviour.⁴⁴ “Nevertheless, the system relies heavily on pre-programmed conduct, established by a programmer, through implicit rules and knowledge representation. This allows the machine to infer what constitutes legally and socially acceptable behaviour. For instance, all autonomous vehicles are pre-programmed to adhere to the road signs and signals. The traffic lights are programmed to halt when the signal is red and proceed when the signal indicates green. In addition, they are programmed to utilise indication lights when making a turn and activate horns when the scenario requires it.” Therefore, a successful AI system employs a combination of AI techniques, such as machine learning models and encoded knowledge representation rules.⁴⁵

B. Hybridization of human and artificial intelligence
Another classification of effective AI systems comprises those that are not completely autonomous, but instead involve human involvement in decision-making processes.⁴⁶ An autonomous system is characterised by its ability to independently make all significant decisions pertaining to its own functioning. Nevertheless, such a system is exceedingly uncommon. Contemporary AI systems possess a level of autonomy, but when faced with decisions outside their expertise, they rely on human judgements. An example of a challenging issue is the long tail problem,

which pertains to the notion that there are several unforeseen and mitigating factors encountered while driving on the road, making it impractical to train AI systems or programme them with suitable responses for such situations.

An illustration will provide a lucid interpretation of the concept. Imagine an autonomous vehicle is operating on the road. As a result of road maintenance, the police have redirected all vehicles to utilise the pedestrian lane for crossing the stretch. In such a scenario, the autonomous vehicle is incapable of reaching a choice. If the self-driving car encounters a scenario where it is unable to autonomously make a choice, it has the capability to seek assistance from a call centre staffed by human specialists.⁴⁷

The human operator is prompted to take action, analysing the circumstance in which the vehicle is impacted by collecting data from the vehicle's sensors, assuming control of the vehicle, and manoeuvring it to safety.⁴⁸ When the car is operating under normal conditions, the driver returns control to the system.⁴⁹ This system is referred to as a human-in-the-loop, and it is highly useful in instances where the system encounters options that it is not taught or prepared to handle. Furthermore, the implementation of such a system is highly advantageous in the domain of law.

4. Does AI possess genuine intelligence?

Computer scientists that are involved in automating intricate tasks such as language translation and autonomous driving have referred to these computer systems as containing artificial intelligence (AI). These computer systems execute intricate tasks that closely resemble those performed by humans, but they utilise a distinct 'synthetic' technique for problem-solving inside.⁵⁰ Many individuals mistakenly perceive AI systems as robots capable of thinking,

⁴³ ET Edit, "Move to Complete Digitization of Courts," The Economic Times, Aug. 4, 2020, available at: <https://economictimes.indiatimes.com/blogs/et-editorials/move-to-complete-digitisation-of-courts/>.

⁴⁴ "National Judicial Data Grid," available at: <https://njdg.ecourts.gov.in/njdgnew/index.php> (last visited on Dec. 28, 2023).

⁴⁵ C. Corthell, "Hybrid Intelligence: How Artificial Assistants Work," Medium (May 4, 2016), available at: <https://medium.com/@clarecorthell/hybrid-artificial-intelligence-how-artificial-assistants-work-eebfabd5334>

⁴⁶ Ravi Mehta, "Demystifying AI: Can Humans and AI coexist to create a 'hyper-productive' HumBot organisation?" Indian Express, Jun. 12, 2020, available at:

<https://indianexpress.com/article/technology/tech-news-technology/can-humans-and-ai-coexist-6453996/>

⁴⁷ Alex Davies, "Nissan's Path to Self-Driving Cars? Humans in Call Centres," Wired, May 1, 2017, available at: <https://www.wired.com/2017/01/nissans-self-driving-teleoperation/>.

⁴⁸ M. Kumar, "Self-Driving cars to be operated from Call Centres?" Geo, Jan. 11, 2017, available at: <https://www.geoawesomeness.com/self-driving-cars-operated-call-centres/>.

⁴⁹ *ibid*

⁵⁰ R. Logan M. Tandoc, "Thinking in Patterns and the Pattern of Human Thought as Contrasted with AI Data Processing," available at: <https://www.mdpi.com/2078-2489/9/4/83/htm>.

believing that they achieve results by employing a form of artificial cognitive ability that is equal to or superior to human-level thinking.⁵¹ In contrast, the truth is that these systems utilise heuristics. They identify patterns in the provided data and employ knowledge, rules, and logic that have been expressly programmed into them by individuals, using computer-readable language, to generate automated outcomes.⁵² By employing these computational methodologies, the system can carry out intricate tasks and generate intelligent outcomes that would typically necessitate advanced cognitive abilities if performed by a human.

Nevertheless, the computational technique utilised by the AI system differs from the mechanism employed by humans while performing cognitive functions. The creators and programmers of AI have long aimed to develop a Strong Artificial General Intelligence (AGI) that surpasses human-level cognition and is capable of engaging in unrestricted conversations on abstract subjects such as philosophy, comprehending concepts and ideas, and performing a wide range of functions associated with human intelligence.⁵³ However, despite the inspiration provided by these ambitious notions, AI developers have not yet come close to creating robust AGI using the current state-of-the-art AI technology.

Research in the field of AI indicates that current systems do exceptionally well in specific, constrained scenarios where there are definitive correct or incorrect solutions, such as playing chess. They also excel in tasks that involve identifying patterns and structures, such as language translation, visual identification, and audio recognition. There is insufficient empirical evidence to support the feasibility of a powerful artificial general intelligence (AGI) emerging within the foreseeable timeframe of five to ten years, spanning from 2019 to the next decade.⁵⁴

III: ARTIFICIAL INTELLIGENCE & LAW

Artificial Intelligence has demonstrated its value in various domains, including medicine where it aids

doctors in performing surgeries, transportation with self-driving cars, and marketing by monitoring consumer purchasing trends. Consequently, it will undoubtedly be advantageous in establishing a sustainable and efficient justice delivery system. Hence, the utilization of Artificial Intelligence in the judicial decision-making process is a practical remedy for reducing the backlog of cases, not only in India but also in other legal systems, and guaranteeing prompt and enduring justice systems worldwide. In this chapter we will see how the law and AI can go hand in hand for establishing an efficient judicial system.

1. The coordinated development of AI & law across the world

The inception of AI and law may be traced back to the 1970s, when researchers initiated investigations into the feasibility of employing AI to mechanize legal reasoning and decision-making. The initial stages of AI and law were marked by an emphasis on rule-based systems, which depended on clearly programmed rules to make decisions.

MYCIN, a computer program developed at Stanford University in the early 1970s, was one of the earliest and most significant systems. MYCIN was specifically developed to identify and cure infectious diseases. However, it also showcased the capability of utilizing artificial intelligence to engage in logical thinking with ambiguous and partial data, which is a significant obstacle in legal reasoning.

During the late 1970s and early 1980s, academics initiated investigations into the utilization of artificial intelligence (AI) in legal domains, namely in tasks like document retrieval and case-based reasoning. The inaugural AI and Law conference took place in 1987, facilitating the convergence of researchers and practitioners from the realms of artificial intelligence and law to explore the prospective applications of AI in the legal domain.

During the 1990s and 2000s, the utilization of artificial intelligence (AI) in the field of law progressed, incorporating novel applications like legal expert systems, natural language processing, and machine learning.

⁵¹ H. Surden, "Machine Learning and Law," 89 Wash. L. Rev. 87, 89 (2014).

⁵² Ibid at 89-90

⁵³ Mills, "AI v. AGI: What's the Difference?" Forbes, Sept. 17, 2018, available at:

<https://www.forbes.com/sites/forbestechcouncil/2018/09/17/ai-vs-agi-whats-the-difference/#8b957b638ee1>.

⁵⁴ Supra at 51

During the late 1990s, the advancement of the internet and electronic databases facilitated the establishment of extensive legal knowledge bases, capable of assisting in legal decision-making.

AI has experienced significant advancements and widespread use in recent years. It is now extensively utilized in various domains, including predictive analytics, contract analysis, and e-discovery. Legal technology firms have arisen to create and promote artificial intelligence (AI) solutions for legal experts. Numerous law firms and legal departments have started to embrace these tools to enhance productivity and save expenses.

Notwithstanding these progressions, the utilization of AI in the field of law continues to be a subject of controversy and gives rise to various ethical and legal inquiries. As artificial intelligence progresses, it is probable that the correlation between AI and law will also progress.

2. Current status of applicability of AI in legal industry

The legal market is globally recognized as one of the largest and is estimated to have a value of around \$1 trillion. Simultaneously, it continues to remain non-digitalized. The legal profession, whether for positive or negative reasons, is known for its cultivated nature and its resistance to embracing new technologies. Lawyers continue to depend on solutions that have been established over the course of many years. There is a possibility that this could undergo alteration within the upcoming years. Artificial intelligence (AI) has the capacity to revolutionize the working methods of legal professionals and reshape the perception of the law among the general public in India. This process is currently in progress. Legal research is one of the most consequential areas where AI can have a profound influence in the world of law. The Indian legal system is characterized by its dynamic nature, allowing lawyers to employ astute techniques to swiftly acquire distinctive understanding of the law. Artificial intelligence has the capability to achieve cost parity with legal research while upholding an equivalent degree of quality. It offers valuable resources to assist lawyers in providing more effective counsel to their clients.

The legal landscape is undergoing a rapid transformation due to the advancements in artificial intelligence (AI). Artificial intelligence is employed to automate tasks, enhance productivity, and facilitate

more informed decision-making. Nevertheless, the use of artificial intelligence in the legal system gives rise to several legal and ethical apprehensions. In the present era, the integration of advanced technology has led to increased efficiency and effectiveness in various industries. However, the Legal field does not have much engagement with contemporary technologies. In order to make progress, it is necessary for them to begin utilizing traditional technologies and file-handling systems that have been in use for a long time. There is a significant requirement in the field of law for legal professionals to be familiar with new technologies. In this scenario, they can readily employ AI technology to enhance the effectiveness of their advancements.

Furthermore, the Supreme Court of India has consistently regarded it as an essential component of democracy and has determined that this freedom encompasses the right to be informed. The influence of AI on freedom of speech is significant, as these systems are increasingly relied upon to moderate online content and are being used more frequently in other aspects of daily life, such as smart assistants and autocorrect technology on mobile devices.

3. Some of the AI tools prevalent in legal industry

A. Ross Intelligence

ROSS Intelligence, a sophisticated artificial intelligence system commonly referred to as the attorney robot, is widely utilised by the majority of legal firms in the United States. Its primary function is to pose inquiries in order to enhance legal reasoning. Additionally, it employs machine learning techniques to track legal updates and significant court rulings. Furthermore, it continuously acquires new knowledge on a daily basis. ROSS provides accurate responses to all inquiries, supported by relevant passages and case laws, demonstrating its intelligent capabilities. The system comprehends queries presented in normal language. This system use natural language processing to comprehend spoken human speech. ROSS AI can be categorised into three primary domains - Comprehension, Retrieval, and Prioritisation. Upon receiving a lawyer's inquiry, ROSS utilises its proprietary Natural Language Processing algorithms to assess the provided text.

