

# INTERNATIONAL JOURNAL OF LAW MANAGEMENT & HUMANITIES

[ISSN 2581-5369]

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Volume 6 | Issue 4

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2023

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# AI and Judicial Decision-Making: Implications for Criminal Trials in India

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## ABSTRACT

*Criminal law and judicial decision-making are being transformed by AI. How far can AI be integrated into the judicial decision-making process and how does it affect criminal trials in India? AI's ability to mimic human cognition and transforming aspects of society is introduced in the study. It highlights AI's benefits in criminal trials, including improved data analysis, document management, language translation, investigative support, security, legal research etc.*

*The study also delves into the function and influence of AI in the judicial process. It looks at the steps taken by the Indian judicial system, such as the use of artificial intelligence-based systems for real-time transcription, judgement translation, and court management. It also provides an example of a judge who utilised AI to rule on a bail application, demonstrating how AI can be applied in the judicial system.*

*Concerns like bias, interpretability, accountability, and the reduction of human experiences to mere data points are highlighted in this study as they pertain to the influence of AI on judicial decision-making. Concerns about discrimination and unfair outcomes are raised, along with issues of explainability and predictive analytics. In light of the prevalence of AI-generated evaluations, it is stressed how crucial it is to keep human judge's ability to think critically.*

*The study concludes with case studies from China and England that demonstrate AI's practical applications and limitations in the judicial system. These instances show difficulties including reliance on inadequate data, computational errors, and the need for regulation, monitoring, and responsibility in AI technology use. To secure the responsible and ethical use of AI in judicial decision-making and the preservation of human judgement and dignity, it emphasises the need for effective legislation, human-oversight, and accountability systems. This research study discusses AI's possible benefits and drawbacks in judicial decision-making.*

**Keywords:** *Artificial Intelligence, Predictive analytics, Human oversight, transparency, biases, accountability, black box, bad data, dignity and integrity.*

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## I. INTRODUCTION

Artificial intelligence (AI) is a fascinating and rapidly developing science that combines human ingenuity with cutting-edge technology to improve many facets of our lives. AI, at its core, refers to the development of intelligent machines that can do jobs that have traditionally required human intelligence.<sup>2</sup> This fascinating subfield spans numerous academic disciplines, including as artificial intelligence, computer science, linguistics, and robotics. Due to its extraordinary ability to duplicate human cognitive processes, Artificial Intelligence (AI) has become a crucial accelerator for innovation. This has prompted deep thought and discussion among academics, businesspeople, and members of the general public, and has ultimately led to ground-breaking innovations.

Imagine a future where machines can learn and think like humans and have cognitive abilities like reasoning and problem solving. Through the development of AI, it may one day be possible to realise a vision of the future in which the line between what requires human intelligence and what can be accomplished by intelligent robots' blurs. Voice assistants that instantly react to our questions, self-driving cars that expertly traverse our roads, and algorithms that properly predict our preferences are just a few examples of the rising pervasiveness of artificial intelligence (AI) in our daily lives. Our methods of operation, of communication, and of interacting with technology have been profoundly altered by the appearance of this phenomenon. It has also opened up new avenues of inquiry that were previously uncharted territory in science fiction. The development of AI has spurred extraordinary growth and development, but it has also raised complex questions and challenges that need to be examined and reflected upon.<sup>3</sup>

## II. BENEFITS OF AI IN CRIMINAL TRIALS

The domains of 'criminal law' and 'technology' have traditionally been regarded as distinct and unrelated areas of study. The utilisation of artificial intelligence in the courtroom has been a subject of ongoing deliberation within the realm of criminal procedure law. The advent of a digital culture has precipitated substantial transformations, not only in the realm of criminal activities, but also in the methodologies employed for conducting investigations. The responsibility of dispensing justice lies with human beings, and the abrupt transition to digital platforms has had an impact on the execution of this duty. In order to optimise its operations,

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<sup>2</sup> Harry Surden, *Artificial Intelligence and Law: An Overview*, 35 Ga. St. U. L. Rev. 1305 (2019).

