

Unveiling the Future: Exploring AI Applications in the Indian Judicial System

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Abstract— The infusion of Artificial Intelligence (AI) into every facet of life has raised pertinent questions about its potential integration within the legal system, a domain traditionally governed by human judgment, principles of equity, and the pursuit of sound jurisprudence. The Supreme Court of India has historically been a bastion of "demosprudence," emphasizing a humanistic approach to the administration of justice. Nevertheless, the rapid advancement of scientific methods and technologies necessitates the consideration of AI's application in the legal system. In contemporary times, AI is being utilized by courts in various capacities, such as data storage and retrieval, multi-body litigation service systems, online dispute resolution platforms, and even judgment prediction. However, the authenticity and integrity of AI-driven solutions remain a subject of skepticism among academics and experts, primarily due to the inherent limitations of AI's application in this context. This paper delves into a comprehensive exploration of AI applications within the Indian Judicial System, meticulously analyzing its potential benefits and limitations. From AI-driven case management to the digitalization of dispute resolution platforms, the impact of AI on the judiciary is scrutinized. The study emphasizes the imperative need for responsible AI adoption, advocating for measures that can facilitate its effective integration while addressing the associated concerns and ensuring a harmonious coexistence of AI and human judgment in the legal realm.

Keywords— Indian Judicial System, Artificial Intelligence, Online Dispute Resolution Platform, digitalization of judiciary, Courts of India

I. INTRODUCTION

The ever-evolving landscape of India's legal system has experienced an unprecedented surge in the number of cases. Unfortunately, this surge in caseload is not met with a corresponding increase in the appointment of judges, leading to a severe backlog in the courts. This, combined with intricate legal procedures, compounds the challenges faced by the judiciary. Lengthy proceedings and complex legal processes further exacerbate the tensions within the judicial system. To tackle these pressing issues and deliver efficient justice services, it has become imperative to integrate AI technology into the legal framework [1]. It's noteworthy that the practical application of AI in enhancing judicial intelligence has advanced at a faster rate than theoretical research in this domain.

In 2004, Mr. Justice R.C. Lahoti, the Chief Justice of India at that time, recognized the urgent need to modernize the

Indian judicial sector by embracing new technologies. In response to this imperative, he put forth the idea of establishing the e-Committee. The primary purpose of creating this committee was to develop a National Policy and Action Plan for the effective implementation of Information and Communication Technology (ICT) in Indian courts. The overarching objective of this initiative was to facilitate the transition of the Indian judiciary into the digital age. The core mission of the e-Committee is to promote the integration and effective utilization of various technologies and communication tools within the judicial system. This integration aims to enhance the overall efficiency of the justice delivery system, leading to significant benefits for a wide spectrum of stakeholders involved in the legal process.

The e-Committee, currently in its second phase, is diligently working to achieve its objectives. In its initial phase in 2005, the Supreme Court focused on establishing connectivity among all courts and empowering the judiciary with ICT, which aimed to enhance both the quality and quantity of their work [2]. The central objective was to make the justice system more accessible, efficient, and accountable. Subsequently, in its second phase that commenced in 2014, the e-Committee of the Supreme Court of India placed significant emphasis on ensuring the seamless dissemination of case-related information to litigants through various service delivery channels. These channels included Kiosks, web portals, mobile apps, email, SMS Pull, and SMS Push [2]. Additionally, the second phase prioritized the implementation of Case Management tools for Judicial Officers, optimizing caseload management, and providing supervisory and monitoring capabilities for principals, District Judges, and High Court Judges, as well as enabling statewide supervision and monitoring of cases by the High Court.

This paper illuminates the diverse applications of AI within the Indian judicial system, delves into its potential consequences through the use of doctrinal methodology, combines it with secondary data analysis, and offers an extensive insight into the integration of AI in this context.