These algorithms possess the capability to automatically comprehend the relevant time frame and legal jurisdiction, and subsequently apply filters to concentrate on the query, as well as the specific

location and dates involved. Once the query has determined the suitable date and jurisdiction filters, it will obtain passages and case laws that closely resemble the query. These passages are discovered using a combination of industry-standard research functions and algorithms. The cases retrieved that are pertinent to the question are prioritised in order to present the most exceptional and pertinent cases first. In an interview, Nancy March, the Director of ROSS intelligence, expressed that prior to the development of ROSS, there was a lack of a readily accessible tool that allowed her to simply pose a query and obtain the necessary information.

B. KIRA SYSTEMS

Cyril Amarchand Mangaldas has entered into a partnership with KIRA systems, an Artificial Intelligence company based in Canada, thereby becoming the first legal firm in India to adopt Artificial Intelligence. KIRA is a tool utilised for the purpose of identifying and extracting provisions from contracts and other legal documents. KIRAs utilisation of powerful machine learning algorithms distinguishes it from other artificial intelligence solutions available in the market. The subject of law has a significant need for technologies incorporating artificial intelligence. This is because artificial intelligence can greatly reduce the time required for comprehensive study and the preparation of arguments, transforming months of work into just a few days. The KIRA system employs real-time editing capabilities to enable lawyers to watch the modifications made by their colleagues in a contract. KIRA's search and analysis capabilities enable lawyers to identify issues and advancements across a range of documents. This technique does a comparative analysis between a given contract and multiple other contracts in order to identify concealed risks. The software has been designed with the capability to be trained in identifying clauses across many languages.

C. EBREVIA

Ebrevia is an AI system that utilises an algorithm created by Columbia University. This company was established by lawyers with the aim of reducing the significant amount of time they spend on contract evaluation. This technology autonomously retrieves data from contracts with a high degree of accuracy and precision. Attorneys benefit from identifying and assessing the risks and potential opportunities inside a contract. The transactions are expedited significantly

with the aid of this method. Ebrevia has the ability to rapidly analyse a large volume of documents and extract important information within seconds. The system's interface is designed to be user-friendly and presents the results in a clear manner. The interface is designed to be intuitive, facilitating ease of usage. The system integrates intricate data within a contract that was overlooked during the manual review phase. Ebrevia is utilised by auditors, law firms, and other corporations to scrutinise and rectify contracts, revealing concealed expenses and enhancing revenue. This system encompasses various components, including the diligence accelerator and the lease abstractor. Diligence facilitates the expedited assessment of contracts by law firms. The lease abstractor is utilised by commercial real-estate firms to extract data from the lease for a range of real-estate related matters. This system can also be trained to retrieve tailored information that is pertinent to a particular sector or project. Ebrevia surpasses the manual reviewing procedure in terms of accuracy and speed. This sophisticated programme is safeguarded by a high-level encryption method used by banks.¹²

D. LAWGEEX

Lawgeex, an Artificial Intelligence firm, was founded by Noory Bechor and Ilan Admon in 2014. Lawgeex thoroughly examines all the contracts that have been inputted into the system and meticulously analyses them. In the event that any issues are detected, the system will promptly notify the lawyer, pinpoint the specific error, and reject the contract. This Artificial Intelligence system has been trained on the use of legal terminology and its application in business contracts. Lawgeex has undergone training to comprehend Non-Disclosure Agreements and other contracts that have less potential for negative outcomes. Contracts that do not align with the company's policy are sent to top lawyers for thorough modification and approval. This mechanism ensures the preservation of business policies and standards. Lawgeex was developed to assist senior and seasoned lawyers in prioritising more crucial matters by reducing the time they spend on contract analysis.¹³

IV: ARTIFICIAL INTELLIGENCE & INDIAN LEGAL INDUSTRY OR JUDICIARY

Artificial Intelligence (AI) has the capacity to transform the Indian Legal system by enhancing its

efficiency through the use of streamlined processes, while also reducing expenses associated with the old legal system. AI has the ability to reshape the paradigm of the Indian Legal System, particularly in areas like legal research. Artificial intelligence can aid judges and lawyers in efficiently analyzing extensive collections of books, data, cases, and precedents. The significant investment of time and effort is minimized when utilizing AI, as it efficiently delivers pertinent information on a certain subject. The AI algorithms possess the capability to examine previous court cases and are very probable to forecast the conclusion of ongoing cases. This will prove advantageous for jurists in rendering more knowledgeable judgments and diminishing the number of cases that proceed to trial.

In India, it is common knowledge that numerous languages are spoken, therefore it is not unexpected that certain essential papers may be written in regional or vernacular languages, which may not be comprehensible to all individuals. AI has the potential to assist in translating legal documents between different languages. This could be especially advantageous in issues pertaining to international law. Artificial intelligence (AI) can be advantageous in resolving conflicts during online hearings as an alternative to physical court proceedings. Nevertheless, AI presents several challenges including employment displacement, data bias, safety and security risks, as well as privacy and ethical concerns. This chapter includes a comprehensive examination of the aforementioned topics.

1. Tracing the technological developments in the Indian judicial settlement

The advent of AI marked the beginning of the fourth industrial revolution, which is significantly altering work paradigms worldwide. The integration of technology with society has profound implications for values, ethics, and societal impact. Leading nations such as China, America, and the UK are embracing AI in their policies and actively pursuing initiatives to transform conventional work methods by adopting AI and other technologies. The extent of the impact can be observed by a direct comparison of the level of development achieved by these countries through the implementation of artificial intelligence in their respective fields. India is currently making efforts to catch up with the adoption of technology and artificial intelligence (AI). Rajiv Malhotra, in his book

"Artificial Intelligence and the Future of Power: Battlegrounds," points out that India's level of AI development is currently unsatisfactory and urges the country to initiate a swift programme to bridge the gap. For India's initial reluctance towards technology adoption was largely due to digital illiteracy and the government's unfriendly policies. However, the country's stance has evolved, and Artificial Intelligence (AI) is now widely recognized and utilized. Businesses and manufacturers in India have realised the significant benefits of leveraging machine learning and AI. Indian companies are increasingly leveraging artificial intelligence (AI) to enhance business outcomes. Over the recent years, emerging technologies have revolutionized the operations of organisations and sectors, hence impacting the production process and supply chain.

The Indian judiciary and legal system stand out as an exception in terms of technology adoption, as they continue to rely on conventional techniques. This has resulted in a significant backlog of cases for the Indian judiciary, as reported by the National Judicial Data Grid. "There are currently 43 million cases outstanding at the district level, around 5.9 million cases in the high court, and around 70,000 cases in the Supreme Court. Inadequate infrastructure and digital illiteracy are the primary factors hindering the legal system from using technology and artificial intelligence, resulting in delays in court processes." The court continues to rely on conventional methods, resulting in significant delays in the administration of justice. Nevertheless, the methodology has shifted, and the judiciary is undergoing a metamorphosis by leveraging technology and artificial intelligence.

Since its inception, the Indian legal system has been hesitant to embrace digitization. However, the outbreak of the Covid-19 pandemic forced the courts to adapt to the situation and explore digital solutions, including artificial intelligence, as a necessary measure. Due to the circumstances, the courts were compelled to implement virtual court proceedings, which proved to be a practical answer for the judiciary. The advantages of virtual courts include their time and cost efficiency, as they eliminate the need for parties to travel and are less demanding than physical courtrooms.

A. E-Courts Integrated Mission Mode Project

The implementation of digital systems in courts was embraced as part of the national e-governance plan.

“The government has launched the eCourts Integrated Mission Mode Project nationwide with the aim of computerizing District and subordinate courts. This initiative seeks to enhance access to justice by leveraging technology. Its objective was to enhance the functionality of the judiciary and optimize the efficiency, transparency, and cost-effectiveness of the judicial system.”

- a. Phase I-The project has been implemented since 2007, with phase-1 taking place between 2011 and 2015. “The objective of this phase was to establish databases for district and talukas level courts on the national judicial data grid. It implemented a system for monitoring the management of cases in the High Courts and Subordinate Courts. NJDG provides a comprehensive database of orders, rulings, and case information from District and Subordinate Courts, as well as High Courts. The National Judicial Data Grid portal provides access to statistics on pendency at the National, State, District, and Individual Court levels for anybody who uses it.”
- b. Phase II- The second phase of the project, initiated in 2015, has automated a total of 18,735 District and Subordinate courts. In addition, all Court Complexes, including taluk level courts, have been equipped with a single unit of video conferencing technology. Furthermore, monies have been authorized for the acquisition of extra video conferencing equipment for 14,443 courtrooms. Video conferencing services have also been established between 3,240 courthouses and 1,272 prisons. In addition, websites such as epay, e-filing, and e-court were created to offer digital operations and streamline the filing method by eliminating the need for paper.
- c. Phase III- The completion of Phase II is approaching, and the Supreme Court of India has granted approval for Phase III. The third phase of the e-Courts project aims to establish a judicial system in India that is cost-effective, easily accessible, efficient, reliable, and characterized by transparency. This system is designed to benefit all individuals seeking justice or involved in the administration of justice. The implementation of Digital and Paperless Courts involves transitioning court proceedings to a digital platform. Online Court systems aim to

eliminate the need for litigators to physically attend court. Virtual Courts are being expanded to include the use of emerging technologies like Artificial Intelligence and its sub-components, such as Optical Character Recognition (OCR), for analyzing case pleadings. The objective of the e-court programs was to enhance the efficiency of the judiciary by facilitating the prompt delivery of information to the parties involved and eliminating unnecessary delays caused by factors like geographical constraints.

B. Proposed plan in furtherance of E-courts project
The current development of judicial systems is characterized by a deliberate push towards digitalization, exemplified by the emergence of Digital and Paperless Courts. This effort aims to transform traditional judicial procedures by shifting from standard paper material to a full digital format. Implementing electronic case management systems improves access to case-related information and promotes cost-effectiveness and environmental sustainability by significantly reducing the need for paperwork.

Simultaneously, the rise of Online Courts fundamentally reshapes the legal environment by giving precedence to virtual engagement, obviating the necessity for litigants or attorneys to be physically present. By utilizing video conferencing and virtual platforms, Online Courts not only simplify legal procedures but also promote accessibility, particularly for individuals living in remote areas. This method tackles the practical difficulties related to being physically present, therefore improving the overall effectiveness of the court system.

Expanding on these progressions, there is a notable inclination towards the proliferation of Virtual Courts, beyond their original emphasis on resolving Traffic Violations. Virtual Courts are becoming crucial in managing a wider range of cases, providing a versatile and easily accessible platform for both civil and criminal issues. These platforms preserve the integrity of legal procedures by mimicking a virtual courtroom experience, while also taking advantage of the possibilities offered by technology.

A crucial element of this process of digital transformation entails the integration of cutting-edge technology, particularly Artificial Intelligence (AI) and its subcategories such as Optical Character Recognition (OCR). Artificial intelligence is utilized

to conduct thorough analysis of the time it takes for cases to be resolved, enabling a better understanding of the effectiveness of the judicial system and the management of pending cases. Furthermore, OCR technology is crucial in converting scanned documents into forms that can be easily searched and edited, hence enhancing the effectiveness of document management. AI's predictive powers also encompass the ability to forecast future litigation patterns, allowing for proactive allocation of resources and strategic planning in the legal field.