<sup>3</sup> Yavar Bathaee, *The Artificial Intelligence Black Box and The Failure of Intent and Causation*, 31 Harv. J.L. & Tech. 890 (2018).

the criminal justice system (CJS) should fully leverage the advantages offered by technology and artificial intelligence (AI).<sup>4</sup> For example:

1. **Enhanced Data Analysis:** The use of AI technologies improves data analysis capabilities by allowing for the rapid and accurate processing of large data volumes. Having access to large volumes of evidence, such as documents, films, and audio recordings, is crucial in legal proceedings. Effectively examining and extracting relevant data, revealing patterns, and recognising relationships that may not be readily evident to human analysts are all within the capabilities of artificial intelligence (AI) systems.<sup>5</sup> Lawyers can utilise this to bolster their cases, narrow in on the most crucial pieces of evidence, and paint a fuller picture of what transpired.
2. **Document management:** Artificial intelligence solutions for document management can be useful in the legal field for a wide variety of documents including case files, court transcripts, and legal precedents. By automating tasks like document inspection, classification, and retrieval, AI can help legal professionals save time and increase productivity.
3. **Language translation:** When a trial involves a defendant or a witness who does not speak English, the use of translation technology driven by artificial intelligence takes on more significance.<sup>6</sup>
4. **Investigative support:** AI can help law enforcement agencies solve difficult crimes by analysing massive volumes of data, making connections between individuals, and spotting trends.<sup>7</sup>
5. **Enhanced security:** By precisely validating the identities of those entering the courtroom and preventing unauthorised entrance, AI-based technologies like facial recognition and biometric identification systems have the ability to protect the credibility of the trial process.
6. **Legal Research and Case Preparation:** AI-powered technology aid legal teams in doing thorough legal research by expediting access to pertinent case law, statutes, and legal precedents. This can save up a lot of time and energy for lawyers to concentrate on more valuable activities, such as strategic analysis and case discussion, rather than

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<sup>4</sup> VALVERDE MARIANA, CLARKE KAMARI, SMITH EVE DRIAN & KOTISWARAN PRABHA, *The Routledge Handbook of Law and Society* 76 (1<sup>st</sup> ed. 2021).

<sup>5</sup> 9 GANS-COMBE CAROLINE, *Ethics, Integrity and Decision Making* 175-194, (2022).

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

administrative tasks. For better and more efficient legal representation, AI can also be utilised to strengthen weak points in an argument.

7. Case prediction and management: Artificial intelligence can aid solicitors and prosecutors in determining the case's feasibility by analysing previous case outcomes and providing insights on possible methods. Prioritising tasks and scheduling them ahead of time can also aid in case management.<sup>8</sup>
8. Reduced costs and time efficiency: By automating repetitive and time-consuming tasks, AI can help reduce the overall costs and time required for a trial. This allows legal professionals to focus on more complex and strategic aspects of the case.

### **III. USE OF AI IN JUDICIAL DECISION MAKING**

The incorporation of artificial intelligence (AI) within the criminal justice system holds promise for augmenting operational effectiveness, precision, and equity. There are reports of the implementation of artificial intelligence in certain foreign countries for the purpose of predicting the verdicts of court cases pertaining to human rights violations. In India, a notable example of this phenomenon is the NITI Aayog, an organisation that released an article entitled “National Strategy for Artificial Intelligence #AI4ALL” with the aim of raising public awareness about the responsible and ethical utilisation of AI. This study emphasises the effective utilisation of artificial intelligence (AI) in five prominent sectors in India, namely healthcare, agriculture, education, smart cities and infrastructure, smart mobility, and transportation.<sup>9</sup> The Indian judiciary has successfully implemented fundamental information and communication technology infrastructure via the eCourts Project and is currently endeavouring to harness the potential of artificial intelligence.