II. BACKGROUND OF STUDY

The quest to merge scientific advancements with the legal domain traces back to the assertion by Justice Holmes in

1895 that "An ideal system of law should draw its postulates and its legislative justification from science" [3]. But with the excessive usage of AI in every field in this contemporary era persuade jurist to explore the scope of its application in the judicial System. Although it seems new its discussion was started when Lee Loevinger [4] emphasized utilizing contemporary technology, particularly computers in legal research. Lee Loevinger is known for coining the word *jurimetrics* and Perry Mayer [5] considered *jurimetrics* as a branch of cybernetic. In his work author concluded that new technology can be used in the legal field and by legal professionals as an enhancer of legal competence. Basically, Lee Loevinger and Perry Mayer's work paved the way for AI integration, particularly in aspects like data retrieval, evidence analysis, and judgment prediction. The scope of digital technology usage is categorized into various aspects such as Data Storage and retrieval, Analysis of complex Evidence, Judgement Prediction, Use in Legal Drafting, and textual Ambiguities and design of Legal Reforms.

AI, as an interdisciplinary initiative, synthesizes expertise from diverse fields such as economics, philosophy, linguistics, mathematics, statistics, electrical engineering, robotics, neuroscience, etc. Understanding the mechanisms that allow AI to actually automate decisions like judges requires systematic big data storage for its scientific and relevant retrieval. Lee Lovinger [4] discussed in his work various electronic data retrieval projects such as The Pittsburgh "Key word combination" Project, Western Reserve Semantic Coded Abstract Projects, The Oklahoma State Points of Law Approach, the "Association Factor" Methods, and The Probabilistic Indexing etc. which are authentic & genuine that can enable judicial system more automated in real sense. Although the e-Committee of the Supreme Court of India is working to enable courts to use the automated technology and or AI-based system. Supreme Court of India started to use automated software exactly a year ago when its Artificial Intelligence Committee launched a portal called the "Supreme Court Portal for Assistance in Courts Efficiency (SUPACE)" built by ManCorp Innovation Labs. Basically, SUPACE was providing the digital infrastructure for the digitization of the court process, which helps by summarizing the document or information in a particular format that was deemed worthy of use. It is a tool that collects relevant facts and laws and makes them available to a judge. Another AI tool used by the Supreme Court is Supreme Court Vidhik Anuvaad Software (SUVAS) to translate legal papers from English into vernacular languages and vice versa. Recently Supreme Court used the software to transcribe its proceedings live. A company named Technology Enabled Resolutions (TERES), headquartered in Bengaluru previously offered AI-enabled transcription services to arbitration practitioners and played a key role in assisting the apex court in establishing this facility. Further Punjab & and Haryana High Court used the artificial intelligence (AI) tool ChatGPT while deciding a bail petition. Further, Gorlamudiveti and Sethu [6] examine three factors, namely bias, precedents, and costs for effective implementation of AI under the Indian legal system, and Maria Dymitruk [7] touched on the issue of fair trial under the automated legal system. As per Kauffman [8], legal professionals should explore the opportunities that

AI is providing for improving legal service delivery. The only challenge for the professionals is to maintain an ethical environment while using such technological advancements. Dafauti [9] discussed the idea of setting up e-courts to support judges for speedy understanding of cases and decisions. A good legal database will create a healthier legal atmosphere for both the parties, the service provider, and the service user. The efficiency of legal professionals will be improved and more transparency can be achieved. Similar results have been found by Jain [10], as per his research AI-powered machines can reduce the time taken by legal professionals for the decision-making process which will further help for speedy justice delivery in India.

III. SCOPE OF ARTIFICIAL INTELLIGENCE IN THE INDIAN JUDICIAL SYSTEM

AI surely helps the judicial system for the improvement in trials and proceedings. Following are the areas where AI can be utilized by the Indian Judicial System-

A. *Judicial trial and legal proceedings*

The trial process, comprising the hearings and the judgment, is at the forefront of the proceedings. In the research [11] it was observed that the integration of resources and application of AI speed up legal choices and contribute to decision-making, pre-trial proceedings, and legal support. Intelligent speech recognition and judgment-finding anticipation throughout the course of a trial are the two key examples of how artificial intelligence technology is used in the courts. Furthermore, monitoring the judge's decision-making, minimizing the occurrence of conflicting decisions in a similar case, and advancing judicial justice. However, it is extremely valuable to both parties. Selecting the most effective litigation strategy for those involved lowers the parties' litigation costs, and increases the parties' legal reach to defend the parties by using an enormous number of laws and cases kept in intelligent technology.

For example, the **Jharkhand High Court** is using technology in the courts namely-

- OCR – An Optical Character Recognition that fixes the orientation and turns scanned text into computer-readable text, etc.
- ChatBot – Text and voice instructions can both be used to control it.