2. Scope of the applicability and adoption of AI in Indian judicial system

Based on estimates from a study, a legal AI system completed a legal review in 26 seconds, while human lawyers required an average of 92 minutes to complete the same assignment. This exemplifies the importance that artificial intelligence can provide to the legal industry. The scope of Artificial Intelligence (AI) and Machine Learning (ML) is extensive and encompasses various aspects. To comprehend their potential application in the Indian Judicial System, which is currently in an early stage of integrating AI and ML, it is important to consider some fundamental areas of utilization, such as enhancing administrative efficiency and improving decision-making processes. Due to the pandemic, there has been a significant increase in the conversation surrounding AI, and its integration with the Indian court is now seen as inevitable rather than a question of choice. Justice DY Chandrachud expressed his opinion on the adoption of AI, emphasizing that

“Let there be no doubt that technology is now bringing focus on judges- How we conduct ourselves, how long we sit in court, the seriousness with which courts are handled and cases are conducted, the courtesy which judges show to the members of the bar and litigants, particularly those lawyers who are not in the higher echelons in the hierarchy of the bar”. He also stated that *“technology must be understood as the facilitator of change, but the driver of change has been and must be the human mind”.*

The utilisation of e-courts, virtual courts, online dispute resolution, and online registry has become a regular occurrence in our daily lives. In other circumstances, this adoption process would have been time-consuming. However, due to the epidemic, it was expedited to avoid any miscarriage of justice and unnecessary delays in the justice delivery system. The

Indian Judiciary is somewhat underdeveloped compared to the judicial systems of other countries such as Brazil, the United Kingdom, the United States, and Europe

The administration of legal proceedings is a complex and time-consuming task. Justice Chandrachud presented the statistics from the National Judicial Data Grid (NJDG) in 2020, revealing that there are over 32.45 million pending cases in India. Furthermore, more than 10% of these cases are over 10 years old. The current situation in the courts is contributing to the significant backlog of cases. Artificial Intelligence (AI) and Machine Learning (ML) can significantly contribute to automating this procedure by generating the cause-list based on the input provided through the e-courts system. Implementing this would optimize efficiency and alleviate the burden on individuals, resulting in time and energy conservation.

SUVAAS and SUPACE are the two current artificial intelligence (AI) and machine learning (ML) programs implemented in the Supreme Court of India. SUVAAS is an automated natural language processor that converts the legal judgments and rulings of the Supreme Court into different languages spoken in India. This would result in broader acceptance and adherence to the rulings of the Supreme Court throughout the territory of India. This program utilizes machine learning techniques as it iteratively learns from previous experiences and subsequently improves its performance in subsequent iterations.

SUPACE is a machine learning tool that analyzes various court processes and provides output to aid the court in identifying which operations can be automated due to their mechanical nature. AI has been successfully employed in several instances to determine bail or settle traffic violations. In the case of *Loomis v. Wisconsin State*, the Supreme Court of Wisconsin in the United States acknowledged the validity of a bail recidivism instrument (COMPAS) that utilizes artificial intelligence. The Court declared that the utilization of a COMPAS risk assessment by a circuits court during sentencing does not infringe upon a defendant's right to due process, as long as it is implemented correctly and with a comprehensive understanding of its limitations and cautions.

In the matter of *Jaswinder Singh v. State of Punjab*, the Punjab & Haryana High Court dismissed a bail application based on the prosecution's accusations that the petitioner was implicated in a vicious and deadly

attack. The sitting court sought information from ChatGPT to obtain a broader view on the decision to issue bail in cases involving cruelty. Nevertheless, it is crucial to acknowledge that this mention of ChatGPT does not convey a viewpoint on the strengths or weaknesses of the case, and the trial court will not take these remarks into account. The reference was specifically meant to enhance comprehension of bail jurisprudence in cases involving cruelty.

Artificial intelligence (AI) and machine learning (ML) can be employed to enhance decision-making processes. This tool facilitates the expeditious examination and research of legal matters based on factual situations. Both advocates and judges must ascertain the applicable legal requirements in each case. This aid would greatly enhance the efficiency of the judicial system. In the context of traffic fines, which are largely handled through online payment systems, deep learning machine learning algorithms can also be employed in Judicial Decisions to calculate motor vehicle compensation. This is possible since the variables involved in the calculation are well-defined and restricted in number. AI can be utilized in the field of legal information distribution through the implementation of legal bots.

Various industries, including as insurance, banking, and e-commerce, are embracing this technology. It assists the general public in making informed decisions on their rights, liabilities, compensations, the outcome of legal cases, and the seriousness of the matter, among other factors. Many law firms in the United States utilize artificial intelligence to predict court rulings and identify the lawyers who are successful in front of specific judges. Furthermore, in Europe, AI arrived to a same verdict as European Court of Human Rights judges in about 80% of cases involving torture, degrading treatment, and privacy infringement. On a domestic level, Cyril Amarchand Mangaldas, a law company based in Mumbai, has adopted the machine learning legal system 'KIRA' from Canada, leading to notable gains in productivity. According to the Harvard Business Review, the utilization of AI has significantly increased in the past

18 months, with approximately 86% of companies stating that AI is becoming a widely accepted technology in 2021. Twelve Consequently, individuals would have the opportunity to seek advice from lawyers who are ready to provide pro bono services using this AI legal robot, with minimal inconvenience regarding geographical proximity and the cost of hiring a lawyer. Hence, the immense potential of Artificial Intelligence (AI) and Machine Learning (ML) is poised to become a tangible reality in the near future.

V: UTILITY OF ARTIFICIAL INTELLIGENCE FOR EFFICIENT LEGAL REGIME IN COUNTRY

Artificial intelligence (AI) has the potential to solve many of the problems impeding the administration of justice if applied properly in the legal sector, particularly in nations like India with very huge backlogs of cases. The improved speed, precision, and time-saving features of AI can contribute to the digital empowerment of India's legal system and lessen the unsettling backlog of cases in the nation. It is imperative to address the efficiency issues ailing the court system because, as the saying goes, justice postponed is justice denied, and the country now has over 4.7 crore (47 million) pending cases, a figure that haunts the institution. In this chapter we will try to find out the utility of AI in different aspects of legal industry

1. In Administration & governance of Law

The utilization of artificial intelligence has significant promise in the management and regulation of legal affairs inside society. In countries with a significant number of pending cases and an overwhelmed judicial system, the implementation of artificial intelligence approaches could alleviate the strain and diminish the backlog of cases, hence enhancing efficiency within the legal sector.⁵⁵ Previously, the administration of law was exclusively carried out by humans. However, due to advancements in artificial intelligence (AI) techniques such as machine learning, logical rules, and knowledge representation, the administration of law will no longer be limited to humans.⁵⁶ This will result

⁵⁵ Law Commission of India, Report No. 245, "Arrears and Backlog: Creating Additional Judicial (wo)manpower," Jul. 2014, available at: http://lawcommissionofindia.nic.in/reports/report_no.245.pdf.

⁵⁶ S. Rautray, "'Arrears a concern,' says Justice Chelameswar," Economic Times, Jan. 22, 2018, available at:

https://economictimes.indiatimes.com/news/politics-and-nation/arrears-a-concern-says-justice-chelameswar/articleshow/62609506.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst.

in a significant transformation of the roles of those involved in the legal process. "Advanced technologies such as predictive coding, predictive analytics, e-discovery, e-reviews, knowledge representation, natural language processing, deep neural networks, and machine learning have revolutionized the legal profession. These technologies have transformed the way lawyers practice law, how judges and police enforce the law, and how users evaluate their legal responsibilities."⁵⁷

AI in law encompasses the utilization of computer and mathematical methodologies to enhance the comprehensibility, controllability, utility, accessibility, and predictability of legal systems.⁵⁸ The application of mathematical methods and formal principles to the field of law was initially envisioned and explained by mathematician Gottfried Leibniz in the 17th century. It is worth noting that Leibniz was also a practicing lawyer. In the 20th Century, namely during the 1970-80's, the integration of AI into the field of law relied heavily on logical principles and techniques for representing information. This involved transforming legal rules, legislation, and legal arguments into a format that computers could understand.⁵⁹ However, in the beginning of the 21st century, namely in the 2000s, machine learning techniques of artificial intelligence were added to the subject of law to complement knowledge representation techniques.⁶⁰

Subsequently, there was a notable surge in the development of AI and law, characterized by the emergence of interdisciplinary collaborations between technology and law through legal-tech start-ups. Additionally, both public and private universities established interdisciplinary courses and centers that bridged the gap between law and technology

departments.⁶¹ This resulted in the creation of distinctive applications of AI techniques in the management and regulation of law inside society. The implementation of artificial intelligence has had a significant influence on several aspects of the legal system, including the legal profession's activities, the management of law by judges and government entities, as well as the utilization of law by individuals and corporations to evaluate their legal rights and obligations.

2. For lawyers and legal practitioners

Lawyers have been a fundamental component of every legal system. Traditionally, they are responsible for a range of tasks including advising clients, assessing the legal merits of cases, creating contracts and legal documents, conducting legal research and reviewing and analysing documents, mitigating risks, and engaging in litigation, among other responsibilities.⁶² Certain tasks are currently at risk of being partially or fully automated by AI.

A. E-discovery and e-review of documents

Law companies and lawyers worldwide are currently utilising machine learning methods such as natural language processing for the purpose of document discovery and document review.⁶³ In contemporary litigation, particularly in common law jurisdictions where case precedents serve as the main basis for litigation, lawyers dedicate a significant portion of their essential time to the process of uncovering pertinent legal documents and case laws. Next, the process involves examining documents to distinguish pertinent ones from irrelevant ones. Historically, this work was performed manually by lawyers or their assistants, who would read through the text quickly. This method was not only time-consuming and labor-

⁵⁷ R. Bhushan, "The fundamental reason why Indian courts have a huge backlog of cases," CNBC, Jan. 13, 2020, available at: <https://www.cnbc18.com/legal/the-fundamental-reason-why-indian-courts-have-a-huge-backlog-of-cases-5045901.htm>.

⁵⁸ *Supra* at 24

⁵⁹ T. Bench-Capon et al., "A History of AI and Law in 50 Papers: 25 Years of the International Conference on AI and Law," 20 *Artificial Intelligence and Law* 215, 277 (2012).

⁶⁰ ICAIL 2015, "First Call for Papers," International Association for Artificial Intelligence and Law: ICAIL, Sept. 10, 2014, available at: <http://www.iaail.org/?q=article/icail-2015-first-call-papers>.

⁶¹ "CodeX: Stanford Center for Legal Informatics," Stanford Law School, available at: <https://law.stanford.edu/codex-the-stanford-center-for-legal-informatics/> (last visited on Dec. 30, 2023)

⁶² "Role of lawyers in the administration of justice," *Advocatetnmoy Law Library*, Oct. 11, 2020, available at: <https://advocatetnmoy.com/2019/03/14/role-of-lawyers-in-the-administration-of-justice/> (last visited Dec. 30, 2023)

⁶³ J. Brickell, "AI-Enabled Processes: And You Thought E-Discovery Was a Headache!" *New York Journal*, Jan. 31, 2020, available at: <https://www.law.com/newyorklawjournal/2020/01/31/ai-enabled-processes-and-you-thought-e-discovery-was-a-headache/?sreturn=20200911015817> (last visited on Dec. 30, 2023).

intensive, but also prone to inaccuracies and human mistakes.

