

A Review on Uses of Machine Learning in Judicial Court

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Abstract:- Justice delayed is justice denied. Well everyone can agree with this fact. So the question is can we improve on the current situation of the judicial system. And the answer is by the use of machine learning. We can significantly decrease the time to deliver justice to the people. this article summarises the automation which has already taken place in the judicial systems and evaluates its pros and cons. Finally, the article concludes with a discussion of the future of machine learning and the judiciary system.

Keywords:- Indian judicial system, judicial system, legal system, artificial intelligence, Wevorce, Natural language processing, crime prediction.

I. INTRODUCTION

In India, AI systems offer huge potential to improve the legal system. Human capacity has already been identified as a major system restriction. As of September 15, there were 4.5 crore pending cases throughout all Indian courts. There was 3.3 crore pending cases in 2019, which indicates that India has gained 23 cases every minute over the last two years. And this is even though Covid-19 disrupted the majority of last year, causing courts to work more slowly, resulting in fewer new cases being filed and fewer cases being resolved [20].

People's jobs are being taken over by machines all across the world. The Current world runs on artificial intelligence (AI), and machine learning, as we are automating stock trading through different algorithms, social platforms suggest whom to befriend and even dating is not different [5].

Can machine learning or AI help in judicial systems? can it improve the current judiciary decision-making? Well in the legal domain the idea of automation and semi-automation is not at all new. It has been there since the early 90s such as Westlaws which searches databases for legal data [1].

As a matter of fact, automation has been achieved in the summarization of legal information and information extraction, legal resource categorization, and statistical analysis [2].

So now let's have a closure look at the different uses of machine learning in the current judicial system.

II. AUTOMATING DIVORCE

For a divorce settlement in India, According to the type of divorce and time involved, a private's lawyer fees can cost around 10k-1 lakh [3]. The whole process could take up to 2 years or even more in some cases.

Wevorce is an online platform powered by AI which helps couples walk through five modules and define their optimal outcomes. It is a self-guided online divorce solution that eases out the whole divorce process for couples. For each circumstance, it provides all the different decisions that need to be made. If needed, legal experts are also available to provide appropriate guidance [4].

III. AUTOMATION IN POLICING

Computers and technology help the military reach its targets and intelligence agencies justify carrying out massive pre-emptive surveillance of public telecommunications networks. As a result, machine learning along with big data and algorithms has become a boon for intelligence, security, defence, and anti-terrorism efforts. [4]

Crime predicting Software such as PredPol, HunchLab, etc are readily being used by law enforcement agencies [6].

Geospatial modelling for anticipating future crime spots has evolved into a concept of strategically organizing police using Geographic Information Systems (GIS) to map crime, thanks to CompStat. The goal is to build a police management philosophy, not just to see crime' physically depicted on a map. It includes 'monthly meetings when officers evaluate current data (crime reports, citations, and other statistics) and discuss how to improve those figures as a 'human resource management tool' [8]._Nevertheless, the idea here is to see how the crime evolves rather than the cause of crime

Thousands of children have been sexually abused online. According to official estimates, there are over 750,000 online abusers looking for sex with youngsters in over 40,000 public chat rooms at any given time. Terre des Hommes, a Dutch children's rights organization, was the first NGO in Europe to use a virtual persona named 'Sweetie' to prevent webcam child-sex tourism. The Sweetie avatar, posed as a ten-year-old Filipino girl, was used to identify offenders in chatrooms and online forums and was controlled by an organization to collect information on those who contacted

Sweetie and asked for webcam sex. Furthermore, Terre des Hommes began developing an AI system capable of portraying and acting as Sweetie without the need for human involvement in order to identify repeat criminals. Terre des Hommes and its partners will be able to safeguard hundreds of thousands of children from this particularly pernicious kind of sexual exploitation as a result of this project [9]. In prisons, artificial intelligence is being employed for both security and therapeutic purposes. An AI network is purportedly being installed at a Chinese prison that will be able to recognize and track every prisoner around the clock and warn guards if anything seems out of place [10].