This was operationalized by framing a comprehensive list of between 120 and 150 questions that would invariably cross a judge's mind when considering criminal cases, particularly situations of murder. Following that, a number of related cases were labelled in the system, which made viewing files simple and quick. The system will be able to provide details about a specific situation, such as - How many victims there were, how many suspects there were, what crimes the suspects were accused of committing, how severe the victim's injuries were, how long it took the police to arrive at the crime scene, what the post-mortem revealed as the cause of death, whether the blood samples taken corresponded to the blood specimens on the weapon match the wound that was sustained, etc.

B. Ancillary undertakings of the Judicial System

The auxiliary affairs of the justice system are the external tools that help in serving justice to the parties. These are very important in the judicial procedure and hence AI also becomes important for them. AI bears a great responsibility while identifying, collecting, analysing, and summarizing the shreds of evidence that are the key to any trial. The introduction of AI will bring a revolution in forensics [12], ultimately helping the judiciary to understand complex situations easily. Justice can be unserved due to the technicality of the facts and therefore AI is needed to proofread complex things to reduce the errors and enhance efficiency.

C. Search Service and Procedure in Indian Judiciary

All judicial employees must possess the ability to conduct judicial searches. The court staff is constantly looking for ways to swiftly and accurately locate the desired legal rules or instances in the enormous legal database. Currently, the standard method of retrieval is the keywords system, for getting several similar results. Hence there is a need for an advanced retrieval system based on deep learning technology and natural language processing. This modified intelligence judicial retrieval project can lower the cost of identifying extraneous information and provide users with the most valuable and pertinent retrieval results.

IV. POSSIBLE DEVELOPMENTS IN THE JUDICIAL SYSTEM THROUGH ARTIFICIAL INTELLIGENCE

Artificial intelligence is currently being used in courts mostly for information digitization, integrated litigation service systems, e-dispute platforms, judgment forecasting, etc.

A. Digitalization of the data

Digitization is the process of converting documented information into reusable electronic data. Legal documents may be filed electronically using an e-filing system. Now civil and criminal cases can be filed electronically before High Courts and District Courts that have e-filing systems in operation. The goal of the introduction of e-filing is to encourage paperless filing while reducing time and expense by using technology solutions to submit cases before Indian courts.

The main advantage of digitalization of the information is that parties, solicitors, and members of the public may all view the whole database of information pertaining to a case online. Compared to browsing through numerous volumes of legal documents, this makes conducting legal research simpler. Without proper access, the legal information kept in the e-court directory cannot be lost or changed. It becomes much simpler to maintain data for bail orders, warrants, minor adjustments, etc.

B. Digitalized dispute resolution system

The abovementioned system includes e-litigation, e-FIR, electronic serving of summon to the parties, e-filing mobile app, online helpline numbers, and online consultation on various platforms. In order to enhance the litigation process for litigants, computer-controlled robots are also used to realize litigation services and electronic self-services.

Although in India the courts are not as much as digitalized as it is required to be. The lengthy procedure and the number of huge pendency of cases require the digitalization of courts for the sake of speedy disposal of cases to ensure justice.

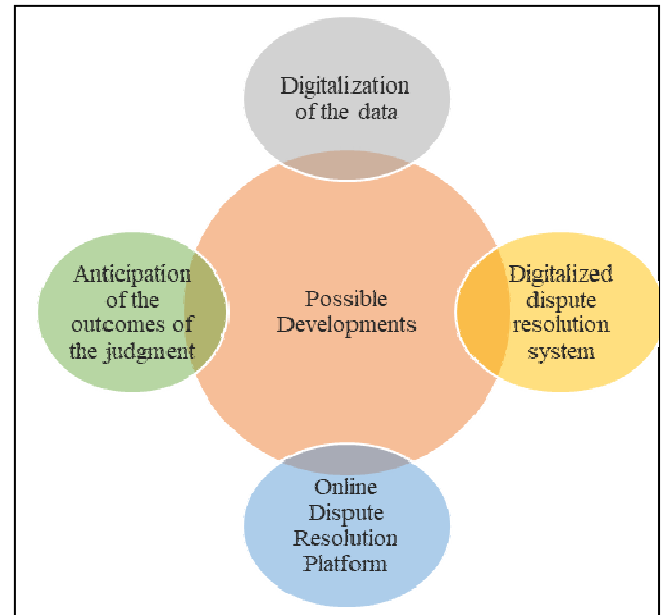


Figure 1. Possible Development of AI in the Indian Judicial System

C. Need for an Online Dispute Resolution Platform

The extraordinary COVID-19 Pandemic breakout has significantly hampered the operation of courts throughout India, and following the lockdown, only the most essential cases are being heard via videoconference. In order to instruct the courts at all stages to set up a system to facilitate online videoconferencing until the situation returned to normal, the Supreme Court of India issued recommendations. Although many District Courts and High Courts manage to hear cases online.