The advent of electronic discovery, employing machine learning techniques, has led to the substitution of manual document evaluation with predictive coding and technology-assisted reviews.⁶⁴ ROSS, an artificial intelligence-powered legal research engine, automates legal operations to enhance efficiency and save costs.⁶⁵ The system uses natural language processing to retrieve and present legal information, ranging from citations to complete legal papers.⁶⁶ These AI systems have revolutionised the analysis of legal papers by rapidly examining vast quantities of contract, merger paperwork, and other materials in real time⁶⁷. This significantly reduces the amount of time spent by lawyers, allowing them to allocate their resources more efficiently towards tasks involving abstraction and conceptualization, such as case debate, court strategizing, and other cognitive activities like client counselling, which are not well-suited for AI technology. Technology-assisted document discovery and review significantly impact the court's efficiency in resolving cases by reducing the time taken. Lawyers are increasingly expediting the justice delivery process by reducing the time it takes to prepare and present their cases before judges, from the initial filing of litigation to the final dispositions in court.⁶⁸

B. Predictions on case-outcome and other related issues

Lawyers employ techniques such as predictive coding and predictive analytics to forecast the likelihood of their clients' victory or failure in court. Previously, lawyers relied on their intuition and past courtroom experience to create case predictions. "However, this has been replaced by the use of machine-learning algorithms, which now generate predictions about cases based on factual information and data."⁶⁹ This has

facilitated the litigants in making well-informed decisions regarding the expenses of litigation, the duration from the first filing to the final resolution of the matter, and the likelihood of success or failure in their case."

C. Alternate dispute resolution

The litigants are being encouraged to utilise alternative dispute resolution (ADR) to settle their cases, mostly relying on the predictive scores given by artificial intelligence (AI). Parties involved in legal disputes have effectively transitioned from traditional court litigation to alternative dispute resolution (ADR) facilitated by artificial intelligence (AI). They have successfully settled their conflicts with the help of AI-assisted ADR.⁷⁰ This has successfully alleviated the workload of the court system without compromising the societal requirements for justice. The number of litigants visiting the court to seek justice is decreasing due to the availability of alternative dispute resolution (ADR) strategies.⁷¹

3. For judges

The global exploration of utilizing AI systems to expedite case resolution by assisting judges is currently underway. Government authorities are employing artificial intelligence (AI) to make significant legal or policy determinations.⁷² In countries such as India, where there is a significant backlog of cases in the judiciary, the administration and governance of law and justice in the courthouses are severely disorganized. Utilizing AI technology is crucial for expediting the process of dispensing justice, enhancing transparency and efficiency, and thereby diminishing the backlog of cases.

A. Risk-assessment of criminal defendants

Judges are effectively utilising AI algorithms to determine sentencing and grant bail to criminal

⁶⁴ C. Yablon and N.L. Roos, "Predictive Coding: Emerging Questions and Concerns," 64 S.C. L. Rev. 633 (2013), 634, 637.

⁶⁵ "The intelligent legal research choice," ROSS, available at: <https://www.rossintelligence.com> (last visited on Dec. 24, 2023).

⁶⁶ *ibid*

⁶⁷ "Demystifying Artificial Intelligence," Thomson Reuters, available at: <https://legal.thomsonreuters.com/en/insights/white-papers/demystifying-ai> (last visited on Dec. 29, 2021).

⁶⁸ *Supra* at 63

⁶⁹ R.A. Shaikh et al., "Predicting Outcome of Legal Cases based on Legal Factors using Classifiers," 167 *Procedia Computer Science* 2393 (2020) - 2402.

⁷⁰ J. South and A. Rogers, "What might artificial intelligence mean for alternate dispute resolution?," *Kluwer Mediation Blog*, Aug. 30, 2018, available at:

<http://mediationblog.kluwerarbitration.com/2018/08/30/might-artificial-intelligence-mean-alternative-dispute-resolution/>.

⁷¹ R.J. Kartez et al., "AI and its impact on future ADR," available at: https://nysba.org/NYSBA/Sections/Coursebooks/Dispute%20Resolution/2019%20Fall%20Meeting/_Panel%205.pdf.

⁷² D. Kehl et al., "Algorithms in the criminal justice system: Assessing use of risk assessment in sentencing," 2017, available at: https://dash.harvard.edu/bitstream/handle/1/33746041/201707_responsivecommunities_2.pdf?sequence=1&isAllowed=y.

defendants.⁷³ When determining whether to grant bail to a criminal defendant awaiting trial, a court must conduct a risk assessment to evaluate the likelihood of the offender committing another offence or fleeing.⁷⁴ The courts are utilising AI algorithms to measure the likelihood of a person committing another crime or fleeing. The machine learning system endeavors to generate a forecast by analysing historical crime data, which is subsequently conveyed to a court in the form of a numerical score. While the judges are not obligated to rely on the computerized assessments, these scores do have a significant impact on the judges' decision-making process when it comes to giving punishments or bails.

B. Translations of legal documents

Another notable example is the utilisation of artificial intelligence tools in courtrooms to facilitate accurate and high-quality translations of legal documents between vernacular languages and English.⁷⁵ Court houses primarily function in their official languages, namely English, and hence necessitate all documentation to be in the same language. English serves as the official language of the higher courts in several nations, including India. Nevertheless, the lesser courts employ colloquial languages for their daily proceedings. The issue of translation arises when a matter is brought to the higher courts through the process of appeal. The scarcity of proficient translators proficient in translating between vernacular languages and English has resulted in significant delays in settling conflicts.⁷⁶

In India, judges have devised a successful approach by employing AI systems to convert papers from regional languages into English and vice versa. The courts have effectively utilised natural language processing techniques to accurately translate numerous documents from nine vernacular languages into English and vice versa.⁷⁷ The current accuracy range

of these techniques is between 60% and 80%, with a potential for future improvement. This is due to the machine learning algorithm continuously enhancing its performance through the analysis of increasing amounts of high-quality and well-organized data. Indian individuals now have convenient access to and can comprehend judgments from higher courts in their local vernacular language. This AI tool has facilitated equal access to justice by providing common individuals with convenient access to significant court rulings from higher courts, presented in their native language. Furthermore, it has expedited the process of justice, consequently enhancing the efficiency of the legal system in courtrooms.

C. E-analysis of legal documents

By employing technology assisted review and predictive coding, judges are now capable of swiftly analysing and extracting pertinent information from numerous legal papers spanning thousands of pages, all within a matter of minutes.⁷⁸ In India, the courts have proposed the development of an artificial intelligence (AI) system capable of efficiently analysing extensive volumes of criminal petitions. This system would extract pertinent information from these documents and offer it to judges and judicial personnel.⁷⁹ Prior to this, judges were required to personally review the documents, a process that often took at least a month to thoroughly read and analyse every line of the criminal petition. The AI system does this work with efficiency and precision. The AI system autonomously educates itself by studying court judgements to discern trends in how judges inquire during criminal cases. Which inquiries are typically and frequently posed in a criminal petition? What will be the judge's response in a certain case? Utilising this 'training', the system can effectively extract the most pertinent information from thousands of pages, focusing on 150 data points. It then gives a succinct

⁷³ D. Ashman, "The Impact of Alternate Dispute Resolution (ADR) in Employment Law" (2011) (Unpublished College of Technology Master Theses, Purdue University).

⁷⁴ Cathy O'Neil, *Weapon of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (Crown Publishers 2016).

⁷⁵ Supreme Court of India, "Supreme Court Vidhik Anuvad Software (SUVAS)" (Press Release, Nov. 25, 2019), available at: <https://main.sci.gov.in/pdf/Press/press%20release%20for%20law%20day%20celebration.pdf>.

⁷⁶ "SUVAS 'Supreme Court Vidhik Anuvad Software' translation tool India," *Deccan Herald*, 2019, available at:

<https://www.deccanherald.com/national/national-politics/software-to-translate-sc-judgments-in-9-languages-784940.html>.

⁷⁷ *ibid*

⁷⁸ B. Marr, "How AI and Machine Learning Are Transforming Law Firms and the Legal Sector," *Forbes*, May 23, 2018, available at: <https://www.forbes.com/sites/bernardmarr/2018/05/23/how-ai-and-machine-learning-are-transforming-law-firms-and-the-legal-sector/#3d0d039832c3>.

⁷⁹ Justice L. N. Rao, "Artificial Intelligence and Law," *Legal Empowerment Through Interaction Online Lecture Series*, Aug. 6, 2020, available at: <https://youtu.be/ZJsIQwPn5AU> (last visited on Mar. 6, 2021).

summary to a court within a timeframe of two to three minutes. This entire procedure now occurs within minutes, whereas previously it would take over a month when performed manually. The implementation of AI systems is projected to significantly decrease the duration required by judges to make final decisions on criminal petitions and appeals in courtrooms.

4. For individuals and businesses

The third crucial aspect of law administration pertains to the individuals who are subject to it, commonly referred to as the 'users of law'. The users of law consist of individuals, organizations, and enterprises who are subject to legal regulations and employ legal instruments like as contracts, wills, grants, etc., to carry out their personal and business endeavours.⁸⁰ Both individuals and organizations utilize legal expert systems, such as Turbo Tax, to accurately compute their tax obligations.⁸¹ Numerous firms employ proprietary expert systems, such as business-logic policy systems, which utilise computer-based rules regarding company matters to evaluate their compliance with legal regulations. One hundred and nine Government authorities now rely on the results of these legal expert systems when making official determinations about rights and liabilities.⁸² "These legal expert systems employ logic-based knowledge representation to facilitate the identification of law breakers."⁸³ AI is utilised in legal self-help platforms, employing automated chatbots to furnish users with responses to fundamental legal inquiries. Furthermore, legal practitioners are utilising computer-generated computable legal contracts for the facilitation of internet trading and other trade-related endeavours.⁸⁴ These contracts are written in computer-readable languages and can be implemented automatically without the need for human or legal professionals."

VI: AN EXAMINATION OF THE APPLICATION OF ARTIFICIAL INTELLIGENCE IN THE LEGAL SYSTEM: A COMPARATIVE ASSESSMENT

The potential of artificial intelligence (AI) in the legal system is being looked at by judiciaries, prosecution

services, and other specialized judicial agencies worldwide. For example, AI technologies have already been incorporated into a number of legal systems across the globe to support investigations and automate the decision-making process. This chapter will attempt to analyze the evolution and advancement of the legal systems in various countries, such as the United States, the United Kingdom, and China.

1. The United States of America

The United States has developed many programmes that employ artificial intelligence (AI) for a range of reasons aimed at improving the administration of justice. Some US Courts utilize artificial intelligence (AI) with research tools to assist judges in rendering impartial and equitable verdicts. Artificial intelligence algorithms process data and forecast the result of a situation.

AI-driven systems like COMPAS (Correctional Offender Management Profiling for Alternative Solutions) aid judges in evaluating the likelihood of future criminal behaviour. These technologies employ machine learning algorithms to assess multiple parameters, including criminal record, socio-economic background, and mental health, in order to forecast the probability of reoffending. Additionally, the US Sentencing Commission use artificial intelligence (AI) to create and enforce sentencing guidelines, aiding judges in determining equitable and uniform penalties for various offences.

