Artificial Intelligence in the Judiciary: Uses and Threats

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Abstract

Justice institutions have been slower than other government sectors to intensive use of Information Technology-IT. Nevertheless, there is an increasing volume of digital information resulting from IT in legal procedures in most countries. The repositories of such information/data bring up the opportunity to apply AI in justice-related organisations. AI can be used for a wide range of purposes that might help solve chronic problems in justice-related organisations, such as slow justice processes and high operating costs. At the same time, AI use raises important concerns about safeguarding the values of Justice. This article presents and discusses the applications of AI in support of the work of judges and the main threats to justice values posed by their use in courts.

Keywords

e-Justice, e-Court, Predictive Justice, Artificial Intelligence

1. Introduction

Justice institutions have been slower than other government sectors to intensive use of Information Technology-IT [1, 2, 3, 4]. Nowadays, in the Judiciary, Case Management Systems-CMS used to handle judicial cases are already adopted or are in the process of deployment in most world countries [2]. In the most developed justice systems, CMS provided legal repositories that provide the foundation for Artificial Intelligence-AI applications development for various purposes, either to assist or perhaps even substitute judicial decisions.

Considering the high amount of caseload around the globe, the use of AI has great potential to support judicial activities resulting in more access to justice, transparency and accountability, reduction of costs, and decreased judicial lawsuit duration [5, 6]. Nonetheless, its implementation process may also pose risks to justice values, such as impartiality and respect for fundamental rights.

This article presents and discusses the applications of AI in support of the work of judges and the main threats to justice values posed by their use in courts. The paper is structured as follows: Section 2 underlines the benefits of AI tools for Justice, and more specifically, for the Judiciary; Section 3 describes the main uses, organising them into categories, and section 4 poses the threats in the deployment of AI applications for the Judiciary. Section 5 suggests important remarks in current research mixing AI and the Judiciary.

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2. AI in the Justice Domain

AI can be defined as "a set of scientific methods, theories and techniques whose aim is to reproduce, by a machine, the cognitive abilities of human beings. Current developments seek to have machines perform complex tasks previously carried out by humans" ([7], p. 69). The actual use of AI largely consists of machine learning applications that depend on a huge amount of data used to recognise patterns on their own and make predictions [8] which have the potential to drive considerable transformative innovations for institutions and society [9].

AI deployment in the Judiciary can enhance efficiency. In the contemporary world, the demand for Justice has grown as society becomes more complex and citizens engage more in commercial and legal disputes [10]. In fact, Justice is expensive, the time spent solving litigious is high, and the workload of judges is increasing [11, 12, 6].

However, many lawsuits are simple, similar (if not identical), repetitive and with a predictable outcome. Using AI to automate human manual processes in these cases can streamline decisions, reduce litigation volume, and thus lead to lower costs. [10, 5, 13, 14, 6]. Another benefit of using AI in the Judiciary is that the automation of simple and repetitive cases gives judges more time to dedicate to their main role: deciding in court cases. Furthermore, speedy up Justice generally increases the subjective sense of fairness [15, 16].

Impartiality, objectivity, uncertainty reduction, and human error elimination are advantages AI decisions offer compared to humans' decisions [10, 6, 17]. AI can also help reduce disparities in similar suits, for example, avoiding disproportional treatment between convicted in the cases of setting bail or determining sentences [14] .

This article was based on a review of 28 papers from Scopus, limited to the period between 2000 and 2022. AI evidence production and AI to support the police were not the object of our study. The ODR literature that most refers to non-judicial disputes was also excluded.

3. Uses of AI in the Judiciary

A recurring and controversial question is whether AI could replace the work of judges. Garoupa speculates that AI will gradually replace judges, prosecutors, and lawyers [18]. Other authors believe that AI applications will not get to decide judicial cases but support decision-making, as creativity would be needed to choose between competing rules and create new ones [19, 13].

The European Commission for the Efficiency of Justice (CEPEJ) affirms that applications of AI in the Judiciary are restricted to machine learning applications specialised in solving one problem as follows:

"In most occasions, the objective of these systems is not to reproduce legal reasoning but to identify the correlations between the different parameters of a decision and through the use of machine learning, to infer one or more models. Such models would be used to 'predict' or 'foresee' a future judicial decision ([7], p.29)."

Reviewing the literature concerned with AI uses in the Judiciary, eight categories emerged from the content analyses considering the type of applications and functionalities. The main solutions we found are:

1. Similar cases push systems: Designed to automatically push similar judicial cases to

help judges and staff reflect on specific cases. Generally, the system works by inserting keywords, and then similar cases (or related to the subject) are pushed for human review [20, 21, 22, 16].