IV. REVIEW OF LEGAL DOCUMENTS

Using systems powered by AI like **ROSS Intelligence** which helps to analyse documents by using natural language processing.

AI-powered computer programs increase the effectiveness of archive investigation for legitimate use and machines can audit reports and hail them as important to a specific case. Once a certain sort of report is indicated as significant, machine learning calculations can get to work to discover other records that are essentially significant. Machines are much speedier at sorting through records than people and can yield results and output that can be factually approved. They can offer assistance to decrease the stack on the human workforce by sending documents that are flawed instead of requiring people to survey all records. Legal research must be carried out conveniently and comprehensively, in spite of it being monotonous. [4]

The Indian judiciary's legal data is enormous, untidy, and complex [21]. Cleaning and pre-processing data are essential for any type of analysis, but it is especially important for supervised algorithms that are trained on this data. To increase data quality and address the challenges mentioned above, a variety of machine learning technologies can be used.

To collect, clean, and prepare this data for analysis, Author [22] built a strong pipeline and describe some methods for this [22].

V. ARTIFICIAL INTELLIGENCE

AI can be defined as “allowing a machine to behave in such a way that it would be called intelligent if a human being behaved in such a way”. In 1956, John McCarthy, who coined the term "Artificial Intelligence," gave AI this description.

It's critical to establish that human intelligence is the yardstick by which AI is judged.

Intelligence is defined as the ability to reason abstractly, logically, and consistently, to discover, lay, and see-through correlations, to solve problems, to discover rules in somewhat disordered data with existing knowledge, to solve new tasks, to adapt flexibly to new situations, and to learn without direct and complete instruction.

What does this mean for artificial intelligence?

'Big data' is required for AI to function. "If a machine is to be able to distinguish a cat with 95 per cent reliability, we need roughly 100,000 photographs of cats," says Luc Julia, one of the developers of the digital assistant Siri. 3 In the interim, we've gathered a lot of data, which is why AI has suddenly sparked so much interest. AI can take numerous forms, including speech recognition and image recognition. Machine learning and natural language processing are the main topics of this article. Deep learning, in which technology learns for itself, is yet a future topic [7].

VI. AI IN COURT

We may use machine learning to teach a computer to perform quantitative analysis based on the words and phrases used in a court case and then 'teach' the computer to predict the Court's judgment based on that analysis. The most studied and debated examples are from the United States, which also happens to be where the majority of such software is being used. The Arnold Foundation methodology, which is being implemented in 21 US jurisdictions, examines 1.5 million criminal cases to forecast defendant behaviour during the pre-trial phase. (Dewan, S.: Judges Replacing Conjecture with Formula for Bail. The New York Times (2015)). Bail amounts in Florida are determined using machine learning techniques. (Eckhouse, L.: Big data may be reinforcing racial bias in the criminal justice system. Washington Post (2017))

Author [9] ran numerous experiments in his study that entailed analyzing the language of European Court of Human Rights judgments to determine whether a case was found to be a breach of one's rights or not. Their findings reveal to anticipate decisions in roughly 75 per cent of cases utilizing relatively simple and automatically attainable information, which is significantly higher than the chance performance of 50 per cent [2].

There are several other innovations that are affecting courtroom decision-making. The Ministry of Justice in Estonia is funding a team to build a robot judge capable of adjudicating minor claims disputes under €7,000. 24th footnote, In theory, both parties will submit documents and other relevant evidence, and the AI will make a judgment against which a human judge can hear an appeal. Estonia's 1.3 million citizens already have a national ID card and are accustomed to internet services such as e-voting and digital tax filing, so the idea of a robot judge could work [11].