The e-court filing software is now accessible for usage in India's 18,000 District Courts and 21 High Courts following the project's successful debut [13]. Fortunately, many nations, including India, have implemented online dispute resolution (ODR), which offers great promise for India's virtual courts. Several well-known ODR platforms include the Centre for Online Dispute Resolution (CODR), Sama, Presolv360, and Centre for Alternative Dispute Resolution Excellence (CADRE), and Crek ODR.

The ODR forum idea could hasten the adoption of virtual courts in India, especially in cases involving minor claims like traffic challans, where cases can be decided by AI-based software. ODR forums will raise the likelihood that online hearings and virtual courts will be more effective and viable. It will assist in reducing the backlog of cases pending before various Indian courts.

D. Anticipation of the outcomes of the judgement

The AI can give an outstanding result while preparing the legal documents of the legal matter. It can make a proper database of the cases in a systematic way and even it can help to make comparisons between the alike cases and find

the precedents. The system can also help in providing help to arrive at some conclusion by analysing the previous legal pieces of information.

Presently the apex court of India is maintaining an online push system for assistance in decision-making. This has been to provide speedy justice to parties and to reduce the court's burden of pendency of cases.

V. LIMITATION OF ARTIFICIAL INTELLIGENCE USAGE IN INDIAN JUDICIARY

Though AI would provide benefits to the Indian Judicial System the system also oversees some of the limitations while applying such tools-

- Lack of accuracy in Judicial Data- The data that AI technology is based on forms its fundamental component. It will eventually yield inaccurate findings if the data is insufficient in and of itself. Additionally, only the judgment's outcome is included in the judgment document; the judge's thought process is not included. Because of this, an accurate referee prediction function cannot be achieved using the data source of artificial intelligence technology
- Lack of accurate information of AI tools- The algorithm that AI uses is at its core, if it lacks then it will create an error in the judicial process. AI is totally based on the algorithm and the data storage, but the question is whether proper keywords in combination or semantically coded abstracts were created or not. If it is not there then it will be not process to operate in a real sense. AI tools are made on the understanding of algorithms which requires the nationwide project to create the proper data retrieval mechanism on the basis of "proper keywords in combination" or "semantic coded abstract".
- Limitations to Understanding the complex nature of the Judicial Process- As the judicial process is complex in nature and based on the experience of the judges the AI will be lacking. The judge primarily draws on their trial experience while analyzing any facts and evidence and then on the basis of their judicial mind they come to a conclusion. Artificial intelligence cannot replace judges' judgment, which is a supplement to the law in light of the complex social environment, because judges are the only ones who can apply the law to specific situations. Artificial intelligence can only make decisions based on facts, but doing so is difficult because social life is complicated and there are always new problems to overcome.
- Lack of willingness to accept- The use of AI in legal procedures is also influenced by how eager judges are to accept it. The judges that employ AI technology nowadays primarily target youthful judges. Traditional judges are hesitant to adopt AI technology because they believe Traditional judges are hesitant to adopt AI technology because they believe it will not improve how courts handle cases. Some of them feel that it is wrong to give socially complex legal cases to cold machines. Instead of relying on AI to make

judgments for them, they would like to spend a lot of time making decisions on their own.

VI. FINDING

After the analysis of the application of AI in the Indian Judicial System, it was observed that:

- Indian courts are using AI for case management and Data & information storage.
- AI is used for the integration of the Indian Court, e-filing, and live streaming, for translating and summarizing big data information.
- A few limitations such as a lack of accuracy and authenticity in judicial data and unauthentic AI tools were observed. Furthermore, there is a limitation in understanding the complex nature of the judicial process, which is why a perfect tool for the judicial system cannot be created.
- A lack of willingness is observed for more usage of AI and tool creation among legal professionals.