2. Litigation risk assessment systems: Systems based on judicial statistics and analysis of similar cases give basic information that could evaluate the possible judgment result in advance and though helping parties decide whether to enter the litigation process [14, 15, 23].
3. Document assisted generation systems: Application that automatically generates decisions to help judges write their judicial documents. May include suggestions of the applicable law and penalty [22].
4. Speech-to-text applications: The system converts spoken language into the written text used in courtroom records or hearings [24**?** , 25, 20, 21].
5. Risk prediction systems: The application used in the penal system is supposed to predict risks for violent crime, sexual offender, and recidivism risks, helping judges decide about depriving people of their freedom [26, 27, 28, 23].
6. Answering questions robots: The application answers questions submitted to the Judiciary via a keyboard or verbally concerning a relevant case, verdicts, laws, how to bring a lawsuit, how to investigate their legal rights, and how to obtain evidence [14, 29, 20].
7. Emotion recognition systems: The system can identify the speaker's emotional state, improving the information obtained in the courtroom. While this application is already deployed (in Poland and Italy), similar innovative AI research promises to disrupt the hearing and trials by better predicting deception than humans [25, 30].
8. Filtering Systems: The system organises information according to a defined criterion and takes action, such as grouping cases and returning or allocating the cases to judges [12, 29, 23].

The results of our research align substantially with the classification suggested by CEPEJ, taking into account the service offered: advanced case-law search engines, online dispute resolution, assistance in drafting deeds, analysis (predictive, scales), categorisation of contracts according to different criteria and detection of divergent or incompatible contractual clauses, "Chatbots" to inform litigants or support them in their legal proceedings ([7], p. 17). Realing [5] suggests general classification and asserts that Al can be useful in courts for organising information, advising, and predicting and can be applied in many ways to meet different requirements.

Regarding law matters, the major uses of AI in the Judiciary are concentrated in specific subjects, mainly in civil and administrative matters involving minor disputes and less complex cases. The main subject that AI applications deal with is small claims, domain-name disputes, e-commerce disputes, copyright disputes, neighbourhood disputes, landlord-tenant, condominium disputes, property and income tax disputes, driving misdemeanours and parking fines [31, 14, 15, 16].

Considering the activity of full replacement of judicial work, we found only the applications developed in the Netherlands. An e-Court application renders arbitrational verdicts by default in debt collection proceedings solely resulting from AI. The system was designed to be no longer

a product of any human reasoning. The application did not get to operate as the law doesn't provide the possibility for a "digital judge" [10].

4. Threats Posed by AI for Justice

CEPEJ highlights concerns about potential threats to the use of AI for the principles of Justice when approving the European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and their environment. The principles posed in the document are: 1) respect for fundamental rights, 2) non-discrimination, 3) quality and security, 4) transparency, impartiality and fairness, and 5) "under user control" [7]. The threats posed by AI to the Judiciary respect to possible break of these principles.

The most cited risk in literature is bias, which can violate fundamental rights and result in discrimination [32, 33, 13, 14, 15]. Bias can be intentional or unintentional. Intentional bias refers to those derived by decision-makers when creating the algorithms and representing their value judgments and priorities [14].

Referring to system developers' bias, researchers highlight the threat of lack of expertise, such as the possibility of computer programmers making certain improper assumptions in coding legal norms [15, 17]. Another risk is that the judicial decision, which is the judge's exclusive prerogative, is eventually taken indirectly by the programmers since they are the creators of the system's rules. As Contini affirms, "... while systems developers delegate a suggestion to the system, they end up achieving a delegation of the decision they are supposed to support ([34], p. 13)."

Unintentional bias occurs when algorithms replicate the existing bias in the real world [33, 13, 17]. Using skewed data sets can lead to poor predictive accuracy models. The most famous case of bias is a widely used AI application for criminal Justice in the USA, called COMPAS (Correctional Offender Management Profiling for Alternative Sanctions), which evaluates the potential of recidivism of criminal defendants and helps judge decision-making. ProPublica found that black defendants were far more likely than white defendants to be incorrectly judged to be at a higher risk of recidivism. In contrast, white defendants were more likely to be incorrectly flagged as a low risk than black defendants [27].