AI techniques like COMPAS aid judges in evaluating risk by analysing variables such as criminal record, socioeconomic status, and mental well-being to forecast the probability of reoffending. The US Sentencing Commission use artificial intelligence (AI) to develop and enforce sentencing guidelines to ensure equitable and appropriate penalties

The US Court System has implemented chatbots that disseminate information to the general public. These virtual assistants are capable of providing responses to frequently asked inquiries regarding court procedures, timetables, and several other subjects. This helps alleviate the burden on court personnel and enhances the public's accessibility to information. They provide

⁸⁰ Supra at 23

⁸¹ Supra at 29

⁸² D.F. Engstrom et al., "Government by Algorithm: Artificial Intelligence in Federal Administrative Agencies," available at: [https://www-cdn.law.stanford.edu/wp-](https://www-cdn.law.stanford.edu/wp-content/uploads/2020/02/ACUS-AI-Report.pdf)

[content/uploads/2020/02/ACUS-AI-Report.pdf](https://www-cdn.law.stanford.edu/wp-content/uploads/2020/02/ACUS-AI-Report.pdf) (last visited on Dec. 27, 2023).

⁸³ Supra at 79

⁸⁴ H. Surden, "Computable Contracts," 46 UC Davis School of Law 629 (2012).

responses to often asked inquiries regarding court procedures, schedules, and other relevant topics to the general public. This aids in reducing the burden on court personnel and improves the availability of information for all individuals

2. China

The Smart Court system in China utilises AI technology to assist judges by analysing previous cases and providing recommendations based on relevant laws and precedents. Additionally, it has the capability to suggest punishments by analysing comparable instances, enabling judges to make well-informed judgements and expedite the delivery of justice.

Chinese courts employ artificial intelligence (AI) to do legal research. The 'China Judgements Online' technology, which utilises artificial intelligence, enables judges to efficiently locate pertinent legal papers.

In December 2019, China introduced the establishment of "Internet courts" to handle numerous legal cases, eliminating the need for residents to physically attend court proceedings. The "smart court" incorporates AI-powered non-human judges and enables participants to register their complaints online and resolve them through digital court hearings.

"The Chinese Internet courts adjudicate a wide range of disputes, encompassing intellectual property, e-commerce, financial disputes arising from online behaviour, online loan transactions, domain name conflicts, property and civil rights cases related to the Internet, product liability arising from online purchases, and specific administrative disputes. The average duration of a case in Beijing is 40 days, while the average length of a dispositive hearing is 37 minutes. Individuals make up about 80 percent of the litigants in Chinese Internet courts, with corporate entities accounting for the remaining 20 percent. Furthermore, an overwhelming 98 percent of the verdicts have been accepted without any appeals."

In 2017, China created its inaugural Internet court in the city of Hangzhou. By 2019, it was stated that users have carried out over 3.1 million legal operations using the court system between March and October. The system had a registration of over one million residents, as well as around 73,000 lawyers.

Reporters were recently invited by judicial officials to visit the Hangzhou Internet court in order to see its operations. During a demonstration, citizens were

witnessed utilising video chat to engage in communication with the AI judges.

"Does the defendant have any reservations regarding the admissibility of the judicial blockchain evidence presented by the plaintiff?" "Inquired a virtual judge during a pretrial conference." The non-human judge was depicted in the system as a visual representation of a man adorned in a black robe.

The human complainant responded affirmatively, expressing no opposition.

The judges materialized as holographic projections and are synthetic entities, devoid of any physical being. The holographic judge is an artificial, three-dimensional representation composed of many judges. It possesses the ability to mimic a real person's appearance. Additionally, it performs tasks such as managing schedules, interrogating litigants, collecting evidence, and delivering final judgements.

According to a court official in Hangzhou, the Internet court system functions continuously, 24 hours a day, seven days a week.

3. United Kingdom

In 2020, the UK Ministry of Justice implemented the Digital Case System specifically for the crown courts. The platform provides live updates on court cases and enables distant participation in court proceedings. Additionally, it allows for the electronic submission of evidence, hence minimising the need for paper documents. The Bar Council's Ethics Committee offers directives for criminal law barristers who are utilising the internet portal. The DCS, or Digital Case System, is a tool created to enhance the productivity and efficacy of the criminal judicial system in England and Wales. It allows judges, lawyers, and court personnel to digitally handle cases from beginning to end.

The DCS has two main purposes: facilitating real-time access and updates to submitted cases, and enabling remote engagement in court processes. In addition, the technology enables parties to electronically submit evidence and documents, thereby minimising the usage of paper in court proceedings. The UK Bar Council's Ethics Committee periodically releases guidelines to assist criminal law barristers nationwide in using the online portal.

VII- AT WHAT EXTENT AI CAN BE ADOPTED IN JUDICIAL SYTEMS.

We have already seen how the Artificial intelligence can help in making a justice delivery system more advanced and efficient, but as in other sectors too there is constant fear of professionals being replaced by AI, like after the advent of these self driving cars the job of human drivers became more vulnerable, same as these speculations we also need to find out at what extent we can use these technologies in judicial system. One of the most speculating thing in legal industry is the replacement of AI with Judges and lawyers. So, in this chapter we are going to find out the answer to these speculations, though we have seen the example of china in previous chapter where the AI is delivering the pronouncements in some categories of the cases.

As previously mentioned, emerging technology can help people refine the issues that need to be brought before judges or help them resolve disputes earlier. For instance, technology can be utilized to conduct advising, determinative, and evaluative procedures as well as help humans create options and use AI to create alternatives. Here, Artificial Legal Intelligence ('ALI') refers to certain disruptive technologies that are connected to a system that can provide professional legal advice or decision-making.⁸⁵

1. The replacement of judges

Because AI can be integrated with current adjudicatory or non-adjudicatory processes, it has an important effect on the justice system. However, there have been concerns raised about how these processes will affect the role of judges and attorneys as some human decision-making and analysis is replaced by technology.⁸⁶ It is generally acknowledged that the impact outside of the justice sector will probably be substantial. Numerous forecasts indicate that in 20 years, AI and other advancements will render many current employment arrangements obsolete, with AI-supported processes replacing many current tasks.⁸⁷ However, there hasn't been much talk regarding senior legal sector roles and if these advancements—

including the development of Judge AI—will alter the nature of judicial work, potentially leading to the entire replacement of some judges by newer technology.

It is obvious that in the future, some judicial tasks will be carried out by technology means, especially in cases where artificial intelligence (AI) systems may be developed. In this sense, artificial intelligence (AI) systems and legal information can already employ complex "branching" and data searching technologies to build complex decision trees that can recommend resolutions to legal conflicts. Furthermore, more advanced AI enables neural networks, which are systems that not only mimic human intelligence but can generate new and distinct intelligent systems.⁸⁸ To provide an accurate description of the conflict, the system essentially asks a series of questions or leverages already-existing user data to pose inquiries regarding the issue. After that, the computer uses the conflict description and the law to draw a conclusion. It accomplishes this by using rules for particular groups of information. Lastly, the computer is able to carry out tasks according to the provided description.⁸⁹ The expression of indicative or even final conclusions may be made possible by this method. Because machine learning makes it possible for systems to continuously improve and be corrected with new data sets, these kinds of systems can be reflected and updated on a regular basis.

On the other hand, does this imply that technology will eventually take the role of judges? You could argue that it is not, or at least not at first. One reason for this is because there are a great deal of elements that influence the decisions that are made by the judiciary. Induction and intuition are two examples of such variables, according to the Australian Law Reform Commission, which also mentioned the ability to evaluate the extent to which decisions will have an effect on society.⁹⁰ On the other hand, if technologies are able to support decision-making (for instance, by

⁸⁵ Richard Susskind, *The Future of Law: Facing the Challenges of Information Technology* (Clarendon Press, 1996) 120–1.

⁸⁶ Richard Susskind, *Tomorrow's Lawyers: An Introduction to Your Future* (Oxford University Press, 2nd ed., 2017).

⁸⁷ Tony Dolphin (ed), *Technology, Globalisation and the Future of Work in Europe: Essays on Employment in a Digitised Economy* (Institute for Public Policy Research, 2015) 45.

⁸⁸ N B Chaphalkar, K C Iyer and S K Patil, 'Prediction of Outcome of Construction Dispute Claims Using Multilayer Perceptron Neural

Network Model' (2015) 33 *International Journal of Project Management* 1827.

⁸⁹ Sandra Wachter and Brent Mittelstadt, 'A Right to Reasonable Inferences: Re-thinking Data Protection Law in the Age of Big Data and AI' (2019) *Columbia Business Law Review*

⁹⁰ Australian Law Reform Commission, *Technology: What It Means for Federal Dispute Resolution*, Issues Paper No 23 (1998) 101

enabling participants to identify potential outcomes with greater accuracy), then they may play an increasingly important role in certain types of disputes (especially in the family area). Furthermore, they can support judicial processes and the decision-making process (for instance, by producing a draft or template decision that can then be considered by a human judge).

These kinds of technologies have already been put through their paces in terms of testing⁶³, but their use has been restricted up until this point due to problems with connectivity, cultural norms, technological storage, and accessible technology. On the other hand, the significance of many of these problems is diminishing as people grow more electronically linked and better equipped to store data. The rising importance that such processes will play may result in the possible redirection of more court-related conflicts to alternative dispute resolution (ADR). It may also result in the replacement of more straightforward judicial decision-making processes by completely removing humans (who may only serve as an appeal or review function). In this context, the capability of artificial intelligence (AI) choices to be appealed or reviewed by human decision-makers is frequently highlighted as a crucial component of any systems that are capable of making automated decisions.

These developments present hard questions regarding the management and categorization of data, as well as the location and manner in which executive and judicial activities are carried out and separated. Additionally, they raise questions regarding the capacity of courts and judges to fulfill their roles in the future. Furthermore, as has been the case in the United States of America, there are concerns regarding intellectual property (often known as "IP"), as well as who may have control and input with outsourced Judge AI, and the degree to which algorithms are transparent (for further discussion, see the next section).

In addition, judges are responsible for a great deal more than simply rendering a decision or deciding the outcome of a dispute. The management of cases and the resolution of civil disputes are both areas in which they play an important role. Judicial commentary provides insight into the ways in which society can

function, and many judges also play a role in an educational sense. They not only provide litigants and lawyers with information on the approaches that can be followed, but they also contribute to civic education on a more general level. In terms of what judges offer to society, which goes beyond adjudication and encompasses significant and frequently neglected issues relating to compliance and acceptance of the rule of law, those who advocate for the perspective that judges may be replaced by artificial intelligence are, in a sense, missing the point.

2. An AI judge

Regarding basic adjudicatory tasks, it is evident that the execution of numerous judicial responsibilities necessitates human intellect, and computer programs have not yet been devised to supplant these functions or engage with individuals in a compassionate, emotional, or nimble manner. Could technological advancements eventually supplant human judges in the courtroom, with an AI system designed to oversee hearings and provide more intricate judgments? How might more advanced technologies aid or bolster this endeavor?