On February 21st, 2023, CJI Chandrachud introduced his most recent Artificial Intelligence (AI) aided initiative— live transcription of Constitution Bench proceedings. The transcriptions project follows other AI-aided initiatives such as SUPACE (2021) and judgement translation (2019).<sup>10</sup> The initial development concerns the introduction of a neural translation tool known as the Supreme Court Vidhik Anuvaad Software (SUVAS), which facilitates the translation of judicial documents between English and nine other languages. Apart from that, there is a court administration tool called the Supreme Court Portal for Assistance in Court Efficiency (SUPACE) that is utilised for various functions such as data mining, case tracking, legal

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<sup>8</sup> *Id.*

<sup>9</sup> Government of India, NITI Ayog, *National Strategy for Artificial Intelligence #AI4ALL* (2018).

<sup>10</sup> Aneasha Mathur, Aided by AI, *Supreme Court Begins Live Transcription of Proceedings for First Time*, India Today, 21 Feb, 2023.

research, and related activities. The implementation of this initiative is currently underway in certain regions, with the primary objective of enhancing institutional efficiency.<sup>11</sup>

Furthermore, in a recent case, a judge presiding over the Punjab and Haryana High Court has employed artificial intelligence (AI) technology to render a decision on a bail application.<sup>12</sup> This particular case involves an accused individual who stands charged with a crime that entails acts of cruelty. The panel of Judges inquired ChatGPT regarding the legal precedent surrounding the granting of bail in cases where the assailants have perpetrated acts of cruelty. The response indicated that individuals who have been accused of committing a violent offence characterised by acts of cruelty, such as murder, aggravated assault, or torture, may be perceived as posing a threat to the community and having a propensity to flee. In instances of this nature, the presiding judge may exhibit a reduced inclination to authorise the release of an accused individual on bail, or alternatively, may establish a bail sum of considerable magnitude. Following the communication with ChatGPT, the bench rendered a decision to deny the bail application submitted by the accused. The bench stated in its ruling that the act of inflicting death is inherently cruel. However, if cruelty results in death, the circumstances are altered. When a physical assault is perpetrated in a particularly violent manner, the conditions for granting bail are altered.

#### IV. IMPACT OF AI ON JUDICIAL DECISION MAKING

As AI technologies become increasingly prominent, concerns have arisen regarding bias and ethical considerations. In the realm of artificial intelligence, a significant challenge arises from the disparity between human understanding and machine comprehension. This divide poses a notable obstacle, particularly in AI systems that exhibit exceptional performance and therefore gain widespread adoption. In such cases, concerns emerge not only regarding the accuracy of the training data utilized by algorithms but also the inherent difficulty or even impossibility of comprehending how an AI arrives at its decisions. This conundrum is commonly referred to as the "black box" problem.<sup>13</sup> Within certain AI applications, it becomes increasingly challenging or sometimes unfeasible to discern the underlying reasons behind the outcomes produced. And it is the duty of the judge to give the rationale behind his decision. This lack of interpretability gives rise to various prominent challenges that permeate discussions surrounding AI.

The first challenge revolves around the predictive analytics. AI can use historical data to make

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<sup>11</sup> Anoushka Bidwalkar, Use of Artificial Intelligence in Criminal Justice System. NLIU-CLT (Apr. 18, 2022), <https://clt.nliu.ac.in/?p=431>.

<sup>12</sup> TNN, *Punjab and Haryana HC Uses Chatgpt for Views on Bail*, TOI, Mar. 29, 2023.