Author [12] believes that artificial intelligence (AI) tools would eliminate the biases and mental shortcuts (heuristics) that are inherent in human judgment and thinking. This is a compelling explanation of why AI technologies have been given much too much power to address and solve primarily societal (rather than technological) issues. In order to develop a human-rights-compliant methodology, social scientists, especially attorneys, must collaborate more closely with computer and data scientists. [12].

Some academics are even considering using AI to alleviate the solitary confinement crisis in the United States by using smart assistants like Amazon's Alexa as a kind of 'confinement buddy' for inmates. Although some of the proposed uses appear to be ridiculous and directly harmful, such as inferring criminality from facial photographs, the accomplishments of other criminal justice cases appear to be more difficult to argue or debunk. For example, researchers found that a computer could predict whether a suspect will run or re-offend better than a human judge in a study of 1.36 million pre-trial detention cases [13]. According to Robinson (2018) [14], when a law or public policy considers using predictive analytics in criminal justice, three structural obstacles can arise: (1) what matters versus what the data measure; (2) current goals versus past trends; and (3) public authority versus private knowledge.

Showing how other judges might make a decision based on the machine's model of other judges is another way for AI to assist rather than dictate decision-making, this time by creating a customized community of instantly available experts (trained on data from other experts' behaviour, possibly over time and across geographic and subject matter contexts). Using statistics from other judges to promote moral behaviour may help leverage self-image concerns about being a better judge [22].

Learning from experiments in realms other than justice is one way ahead. Eubanks explains how removing human discretion from public assistance eligibility evaluation seemed like a persuasive approach to eliminate discrimination against African-Americans in the welfare system in her brief review of automated welfare systems in the United States. If human decision-makers are biased, it appears natural to remove humans from the decision-making process. The experiences Eubanks unearthed suggest that it may be counterproductive. The necessity of the ability to bend the rules and re-interpret them according to social situations is overlooked by proponents of automated decision-making systems. As a result, Removing human discretion thus has a two-edged sword: it can minimize human prejudice while also exacerbating or creating new inequalities [13].

In terms of data, first and foremost, criminality is never fully recorded by default. Algorithms will never be able to fully comprehend such gloomy data. The future is then computed using past data. Predictions done by ML can be more accurate when the data provided is as close to reality as possible second, crime is a normative phenomenon, meaning it is influenced by human values that shift across time and space. Given the original and shifting collection of facts or reality, algorithmic calculations can never be precisely calibrated. (X1)

As a result, if the data that it eats are incomplete or of poor quality what it gives out will be the same quality as well.

Gitelman says [15] that in criminal justice, the act of preparing data is essentially political: someone must generate, safeguard, and evaluate data (Gitelman, 2013) [15].

VII. RISKS OF USING MACHINE LEARNING

What are the particular risks associated with using Machine Learning in the judiciary Domain?

In criminal justice contexts, human decision-making is frequently imperfect, and stereotypical arguments and banned variables, such as race, sexual preference, or ethnic origin, frequently enter into verdicts. For example, research on biases in probation decisions has shown that judges are more likely to rule 'by default' and refuse probation near the conclusion of sessions, whereas they are more likely to give parole immediately after eating (Danziger et al., 2011) [16].

So now can algorithms help in such decisions. One might answer that it can provide such an unbiased choosing architecture. But Algorithms, on the other hand, are fed data that isn't 'clean' of social, cultural, or economic contexts. Even formalized synthetic concepts like averages, standard deviations, probability, identical categories or 'equivalences,' correlation, regression, and sampling are "the result of a historical gestation punctuated by hesitations, retranslations, and contradictory interpretations" (Desrosières, 2002: 2) [17]. De-biasing appears to be required.