Harvey provides a concise explanation of the steps an AI judge would need to follow, using the illustration of algorithms that are now found in legal databases. These databases utilize natural language processing to facilitate the retrieval of pertinent information based on search terms. An AI judge would need to surpass the capabilities of these databases by narrowing down the retrieved sources to a practical and pertinent selection. It would then employ tools to compare these legal sources with a current case and conduct an analysis to reach a decision on the outcome.⁹¹ Harvey states that the last stage necessitates the creation of algorithms capable of doing comparison and predictive analysis, along with a probability analysis, in order to produce a valuable and informative result. Nevertheless, Harvey's methodology predominantly preserves human judgment decision-making.

Predictive analysis has been carried out through the use of AI computer algorithms to forecast case outcomes by analyzing textual information. Aletras and his colleagues devised a tool that conducted textual analysis of decisions pertaining to violations of human rights in the European Court of Human Rights

⁹¹ Monidipa Fouzder, 'Briggs: Online Court Will Take the "A" Out of "ADR"', *The Law Society Gazette* (online), 26 September 2016

in order to identify recurring trends in the court's rulings.⁹² The software acquired knowledge of these patterns and had an average predictive accuracy of 79 percent when provided with textual cases.⁹³ This is an instance of machine learning, in which the computer system was capable of analyzing historical data to formulate rules that can be used in the future. Machine learning enables computer programs to acquire proficiency in intricate jobs by means of experience, as opposed to relying on manually designed computer functions. Surden observes that machine learning may encounter some constraints in the creation of proficient artificial intelligences capable of forecasting legal verdicts. Machine learning techniques are effective only when the analyzed data has resemblance to the fresh data being supplied to the artificial intelligence.. If an AI program encounters a unique situation without any comparable precedent, it may not be capable of generating accurate predictions or reaching a definitive result. These challenges may also occur when the sample size of previous examples is insufficient for the computer program to identify patterns and generate meaningful generalizations.⁹⁴ Nevertheless, AI researchers have achieved notable accomplishments in domains other than law, indicating that predictive analysis can be acquired even in situations with substantial fluctuations in novelty. Google's DeepMind researchers have recently achieved success in training an AI program called AlphaGo to play the intricate game of Go at a superior level compared to the European master. This was accomplished by directly training the program's neural networks using a combination of general-purpose supervised and reinforcement learning methods, solely based on gameplay. AI is now being widely utilized in the medical field for diagnostic purposes and to assist with some human activities. Although the law is more intricate than any game, these achievements indicate that Judge AI can acquire the ability to interpret and enforce the law by studying legislation and case law. Furthermore, it is possible to apply these concepts to actual situations. Considering the advancements in non-legal domains and the swift growth of artificial intelligence (AI) along with

increased investment in this field, it is highly feasible that the development of more advanced AI judges will occur within the next ten years. The emergence of more advanced Judge AI becomes a more feasible choice when machine learning combines with increasingly advanced predictive analytical methods.

3. Challenges that may arise during the development of an AI judge

In addition to the general concerns regarding the role of judges in our society, there are certain considerations that are particularly significant when considering the impact of AI on the adjudicative function of judges. Collectively, these criteria indicate that AI has the potential to supplant certain adjudicative duties. Nevertheless, the crucial questions that arise are whether such a development is suitable and the specific situations in which human judges should maintain the majority of adjudicative functions.

A. Legal Authority

“One initial issue is whether a computer program or automated process possess the legal authority to make decisions in place of a human judge. In the context of an automated system delivering administrative decisions, Justice Perry raises questions such as who makes the decision, and who possesses the legal authority to make such a decision.⁹⁵ Is it the computer programmer, the policymaker, the human decision-maker or the computer or automated system itself?

Legislators have removed some of the complexities of this issue. For example, a decision made under the Therapeutic Goods Act by a computer program is deemed to have been made by the Secretary. How such a deeming provision would fare in court litigation remains uncertain.

Justice Kirby, writing in 1999, noted that the need for the public and open nature of adjudication may present difficulties with the adoption of electronic courts:”

“The right to see a judicial decision-maker struggling conscientiously, in public, with the detail of a case is a feature of the court system which cannot be abandoned, at least without risk to the acceptance by the people of courts as part of their form of governance.”

⁹² Nikolaos Aletras et al, ‘Predicting Judicial Decisions of the European Court of Human Rights: A Natural Language Processing Perspective’ [2016] (October) PeerJ Computer Science 1, 15–16

⁹³ *ibid*

⁹⁴ David Silver et al, ‘Mastering the Game of Go with Deep Neural Networks and Tree Search’ (2016) 529 Nature 484, 489

⁹⁵ Perry, ‘Administrative Decision-Making in the Digital World’, above n 33, 31.

“Without a public, open forum for the administration of the state’s judicial powers, would the exercise of these powers be accepted by the populace? Chief Justice Warren argues that they would: few people attend court hearings in person, and information and news is sourced more and more from online media including social media. Furthermore, an online court system featuring AI adjudication programs would not be considered out of place in an increasingly connected and online society.”

B. Translating Law into Code

Commentators have addressed the challenge of precisely converting legal language into algorithms, instructions, and operations that may be comprehended by a computer programme. Legal terminology is intricate and frequently necessitates comprehension of the surrounding context (refer to the subsequent paragraph). Computer programmers and IT workers typically lack legal degrees, experience, as well as expertise in policy and administration. “Nevertheless, it is the responsibility of these experts to convert legislation and case law into computer codes and commands in order to enable an automated process to make decisions.” These sources of law, however intricate in their own right, also function within the framework of legislative presumptions and discretionary judgements. It is difficult to accurately programme these complexities into an automated process. Due to these obstacles, analysts observe that certain regulatory aspects of the legislation may be more appropriate for conversion into computer code. Likewise, these codes will require regular updates in response to frequent revisions, new legal rulings, and intricate transitional clauses. Autonomous systems must possess the ability to enforce the law based on the laws that were in effect at the time the actions took place, in order to ensure that cases are resolved in accordance with the appropriate legal framework. These issues can potentially be addressed by involving attorneys and policymakers in the development and maintenance of these computer programmes.

C. Discretionary Judgments

A significant number of decisions made within the legal system require the exercise of discretion. Computer programmes function according to logical principles, wherein input data is processed using programmed algorithms to achieve a pre-established result. The level of inflexibility may be seen to be incompatible with the exercise of discretionary

judgements. Discretionary choices should consider community ideals, the subjective characteristics of the persons involved, and any other relevant surrounding circumstances.

Justice Perry proposes that lawmakers and officials will substitute subjective principles with more definitive provisions in order to enhance efficiency by using more automated decision-making processes. These modifications aim to streamline the law and enhance its determinative nature, hence facilitating improved computer processing of legal information. These revisions may lead to unjust or capricious rulings since they lack personalised justice and judgement, as well as a nuanced approach to the law. Simultaneously, there are concerns over the existing methods of evaluation and the presence of prejudice. As previously mentioned, the process of judging can be influenced by several elements that may not exist in cases where AI is involved (however it should be noted that AI processes can also produce biased outputs). As observed by proponents of the access to justice movement, the outcome of court adjudication can be significantly affected by various circumstances, such as the calibre of legal representation, the financial resources accessible to the litigant, and the quality of decision-making within the context of rights-based framework. Furthermore, the process of making legal decisions can be impacted by several circumstances that can affect the fairness of the outcome. These encompass a variety of effects on the individual responsible for making the decision, which comprise:

1. The timing and content of an individual's meals.
2. The specific hour of the day;
3. The cumulative number of decisions made by an individual on that day, which might lead to decision fatigue;
4. individual beliefs;
5. Implicit assumptions;
6. Dependence on intuition.
7. The appeal of the individuals involved.
8. Emotion.

The precise influence of these factors on judges remains uncertain, although it is probable that even if a judge becomes cognizant of these aspects, they are prone to undervalue their significance. This phenomenon occurs partly due to our inclination to embellish information regarding our own personal attributes that we perceive as favourable, while being

less inclined to acknowledge information that casts doubt on our good traits.

Concerns arise around the presence of technology-related biases, and there is apprehension that substituting people with AI may not always lead to a decrease in bias in situations where judgement is important. Certain existing AI systems have already exhibited substantial hazards associated with bias, revealing that programmers and other individuals can inadvertently reproduce biased outcomes. These concerns have indicated that algorithms have the potential to generate undesirable outcomes and perpetuate racism and inaccuracies. Moreover, the utilisation of Judge AI has the potential to diminish the justice system's ability to treat individuals in court with respect and to respond to them in a compassionate and empathetic manner, which may involve emotions. Advancements in affective technology indicate the possibility of developing technologies that can reliably identify and effectively respond to human emotions, potentially surpassing human capabilities in this regard.

VIII: ISSUES AND CHALLENGES IN USING ARTIFICIAL INTELLIGENCE IN LEGAL SECTOR

Although these technical breakthroughs undoubtedly provide a range of advantages, they also give rise to ethical concerns around data security, privacy, and their potential impact on decision-making. To achieve a future legal system that is fair, efficient, and accessible, it is crucial to carefully manage the integration of emerging technologies with Digital and Paperless Courts, Online Courts, and Virtual Courts while still upholding fundamental legal principles.

The process of digital transformation in India has several obstacles due to the country's lack of technological development and the near absence of digital literacy among the populace. Individuals who are socially and economically disadvantaged face challenges in accessing and utilizing technology. Additionally, it is crucial for judges, clerks, registrars, and other personnel to possess technological literacy. This highlights the concern that despite the availability of technology to the general public, it may not be fully utilized due to digital illiteracy. A significant challenge in transitioning to virtual courts is the lack of technological proficiency among lawyers and judges. A considerable number of judges and lawyers

are not adept at using technology, with the Bar Council of India reporting that 90% of judges were unfamiliar with its use. The virtual courts face challenges due to the inadequate infrastructure and insufficient resources.

The existing status of the judiciary lacks the capability to carry out virtual court proceedings, as it does not possess the same infrastructure as physical courtrooms. "A comprehensive overhaul is necessary to ensure that the use of technology is accessible to all parties involved in a courtroom. As per the Detailed Project Report (DPR), artificial intelligence (AI) can be utilized for forecasting and prediction, enhancing administrative efficiency, automating filing, intelligently scheduling cases, improving the case information system, and communicating with litigants through chat bots to assist in resolving cases at an early stage." It is crucial to evaluate the increasing concerns associated with the utilisation of AI in the legal domain. The authors will briefly highlight current issues arising from the utilization of artificial intelligence tools and techniques in the legal domain.

1. Potential of learning-bias in algorithmic decision making

Several academics have highlighted the concern that machine learning systems, which derive patterns from data, can exhibit prejudice against specific groups of humans as a result of inherent biases present in the data. For example, a machine learning software utilised a substantial quantity of court judgements to assess the likelihood of repeat offences by criminal defendants. The judges rendered their verdicts, displaying a clear bias against a specific set of individuals compared to the other group, despite both groups being in similar circumstances. "Consequently, the system acquired bias from the data-set and continued to perpetuate it in all subsequent automated decision making. Every machine learning tool is vulnerable to these intrinsic biases present in the dataset, which become embedded in the machine during the training procedures."