Another important point is related to opacity [35]. If litigants don't' know the construction and operation of the system, suggestions given by AI may be questionable [20]. Technical and legal "black-boxes" refer to a lack of transparency or difficulty understanding the algorithm [9]. The technical black box occurs when the algorithm process is unknown even to its developers or is impossible to understand for humans due to our cognitive limitations. Legal black box concerns relate to the public disclosure of algorithmic code legally protected by contracts. Technical black boxes are more difficult to address as explaining the outcomes is part of rights protection in the democratic rule of law. Currently, all transparency requirements cannot yet be established [33, 13].

A 2017 report from AI Now Institute from New York University got to the point of recommending to public agencies, such as those responsible for criminal justice, no longer use black-box AI once such systems raise serious due process concerns. They recommend that the algorithm be available for public auditing, testing, and review and subject to accountability

standards [36].

However, Contini [34] demonstrates that opacity is relative as the equivalence between input and output can be or cannot be checked. He affirms that even inscrutable algorithms can raise operational transparency. The case cited by the author to exemplify is AI speech-to-text applications used in the courtroom, which permit at the same time the text produced in court to be read and reviewed by judges and parties, no matter if there is a black box. Also, arguing in favour of AI, Thornton [15] asserts that traditional paper-based courts' opinions are often complex, long, and technical, and jury determinations are opaque and intelligible for citizens.

The overreliance on technology is another risk. Humans tend to become reliant on automated decision-making systems. They trust statistical data and begin to give up on their own independent judgment, and become blind to systems errors [14, 15, 17, 16]. As Contini states, "the decision remains with the judge, but it can be difficult for the judge to resist these 'disinterested' and 'science-based' suggestions ([34], p. 13)".

The protection of personal data, both concerning parties/witnesses and judges/prosecutors, also arises as an important issue from the use of AI in Justice. Justice collects critical information about citizens, and researcher debates involve the difficulty of balancing privacy in court records versus the right of public access to them [37, 38].

The digital divide is highlighted as a threat to AI deployment in the justice domain too. It includes the skills to use digital services and access the internet and devices [17]. Susskind [39] emphasises that it can be an obstacle to Justice, and it is an important challenge to face. However, he points out solutions such as the availability of a traditional paper-based physical court system in parallel or "some kind of practical help and support to those unable to use the online court services ([39**?**] p. 218)". He also argues that today's traditional courts exclude many people because of their physical or other disabilities.

Thornton [15] refutes the criticism of the use of AI in the Judiciary. He disputes that AI-based systems are less reliable or fair than human-based ones, arguing that legal automation's fairness benefits are two types: objective and subjective. Objectively, automated systems would be able to deal with "highly complex and multifaceted legal frameworks that human operatives simply cannot holistically oversee" and would offer a promising perspective to eliminate human biases" ([15], p. 1840). Subjectively, he indicates impartiality and trustworthiness as positive aspects of AI. He also recognises some problems related to considering a disputant's voice and the degree to which the treatment of disputants is respectful and dignified.

Spitsin & Tarasov [40], considering the doctrinal aspect, argue that a problem still unsolved is the absence of an AI concept suitable for legal science. The authors affirm that the current definitions of AI are non-judicial (technical), so they don't bring enough clarity required to the paradigm of the science of law.

5. Conclusion

The use of AI is just beginning in the Judiciary. Still, it seems to have a promising future to help address the historical problems of Justice, such as slowness and, therefore, the backlog of judicial cases. Our research points to eight main uses, or possible uses, of AI in the Judiciary: similar cases push systems, litigation risk assessment systems, document assisted generation

systems, speech-to-text applications, risk prediction of accused systems, answering questions robots, emotion recognition systems and filtering Systems.

In the meantime, important threats to the values of Justice can arise from the inadequate implementation of AI systems. The main is the bias originating from the algorithm building process or the bias already existing in past data. Discrimination arises as a worrying issue in this context. Opacity is another important problem related to legal industry secrecy involving algorithm construction. Opacity can also be related to the impossibility of understanding the result of the decision-make process of AI, which is a more problematic issue. The need to legally define AI before regulations was also cited in the literature. The solutions for resolving these threats are unclear, and the area is still poorly regulated.

Despite the intense speculation, 'predictive justice' is still little used [7]. The debate that AI will replace human judges seems, for now, it is a remote reality. Justice is trying to deploy technology solutions that can enhance efficiency and replace the repetitive judicial work by grouping, classifying and organising information, which is the base for more advanced technology deployment.

The classification of AI use in the Judiciary is important as it allows scholars and practitioners can restrict research areas. The main threat identification helps to highlight the challenges to be faced while planning and implementing AI projects for justice. Although, in this study, it was not possible to further discuss each application and deepen the knowledge of their interactions, which could be an object for future research. A broader search in other search engines would also be recommended to broaden the research scope.

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