Cleaning data of such historical and cultural weight and inclinations, on the other hand, may not be practical or desirable. Caliskan et al. (2017) argue that, first and foremost, natural language inevitably involves human biases. Because AI is trained on language corpora, it will invariably absorb existing prejudices in a given society (Caliskan et al., 2017). Second, they suggest that de-biasing is conceivable, but that this would result in "fairness through blindness," because prejudice can return through proxies (Caliskan et al., 2017)

Existing legal concepts in constitutional and criminal law already reflect judgments about the relative importance of competing ideals like efficiency and justice. For example, in a democratic, liberal response to crime, it is preferable to release ten criminals than to imprison one innocent person — this is the litmus test for authoritarian and democratic political systems, and tech-savvy professionals are already negotiating these balancing acts. (X2)

Fairness trade-offs are such balancing acts: what to optimize for in each area is different. The topic of the COMPAS probation algorithm's fairness demonstrates how the debate unfolded on several levels. While ProPublica claimed that COMPAS was biased against black defendants by assigning them higher risk scores, Northpointe (now Equivalent), the algorithm's creator, argued that the algorithm directly reflected past data, which showed that blacks were more likely to commit a crime after being released (Spielkamp, 2017). ProPublica looked at both groups' false positives and found that black defendants were rated higher risk but re-offended less frequently, while white defendants were rated lower risk but re-offended more frequently. (Spielkamp, M (2017) Inspecting algorithms for bias. MIT Technology Review, 6 December.)

There are at least two challenges in algorithmic design and implementation on a broad basis. To begin with, gathering a database and developing algorithms for prediction always necessitate human decisions. 'It's a multi-staged human process including judgments made by developers and management.' The statistical method is merely one step in the process of formulating the final rules for prediction, categorization, and decision-making' (European Union Agency for Fundamental Rights, 2018). Second, despite the best intentions of its developers, algorithms may take an unanticipated road to their goals. (European Union Agency for Fundamental Rights (2018) #BigData: Discrimination in data-supported decision making. FRA Focus, 29 May.)

The old privacy protection strategy can no longer protect private information in the age of artificial intelligence. The basic approach of conventional privacy protection is "information and consent." The data collector is primarily protected by the relevant rights protection mechanism. The data collector has the associated obligations and liabilities, however, there are no specific provisions on data use. Many academics argue that in the age of artificial intelligence, a new privacy protection strategy that is fundamentally different from the previous privacy protection model is required, particularly to limit activities like in-depth mining and analysis. However, if deployed in this manner, artificial intelligence's value will surely plummet. We must strike a balance between the usage and protection of personal data in the age of artificial intelligence [19].

VIII. CONCLUSION

In the context of the neoliberal turn and political pressure to "do more with less," automated analysis of judicial decisions using AI is meant to improve efficiency. In this environment, computerized criminal justice decision-making emerges as an 'algorithmic avatar' of neoliberalism. (X3)

Artificial intelligence has been shown in studies to have a significant impact on the legal system, improving court efficiency and ensuring the parties' rights and interests. Artificial intelligence, on the other hand, may increase the chance of personal data being leaked. Because the computational calculations have black-box implications, they may cause inequity. This necessitates the immediate enactment of essential legislation and regulations to protect citizens. On the same hand, because artificial intelligence judgments are mechanical and objective, it is unable to make effective differentiated judgments based on the background of different circumstances, thus it may be better suited to the auxiliary role of the human brain [19].

Finally, we must admit that some procedures in criminal justice systems should not be automated (similarly in the context of policing, by Oswald et al., 2018). There is simply too much at stake for society and individual human rights to be influenced by a diminished human agency consigned to robots [18].

What role may AI and machine learning play in human decision-making? An AI-based recommender system might start by giving a judge the best prediction of themselves based on the judge's previous decision-making, utilizing only legally permissible features from a model. At the absolute least, it can assist judges in maintaining consistency across similar instances by providing the most important reference points—as well as limiting the impact of unrelated elements [22].

In the courts, only technologies that help humans rather than replace them should be used. Overall, we feel that AI and machine learning have enormous potential for India's courts when used carefully and ethically.

ACKNOWLEDGEMENT

We would like to thank our reviewers who provided comments on prior drafts of this paper.

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