The impartiality of AI algorithms is contingent upon the impartiality of the data they are trained on, which might result in partial outputs. The training data for AI algorithms may contain personal information, encompassing instances of historical discrimination and cultural biases. Inadequate data can result in limited outcomes, which can have significant repercussions in the legal sector. AI systems that

forecast case outcomes may exhibit bias towards certain groups, resulting in unjust consequences. Likewise, artificial intelligence algorithms employed for document evaluation may exclusively consider pertinent data that aligns with predetermined concepts of what is crucial. The impartiality of AI algorithms is contingent upon the quality of the data they are trained on. Biased training data for AI algorithms results in limited algorithmic capabilities. Within the legal sector, this can result in prejudiced outcomes in court proceedings, so perpetuating systemic prejudices and unfairness. To overcome this issue, it is vital to ensure that the data used to train AI algorithms is both representative and unbiased.

2. Transparency and interpretability in algorithmic decision making

An inherent limitation of AI in the field of law is the requirement for enhanced transparency on the decision-making process of AI systems. AI algorithms are commonly perceived as opaque, indicating that comprehending their decision-making process for a certain outcome is challenging. The absence of transparency might provide difficulties in detecting and rectifying flaws or biases inside the system. Furthermore, it can provide challenges for legal experts to elucidate the rationale behind a specific decision to their clients.

It is also often known as the 'back box problem'. Machine learning software is specifically built to autonomously train itself using datasets. The algorithmic design of the systems undergoes modification, resulting in increased complexity when the computer engages in self-training. The complexity of ML software sometimes renders it incomprehensible, even to its own creators, except for its input and output.⁹⁶ This poses a significant challenge in the context of forming rational judgements in the field of law, particularly when crucial matters pertaining to the well-being and freedom of an individual are involved. Providing a logical explanation for how the system has reached this outcome is quite challenging. This prompts additional inquiries regarding the transparency of algorithmic decision-making, which, according to the researcher, should be capable of being understood, clarified, and openly disclosed at the minimum.

⁹⁶ Justice Melissa Perry, 'iDecide: The Legal Implications of Automated Decision-Making' (Speech delivered at the Cambridge

3. The perception of mathematical objectivity and impartiality

As the automated decision-making continues without interruption. Computers are commonly perceived as being more impartial, unbiased, and precise compared to humans. "The functioning of an AI system is far more complex and subjective than it may initially seem. Government officials, individuals, and other beneficiaries of AI systems typically depend on the mathematical output of these systems and defer to their decision-making without considering the underlying mechanisms involved in reaching a certain conclusion." For example, if a computer produces a result indicating that an individual has a significant likelihood of reoffending or is extremely prone to committing a serious crime if granted bail, a judge will defer to the system's prediction rather than exercising independent judgement. The judge fails to question about the specific parameters employed in calculating the risk score of the criminal defendant. This raises concerns about the inclusion of a 'person in the loop' who is responsible for ensuring that the system remains impartial and objective. However, it appears that human intellect is highly prone to the illusion of mathematical objectivity that is generated by the AI system.

4. Data privacy concerns

The advancement of advanced AI technologies increases the likelihood of using users' personal information in manners that may encroach upon their privacy concerns. For instance, natural language processing systems used in translating court records and other secret resources acquire knowledge of patterns and crucial information about clients, judges, and lawyers, which might be exploited to their disadvantage. These datasets may include additional pertinent information that is not perceptible to humans but can be detected by AI systems, such as political affiliation, sexual orientation, and other preferences. This information might potentially be utilised to manipulate individuals' choices and decision-making processes. In addition, law enforcement agencies utilise facial recognition technology for surveillance purposes at airports, railways, and bus stations. Furthermore, also gives rise to issues regarding the protection of consumers' sensitive information.

Centre for Public Law Conference: Process and Substance in Public Law, University of Cambridge, 15–17 September 2014)

“Given the abundance of extensive data on social media platforms such as Instagram and Facebook, these machine recognition software have the capability to change sensitive information such as retina scans and other facial characteristics of individuals.” An additional significant issue associated with face recognition technology is the likelihood of erroneously identifying persons, resulting in their unjust convictions, which poses a detrimental prospect for our society. “Tools without a strong privacy protection policy have the potential to be misused by law enforcement agencies, as well as other governmental and private entities, for continuous surveillance of the general population.”

Another notable disadvantage of utilising AI in the legal sector is the possibility of data breaches and additional security considerations. Legal professionals are responsible for managing sensitive and confidential information, and any unauthorised access or disclosure of this data could result in significant legal and financial repercussions. AI systems utilised in the legal sector necessitate robust security measures to safeguard sensitive data.

5. Limited Scope & Lack of Context

AI is frequently limited in its applicability to specific legal duties. AI-driven legal research tools are highly proficient in locating pertinent case law, as exemplified. However, it is possible that they may be required to offer a distinct level of understanding regarding the intricacies of legal precedents, surpassing that of a human legal researcher. Likewise, although AI-driven document review systems can be highly efficient in evaluating extensive amounts of papers, they must possess the capability to recognise the same level of intricacy and subtlety as a human reviewer.

AI algorithms are limited to the data they receive and may have limited ability to comprehend the context in which the data is provided. This can pose significant challenges, especially in legal contexts, as the interpretation of a term or phrase can differ based on the unique legal circumstances. By comprehending the relevant context, AI algorithms have the potential to effectively examine and interpret legal documents with precision.

6. Job losses and other ethical concerns

Another significant issue with AI in the legal field is the possibility of employment reduction. AI technology has the capability to automate several

repetitive operations, including document review and legal research, potentially leading to a reduction in job opportunities within the legal sector. Although AI has the potential to enhance the productivity of legal practitioners by allowing them to allocate more time to complex activities, it may also lead to job displacement for individuals engaged in repetitive duties.

Utilising AI in the field of law raises numerous ethical considerations. AI algorithms can be employed to forecast the probability of an individual engaging in criminal behaviour, hence prompting concerns around privacy and the presumption of innocence. Likewise, the utilisation of AI in hiring decisions can result in prejudiced consequences. When incorporating AI technology, the legal business must thoroughly address these ethical considerations.

7. Cost and Accessibility

Although AI technology has the potential to save expenses in the legal sector, its implementation can be costly. Smaller law firms and independent practitioners may lack the necessary resources to allocate towards AI technology, hence reducing its accessibility for those who require it the most. In addition, the availability of AI-powered legal services may be restricted to certain regions or specific legal matters, so further constraining accessibility.

8. Inquiries related to licencing and inquiries pertaining to accountability

AI systems, in contrast to licenced attorneys, are not required to obtain a legal practice licence and hence are not bound by ethical standards and professional rules of conduct. Who bears responsibility or accountability for an AI system that offers erroneous or deceptive legal counsel? Who is responsible, the developer or the user?

The utilisation of Artificial Intelligence (AI) in the judiciary presents a challenge, even when judges maintain the final authority in decision-making. It is frequently seen that individuals can excessively depend on technology-driven suggestions because of the presence of automated prejudice.

According to a recent news source, a lawyer from New York employed ChatGPT for legal research and incorporated six case citations into a brief submitted to the court. Nevertheless, the opposing counsel was unable to locate any of the cases, and the lawyer had to acknowledge that he had not personally verified their authenticity. The judge levied sanctions on the

implicated solicitors, resulting in a collective punishment of \$5,000 imposed on their legal company. Hence, attorneys must exercise prudence while employing generative AI for legal research.

9. Concerns regarding competition

AI can function autonomously from its coders or programmers by utilising its self-learning skills. Nevertheless, this may lead to unexplored technical and economic inequalities. These discrepancies have the potential to result in the improper use of data and may disrupt the framework set forth by the Competition Act, 2000.

Ensuring responsibility for technology-related mistakes in the legal domain can prove to be a formidable undertaking. The consequences of errors produced by AI systems will have significant ramifications that will impact the freedom and well-being of individuals. Nevertheless, legislators and industry professionals from legal or other domains can implement proactive measures to establish unambiguous boundaries of responsibility and guarantee accountability in the use of AI in their profession.

It is crucial to bear in mind that AI does not serve as a substitute for the work of lawyers; instead, it should serve as a complement to it. Although AI has the capability to streamline monotonous and time-consuming processes, it lacks the ability to manage strategic decision-making, intricate legal analysis, and provide legal advice.

IX: BIGGEST HURDLES FOR AI IN LEGAL FIELD & JUDICIARY

The essence of the case and the feelings of the client can only be comprehended by direct human engagement, as mandated by legal regulations. One of the major limitations of Robot Lawyers is their deficiency in providing a human touch to a case. Only a Homo sapiens can genuinely comprehend the sentiments of another Homo sapiens. While the presence of numerous automated legal systems exists, the necessity of human involvement in the field of law remains imperative. In Indian courts, lawyers dedicate a minimum of one day to exclusively engage with their clients in order to get essential data from them. Humans often exhibit a reluctance to fully disclose information that cannot be obtained by a robotic lawyer. Client engagement and various forms of communication, including accurately reading the

client's genuine stance, are the primary aspects of a lawyer's role in the legal profession. When a lawyer engages with their client, it involves more than just simple communication.

The lawyer carefully observes and interprets the client's language, gestures, and emotions, even though not all of it can be fully understood or expressed. Only a human lawyer possesses the capacity to comprehend the mental state of their client and respond accordingly. An artificial brain is incapable of comprehending the diverse range of emotions experienced by a human being. The development of affective computing technologies has empowered robots to comprehend and react appropriately to human emotions. Using microphones, cameras, and sensors, this technology detects a person's psychological state and recommends videos that can improve their mood. Artificial intelligence is becoming invincible as technology continues to improve, addressing and resolving every negative associated with it. Artificial intelligence, while having military-grade protection, is unlikely to surpass hacking. There is always a means of accessing the system. Hackers can compromise the intricate mechanism of Artificial Intelligence by manipulating the data to work against it and overwhelming its memory capacity. Manipulating an Artificial Intelligence system is a straightforward task due to its inherent lack of genuine intelligence, making it susceptible to deception.

The primary limitation of Artificial Intelligence, which remains unsolvable given the current state of technology, is the absence of "imagination." Imagination serves as the subtle boundary that distinguishes humans from robots. Human beings possess a distinctive attribute that allows them to exhibit creativity in their different domains. The extent of a human's creativity is contingent upon their amount of imagination, but a robot's creativity is exclusively rooted in the principle of trial and error. Robot lawyers operate solely based on the input of information provided to them; they lack the ability to autonomously analyse legal matters and reach a resolution. Possessing a vivid imagination and the ability to think creatively are key attributes of a proficient lawyer. A lawyer must possess street smarts and the ability to think on their feet while presenting arguments in any court. Attorney robots are currently limited in their ability to generate original ideas, which

means they will not be able to surpass human lawyers in the foreseeable future. The major issue encountered by Artificial Intelligence is the conundrum of perverse instantiation, sometimes known as the AI control problem. Perverse instantiation refers to the phenomenon in which an artificially intelligent robot begins to independently generate alternative methods to fulfil its given instructions. The act of perverse instantiation grants the robot complete autonomy and control over itself. AI control problems are likely to impact attorney robots as well.