<sup>13</sup> Yavar, *supra* note 2, at 906.

predictions about case outcomes, which can help lawyers, judges, and prosecutors assess the potential risks and merits of a trial. To better understand this, imagine a parole board that relies on an algorithm to assess the likelihood of recidivism for individuals eligible for early release. The algorithm generates a risk score of 9 for one inmate, indicating they have a high risk of reoffending and a score of 3 for another, suggesting they have a lower risk. Now, it is unlikely that the group would give the person with the higher risk score a shorter sentence or let them out earlier. The reason is that in this system, the group might be seen as simply accepting whatever the computer program says without questioning or making their own judgment. This apprehension arises because, in this hybrid system, the parole board might be viewed as merely endorsing the algorithm's recommendations without having the ability to critically evaluate or override them.<sup>14</sup>

Also, AI does not give the reason for reaching a certain conclusion or outcome and this lack of explainability engenders apprehension regarding accountability. If an AI system produces a faulty or unfavourable outcome, it becomes difficult to assign responsibility or understand who or what should be held accountable for the consequences. This can lead to legal, ethical, and regulatory dilemmas as the allocation of blame becomes unclear.

These concerns revolve around the potential lack of accountability and independent decision-making on the part of human judges or decision-makers when they are heavily reliant on computer-generated assessments of risk. The fear is that the system may prioritize automation over thoughtful judgment, potentially undermining the fairness and integrity of the judicial process.

The second challenge is related to dignity in the context of increasing automation is the concern that as technology becomes more prominent in decision-making processes, human experiences are reduced to mere data points rather than being acknowledged as lived experiences with subjective voices. This fear stems from the worry that the richness, nuances, and individuality of human existence may be overlooked or undervalued in favour of algorithmic calculations.<sup>15</sup> To illustrate this let us take an example, if a court relies heavily on automated risk assessment tools to determine the length of a prison sentence or eligibility for parole, the personal circumstances, background, and unique story of an individual might not receive sufficient consideration. Factors such as upbringing, trauma, or personal growth during incarceration,

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<sup>14</sup> Francesco Contini, *Artificial Intelligence: A New Trojan Horse for Undue Influence on Judiciaries?* UNODC [https://www.unodc.org/dohadecclaration/en/news/2019/06/artificial-intelligence\\_-a-new-trojan-horse-for-undue-influence-on-judiciaries.html](https://www.unodc.org/dohadecclaration/en/news/2019/06/artificial-intelligence_-a-new-trojan-horse-for-undue-influence-on-judiciaries.html).

<sup>15</sup> VALVERDE, *supra* note 3, at 78.

which can greatly impact an individual's potential for rehabilitation, could be overshadowed by statistical models that focus primarily on past criminal records and recidivism rates.

The third challenge associated with increasing automation is the fear of bad data. This fear goes beyond the concern that data might be incorrect; it also encompasses the worry that even accurate data can be used in a misleading and discriminatory manner.<sup>16</sup> This fear has materialized in various contexts worldwide, ranging from police departments and internet searches to pricing strategies and courtroom decisions. Algorithms employed in these scenarios can develop rules that indirectly identify certain groups protected from discrimination by law. However, the use of these algorithms can inadvertently reinforce discriminatory associations, leading to worse outcomes for already marginalized individuals based on factors like race, sex, gender, religion, and more. For instance, in the context of law enforcement, algorithms can be used to predict criminal behaviour based on historical data. If historical arrest data reflects disproportionate targeting of certain racial or ethnic groups due to biased policing practices, an algorithm trained on that data may incorrectly assume a higher likelihood of criminality within those groups. As a result, individuals from these marginalized communities may face increased surveillance, biased treatment, or harsher sentencing, exacerbating existing injustices.

## V. CASE STUDIES AND EXAMPLES

In 2019, the utilisation of artificial intelligence (AI) was initiated by a court situated in the southern region of Shanghai, specifically in the city of Hangzhou. Xiao Zhi 3.0, also known as “Little Wisdom”, initially provided assistance in a legal proceeding involving a group of ten individuals who had defaulted on their bank loan obligations. In the past, the resolution of the matter would have necessitated the undertaking of 10 distinct trials. However, with the advent of Xiao Zhi 3.0, all instances were successfully addressed within a single hearing presided over by a solitary judge, culminating in the issuance of a decision within a mere half-hour timeframe.<sup>17</sup>