VII. RECOMMENDATIONS FOR THE PROPER APPLICATION OF AI

With the help of AI applications, the Indian Judicial system can provide better services to its stakeholders. However, the proper application of AI tools is necessary to reap the benefits.

A. Outline the role of AI in the judicial system

Total dependency on artificial intelligence will be a sign of danger as it may make the judgment technical and it can defeat the purpose of law. Any intelligence cannot practically overtake the role of a judge. Machines can help and add a helping hand to humans but it cannot replace it. AI can't replicate the emotions, social thoughts, and day-to-day trial experience. Therefore, it can only be used in the technical and ancillary tasks of the courts. And that is how it can help to contribute to the efficiency of the judicial system.

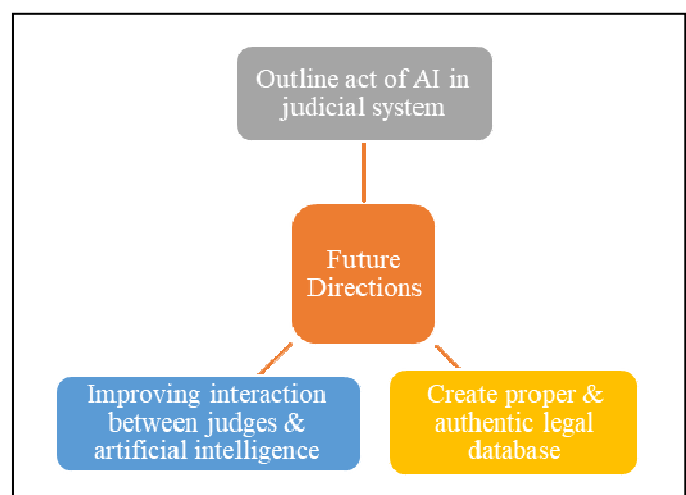


Figure 2. Future Directions for Proper Application of AI

B. Improve the interaction of judges with artificial intelligence

Due to misconceptions about artificial intelligence, the judicial field currently uses artificial intelligence technology at a low rate. And even the judicial actors of the courts are not accepting it completely due to its complex nature. Improving the relationship between judges and AI will improve the situation compared to now. By arranging judges' training, evaluation mechanisms, printing and disseminating instructional materials, etc. AI will become handier with time by encouraging its use and by gradual implementation in the system

C. Create a proper & authentic legal database

AI works only on the data and information and its accuracy totally depends on it. As a matter of fact, for proper results of the case, we need to create a proper database. The database can scrutinize, and summarize the data in a proper way. It will raise the efficiency of the court and reduce the court's burden. Otherwise, incomplete and false information may lead to inaccuracy and defeat justice.

VIII. CONCLUSION

There will always be uncertainty and dread at the beginning of new things, but we must proceed with caution to prevent collateral damage. The justice system is based on the jurisprudence of legal cognitive and practical rationalities, which are based on the theories of effectiveness, reasonableness, fairness, and justice of the law. Likewise, growth is the nature of law and hence shift towards the use of AI is the need of the hour. When law meets science in a proper way then it will ensure justice for more at a time. It will bring a commendable revolution in the legal system.

The study underscores the restricted implementation of AI within the Indian judicial system, primarily attributed to concerns surrounding data accuracy and the underdeveloped state of AI tools in the legal domain. Furthermore, it highlights the prevailing apprehension among legal luminaries regarding the preference for technological findings over human judicial judgment, leading to a reluctance to fully embrace this emerging technology.

The study also acknowledges the rapidly evolving digital landscape in which we find ourselves. It anticipates that AI will inevitably play a transformative role in the entire judicial ecosystem. Consequently, the study recommends a gradual, cautious, and well-considered approach for the Indian judicial system to introduce AI into its justice delivery mechanisms.

In the study, it was observed that most of the Legal experts considered that the pronouncement of judgment and judging is a complex phenomenon and involves human feeling. However, this notion does not accurately reflect the reality. Several legal experts are cognizant of the precision and robustness of AI techniques, and they have openly endorsed the application of such technologies. This is evident by the use of a few software by the Supreme Court of India. This development not only signifies the current acceptance of AI but also instills optimism regarding its future expansion and implementation in the legal field.

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