If the whole workload of a legal business is being assigned to Artificial Intelligence and attorney robots, the skills and efforts of aspiring lawyers will be rendered futile. The integration of AI into people's lives significantly increases the likelihood of individuals developing laziness and lethargy. The implementation of attorney robots in legal firms will undoubtedly alleviate the workload of human employees. However, it may also hinder the development of aspiring lawyers by limiting their exposure to essential tasks such as learning the process of filing, compiling documents, and drafting contracts. In the legal profession, it is imperative for lawyers and interns to acquire the ability to independently draft contracts, even in the presence of attorney robots. This ensures that they possess the necessary knowledge and skills to draft contracts in the event of a malfunctioning attorney robot. These learned skills are what sets this individual apart in the legal sector, making them a more proficient lawyer.

India will inevitably establish a rule to govern the behaviour of Artificial Intelligence (AI) in the legal sector, as AI and Attorney robots become more prevalent. The code would resemble the Advocates Act, a code that regulates the ethical responsibility of an advocate in relation to their behaviour. These regulations and restrictions will be implemented to mitigate the adverse effects of Artificial Intelligence and Attorney Robots. The proposed laws on AI and Attorney robots are likely to diminish their extensive capabilities, making them subject to scrutiny by lawmakers and limiting their scope. Consequently, the effectiveness of AI and attorney robots in the legal industry will diminish over time due to the implementation of regulations and constraints.

X REGULATING AI: GLOBAL AND INDIAN APPROACHES TO ESTABLISHING LEGAL FRAMEWORKS

Artificial Intelligence (AI) holds significant potential for enhancing various aspects of society, including healthcare, education, transportation, and entertainment. Nevertheless, artificial intelligence presents obstacles and potential dangers, including ethical quandaries, breaches of privacy, prejudice, discrimination, and security vulnerabilities.

In response to these problems and concerns, a consortium of international AI experts and data scientists has introduced a novel, non-mandatory framework for the secure development of artificial intelligence products. The World Ethical Data Foundation (WEDF) has a membership of 25,000 individuals, which includes employees from prominent technology companies like Meta, Google, and Samsung. The framework offers 84 questions for developers to consider at the start of an AI project.

Nevertheless, as the use of AI continues to increase, there is an emerging requirement for dedicated legislation to govern AI, with the aim of eradicating inherent or acquired prejudice and addressing ethical considerations associated with its use.

White papers, recommendations, and policies in jurisdictions like the UK, USA, and EU specifically address the assessment of algorithmic impact and the eradication of algorithmic biases. The proposed Artificial Intelligence Act of the European Parliament has just been amended. The amendment suggests incorporating a prohibition on employing AI technology in biometric surveillance, with the exception of law enforcement activities that have been authorized by a court, and requiring generative AI systems such as ChatGPT to reveal content that has been generated by AI.

Indian Point of View:

India currently lacks formal legislation to govern the regulation of artificial intelligence (AI). The Ministry of Electronics and Information Technology (MEITY) is the governing body responsible for developing strategies relating to artificial intelligence (AI). MEITY has established committees to create a policy framework for AI.

The Niti Ayog has established a comprehensive framework consisting of seven ethical principles for Artificial Intelligence (AI). These principles

encompass safety and reliability, equality, inclusivity and non-discrimination, privacy and security, transparency, accountability, and the preservation and promotion of good human values. The Supreme Court and high courts are constitutionally obligated to uphold fundamental rights, which encompass the right to privacy. The fundamental legislation governing data protection in India is the Information Technology Act, along with its corresponding regulations. Furthermore, MEITY has introduced the Digital Personal Data Protection Bill, which is currently for formal enactment. If this legislation is enacted, individuals will be empowered to request information regarding the data acquired from them by private and government bodies, as well as the techniques employed to process and preserve it.

XI: AI IN JUDICIAL SET-UP BOON OR BANE

As we have already discussed Artificial intellect (AI) refers to the replication of human intellect in computerised machines, enabling them to carry out tasks that typically demand human cognitive abilities, such as problem-solving, decision-making, and language processing. Artificial intelligence (AI) is widely utilised in many sectors like banking, law, healthcare, education, and the automotive industry. The creation and application of Artificial Intelligence (AI) can have both beneficial and detrimental consequences. AI, like any other breakthrough, possesses both advantages and downsides. Here are some of the rationales for both perspectives:

Advantages

1. AI can expedite task completion compared to human performance in typical contexts.
2. AI facilitates the automation of tasks, enabling their completion without human intervention, so allowing individuals to concentrate on more innovative and strategic endeavours.
3. AI enables the development of new goods that were previously difficult or impossible to implement.
4. AI can serve as an accessibility aid for individuals with disabilities, offering speech recognition and image recognition capabilities.
5. Previously, the process of performing legal research was arduous and time-consuming, necessitating junior associates at law firms and law students to manually sift through physical

copies of case law volumes in search of relevant precedents.

6. The procedure has been digitised due to recent improvements in software and technology. Lawyers now perform extensive legal research using internet resources like as Manu Patra and SCC. AI software tools assist in assessing previous instances and have the potential to determine the outcome of the current case, which pertains to the same subject matter.

Disadvantages

1. One significant disadvantage of the emergence of AI is job displacement. This refers to the likelihood that individuals may lose their jobs and be substituted by Artificial Intelligence as it becomes more prevalent in society.
2. AI algorithms can exhibit prejudice when they are trained on biased information, resulting in discriminating outcomes.
3. With AI's comprehensive data collection and utilisation, a significant concern arises over the privacy of persons, as the identities and intentions of those accessing the information may remain unknown.
4. India currently lacks particular legislation to handle the issue of controlling and managing AI, despite some efforts being made in this regard. A multitude of challenges arise as a consequence.

The legal industry is characterised by a delayed and inflexible response to the adoption of new technology. It is currently facing significant pressure to innovate and undergo transformation from multiple sources. Nevertheless, the emergence of advanced technologies driven by the progress of automated artificial intelligence has the potential to greatly disrupt the conventional functioning of the legal system, primarily due to its current underutilization. Every business has been impacted by technology advancements, and it is not surprising that the legal industry is not exempt from these trends.

The legal services business has traditionally exhibited resistance to innovation and a reluctance to embrace new technologies, partly due to long-standing habits and a conservative approach. This sets it apart from other lucrative sectors. Convincing highly accomplished law firms, among other obstacles, to embrace disruptive technology such as AI is a formidable task. However, the sector is on the verge of

undergoing a fundamental restructuring that will have a substantial effect on business models. This transformation is being driven by technical advancements, particularly in automation and artificial intelligence (AI), as well as market dynamics. There is a risk that organisations may have a financial shortfall if they fail to start incorporating AI into their corporate operations. This could potentially affect the sector's competitiveness and general economic well-being on a worldwide level.

The phrase artificial intelligence was introduced by McCarthy in the mid-1950s, who defined it as “the science and engineering of making intelligent machines, especially intelligent computer programs” artificial intelligence? Within the legal services sector, the rise of emerging technologies, specifically artificial intelligence (AI), machine learning (ML), and automation, is compelling businesses to seek innovative approaches to enhance the efficiency, distribution, and profitability of their operations. Technological innovation serves as a catalyst for the Broad Market Index by providing businesses with the chance to learn from and adapt to their external environment and client wants, therefore ensuring their competitiveness.

AI has the potential to provide legal firms with access to resources that can facilitate their lucrative and economically advantageous transformation. Although artificial intelligence has the capacity to influence all areas of legal services, its impact is expected to be mostly focused on the configuration parts of the business model in the near-to medium-term. These factors pertain to the company's organisational structure and the allocation of finances in the process of generating value. “Recent research on technological innovation in legal services indicates that specific legal technologies, including document arrangement, automation, and artificial intelligence, are expected to disrupt the current frameworks and business strategies of legal services firms. However, these technologies also present new opportunities for client interaction and involvement.”

However, over time, contemporary technological devices will inevitably have a transformative influence. This suggests that the intention is not to replace solicitors, but rather to enhance their abilities by aiding them in making assessments using logical reasoning, a task that robots are incapable of performing. Furthermore, it is anticipated that AI

would empower lawyers to accomplish more within a given timeframe, while significantly reducing the time needed to execute tasks that were previously arduous and time-consuming. This will empower them to broaden rather than restrict their areas of expertise. The writers assert that artificial intelligence possesses the capacity to not only alter the essence of the law but also transform the process of generating and using legal services by clients. As a consequence, there is a potential for enhanced velocity, availability, and customisation of services. Nevertheless, there is a potential for jeopardising client-attorney confidentiality, the complete displacement of human attorneys, and alterations to the regulatory landscape as a whole.

XII: CONCLUSION

The incorporation of artificial intelligence (AI) into the Indian court system has the capacity to catalyse a profound change in the manner in which justice is dispensed. The projects, namely SUPACE, SUVAS, and the eCourts project, have already showcased the favourable influence of AI in expanding the availability of justice, optimising administrative duties, improving decision-making, and tackling the accumulation of pending cases. The progress in technology has facilitated the development of a judicial system that is more effective, open, and encompassing.

“The implementation of AI-driven tools and systems, such as AI-based case management, legal research tools, and virtual courts, has greatly enhanced the effectiveness of administrative duties, enabling judicial personnel to concentrate on more intricate legal responsibilities.” Through the automation of repetitive procedures, artificial intelligence (AI) has effectively minimised mistakes, enhanced precision, and accelerated the resolution of cases, resulting in significant time and resource savings for both the court system and the parties involved in litigation. “Furthermore, AI has enabled the translation of legal texts into local languages using tools such as SUVAS, thus overcoming linguistic obstacles and fostering inclusiveness within the legal system. This has enabled individuals who are more proficient in colloquial languages to understand court processes and papers in their chosen language, guaranteeing equitable access to justice.”

“AI has transformed legal research and decision-making through the provision of intelligent analytics, research assistance, and valuable insights into pertinent legal precedents and case law. This has empowered judges to render more well-informed decisions, foster uniformity in rulings, and anticipate case outcomes, resulting in a more streamlined and proficient judicial procedure.” Moreover, AI has the capacity to detect trivial cases, optimise case administration, and distribute resources more efficiently, so significantly diminishing the accumulation of pending cases and guaranteeing prompt dispensation of justice.

Addressing the difficulties of bias, accuracy, and openness is crucial when utilising AI in the legal system, despite its obvious advantages. “It is crucial to closely monitor the quality and quantity of training data, as well as the design and implementation of AI algorithms, in order to avoid biases and prejudice. The development and deployment of AI systems should be guided by ethical considerations and responsible behaviours to assure justice and prevent the perpetuation of current socioeconomic imbalances.”

In order to ensure the just and ethical use of AI in the legal system, it is imperative to establish clear and responsible procedures, involve extensive collaborative endeavours, and uphold principles of impartiality, parity, confidentiality, openness, and responsibility. The Indian judicial system may utilise AI to improve access to justice, increase efficiency, and respect principles of fairness and equity by effectively combining technology breakthroughs with human-centric ideals.

In order to keep up with the changing landscape of the legal sector and the ongoing digital revolution, it is crucial for the Indian court to be receptive to new technology, encourage innovation, and adjust to the evolving times. The conscientious and moral incorporation of AI into the legal system has immense potential to augment the principles of justice, enhance the availability of legal remedies, and guarantee an equitable and streamlined judicial procedure for everyone. To fulfill its objective of providing prompt, transparent, and fair justice in the 21st century and beyond, the Indian judiciary can adopt AI as a tool to assist legal practitioners.

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