The utilisation of technology involves the process of capturing testimonies through voice recognition, conducting analysis of case materials, and validating information from databases in real-time. The Xiao Baogong Intelligent Sentencing Prediction System, an additional artificial intelligence platform in the legal domain, is employed by judges and prosecutors for criminal law purposes. However, a significant concern arises in the fact that AI systems rely on an incomplete public record, primarily due to the uneven digitization of various regions in

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<sup>16</sup> *Id.*

<sup>17</sup> Alena Zhabina, *How China's AI is automating the legal system*, DW (Jan. 1, 2023) <https://www.dw.com/en/how-chinas-ai-is-automating-the-legal-system/a-64465988>.



China. Several contentious cases have been expunged from the official government repository known as China Judgements Online subsequent to widespread public outcry regarding perceived lenient sentencing imposed upon the accused individuals. The issue at hand has elicited apprehension regarding the capacity of AI systems reliant on fragmented data to render impartial decisions.<sup>18</sup>

In the jurisdictions of England and Wales, a computational error of a straightforward nature that was present within the designated official document utilised in divorce proceedings resulted in the inaccurate determination of spousal support payments in a total of 3,600 cases spanning a duration of 19 months. The issue at hand does not solely pertain to the error itself, but rather to the underlying factors that contributed to the Ministry of Justice and the form users' failure to identify the error over an extended period of time. The attention of technology users is primarily directed towards the interfaces and tools that facilitate the utilisation of technological systems, rather than the intricacies of their internal operations.<sup>19</sup>

Technology used in courts makes a vast amount of case-related data public in an effort to promote openness, but it is impossible to examine and hold accountable how systems internally evaluate the data. Therefore, a fundamental inquiry pertains to the potential methods for implementing efficient regulations on the internal mechanisms of information and communication technologies (ICTs) as well as the algorithms responsible for data processing. Another challenge is how to provide sufficient oversight and responsibility for how technology functions and whether AI (and specifically machine learning) presents a special instance in this accountability exercise.

A number of jurisdictions, particularly within the United States, have implemented technological systems that provide recommendations for making decisions regarding pre-trial detention. These applications employ algorithms that assess the likelihood of recidivism and assign a numerical value to the defendant indicating their probability of engaging in criminal behaviour upon release. ProPublica, a non-governmental organisation based in the United States, which specialises in conducting investigations pertaining to matters of public interest, undertook a comparative analysis between observed recidivism rates and projected recidivism rates. The examination of the cases of 10,000 individuals accused of criminal offences revealed that there was a notable disparity in the accuracy of risk assessments based on race. Specifically, the findings indicated that black defendants were more prone to being erroneously perceived as

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<sup>18</sup>*Id.*

<sup>19</sup> Contini, *supra* note 13.

having a higher likelihood of reoffending, whereas white defendants were more susceptible to being inaccurately identified as having a lower risk of recidivism.<sup>20</sup> This particular case exemplifies the challenges associated with achieving accountability and highlights the potential for biases to be introduced into judicial processes through such systems. In this instance, the forecast is derived from algorithms that undergo dynamic modifications. Machine learning algorithms undergo a process of self-adaptation, wherein they acquire knowledge and modify their behaviour through experiential learning. The lack of transparency regarding the inner workings and decision-making processes of evolving algorithms poses a challenge in comprehending their functionality and rationale. How can we ensure correct responsibility if we can't implement efficient control mechanisms?

Henceforth, it is postulated that the integration of technology within the realm of the judicial process is advocated, with the purpose of enhancing case administration, facilitating rudimentary web forms, or even engaging in intricate artificial intelligence-driven tasks, contingent upon the existence of appropriate mechanisms of responsibility.

## **VI. ADDRESSING CHALLENGES AND ENSURING FAIRNESS**

In order to ensure equity and preserve fundamental rights, it is imperative that artificial intelligence (AI) within the legal system adheres to the principles of due process, notwithstanding its potential for providing valuable insights and enhancing efficiency. Several potential solutions to this problem can be identified:

1. **Establish Clear Guidelines and Standards:** Governments and legal organisations should establish comprehensive legal and ethical frameworks to regulate the utilisation of artificial intelligence (AI) in the context of judicial decision-making. The incorporation of individual rights, privacy, justice, and accountability should be duly considered during the formulation of these frameworks. It is imperative to consider the limitations and potential risks associated with AI systems, and subsequently provide recommendations for their appropriate implementation. To ensure the alignment of these guidelines with established legal principles and constitutional rights, it is imperative to foster a collaborative endeavour involving legal institutions and regulatory agencies.<sup>21</sup>
2. **Rigorous Testing and Validation:** To uphold the virtues of precision, reliability, and objectivity, it is imperative that AI systems utilised in the realm of judicial decision-

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<sup>20</sup> *Id.*

<sup>21</sup> UNESCO, *Recommendation on The Ethics Of Artificial Intelligence*, 41 session (Nov. 2021).

making undergo rigorous examination and validation. The effectiveness of AI systems can be assessed by third-party audits, comparisons to industry norms, and simulated scenarios. System biases and flaws can be detected and corrected through regular validation processes.

3. **Explainable AI and Transparency:** Focus on creating visible and explainable AI systems. Everyone who may be impacted by a choice made with the use of artificial intelligence (AI) should have access to information explaining the reasoning behind that decision. Encourage the adoption of AI models, rule-based systems, or methodologies that can be easily understood by humans and that can explain the thought process that went into the AI's conclusions.<sup>22</sup>
4. **Continuous Monitoring and Audit:** Establish stringent auditing and monitoring procedures to guarantee continued adherence to legal and ethical standards. Biases, inaccuracies, and departures from set rules can be uncovered with regular reviews. AI systems should be reviewed on a regular basis to incorporate updates, deal with new problems, and make sure they are in line with the ever-changing legal and societal norms.
5. **Education and Training for Legal Professionals:** Invest in training and education programs for judges, legal professionals, and court personnel to enhance their understanding of AI technologies. Training should focus on the capabilities and limitations of AI, as well as the potential ethical and legal implications. It is essential to equip legal professionals with the necessary knowledge to effectively evaluate, challenge, and interpret AI-generated information.
6. **Human in Loop:** It is to be remembered that AI should complement, rather than replace, human judgment in the legal system. Human oversight, critical thinking, and ethical considerations should always remain central to the decision-making process. If we keep a human in loop and considering the result generated by AI as advisory only and evaluate the decision by applying human mind and taking other considerations into the account, will better protect the rights of the individuals.

Stakeholders may help alleviate the tensions between AI and judicial decision-making by implementing the following recommendations, paving the way for a legal system that takes advantage of AI's potential without compromising on fundamental principles like due process,

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<sup>22</sup> Liangru Yu & Yi Li, *Artificial Intelligence Decision-Making Transparency and Employees' Trust: The Parallel Multiple Mediating Effect Of Effectiveness And Discomfort*, 12 *Behav. Sci.* (2022).

fairness, or justice.

## **VII. CONCLUSION**

Those in favour of such technologies say they can speed up the legal system, reduce waste, and help spot hazards and patterns that could otherwise go undetected. They argue that judgements can be made that are more objective and fairer with the help of AI tools since they can eliminate human prejudice and subjectivity.

However, there are worries about the accuracy, openness, and possible biases of these AI systems. It has been argued that these algorithm's biased effects can be traced back to the data used to train them, which may itself reflect societal biases. The difficulty for defendants, attorneys, and judges to challenge or question the results produced by these AI technologies is compounded by the fact that little is known about how they work.

When it comes to accountability, artificial intelligence systems that are built on machine learning pose an even greater challenge. The discussion is still going on, and the precautionary principle need to be implemented until such problems have been answered from a purely institutional and technological vantage point.

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