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ARTIFICIAL INTELLIGENCE IN COURTS AND DISPUTE RESOLUTION: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

Background: *Can AI be utilised in adjudication without compromising justice? While many support AI's potential to enhance judicial efficiency, concerns persist regarding its use in autonomous decision-making and the risks this poses to fundamental rights. This research assesses the transformative potential of artificial intelligence in the judicial sector and analyses the legal challenges associated with deploying AI in different capacities, including assistive roles, procedural functions, and the more controversial fully autonomous adjudication. It further explores existing legal frameworks and regulatory responses, with a particular focus on the EU AI Act, to assess how AI can be governed to balance efficiency with the protection of human rights and the rule of law.*

Methodology: *This research adopted a doctrinal research methodology, conducting a thorough analysis of primary sources, including the EU Artificial Intelligence Act, the European Convention on Human Rights (ECHR), and case law from US and Chinese jurisdictions. In addition, the study employed a comparative legal analysis to examine similarities and differences in AI regulation, judicial practices, and human*

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rights protections across these jurisdictions. A systematic legal method was applied by analysing the EU AI Act in conjunction with ECHR provisions and relevant case law to evaluate the broader legal and regulatory framework governing AI in adjudication. Secondary sources, including journal articles, books, dissertations, conference papers, newspaper articles, reports, and blogs, were critically assessed using the CRAAP test. Finally, a critical legal method was applied to evaluate the ethical, procedural, and human rights implications of AI deployment in judicial decision-making.

Results and conclusion: *The findings of this research support the deployment of AI in an assistive capacity within adjudication, rather than as a fully autonomous decision-maker. AI-assisted adjudication can be strengthened through robust ethical and procedural safeguards, including mandatory human oversight, enhanced transparency, and improved interpretability of algorithmic decisions. Such measures can mitigate risks related to fairness, bias, and the erosion of judicial discretion identified in fully autonomous systems. When AI tools function explicitly as support rather than authoritative actors, concerns about violations of the right to a fair trial, judicial independence, and effective participation are significantly reduced. Ultimately, the legitimacy of AI in courtroom decision-making depends less on its mere presence and more on how it is designed, regulated, and perceived by both the judiciary and the public. Based on these findings, this research offers concrete recommendations for judicial institutions to ensure that AI enhances efficiency without compromising justice.*

1 INTRODUCTION

AI is transforming justice worldwide. In 2019, a Chinese litigant attended a trial entirely online—with evidence, witnesses, a judge, and a ruling all conducted through a virtual platform guided by AI. In that proceeding, the human judge relied not only on digital records but also on AI-generated case summaries and precedent recommendations.[1] The verdict was delivered within minutes.

Half a world away, a defendant in Wisconsin, USA, filed a motion for post-conviction relief after learning that the original decision had been influenced by a proprietary algorithm (COMPAS) that neither they nor their counsel could question or understand.[2] When challenged, the software's creators refused to disclose how the system made its decisions, claiming trade secrecy.

Similarly, in Canada, the federal Post-Conviction Risk Assessment tool—used to inform probation decisions—was shown to produce racially disparate results, assigning disproportionately higher risk scores to Black offenders compared to white offenders.[3] These

1 Xinhua, 'Beijing Internet Court Launches AI Judge' *China Daily* (Beijing, 28 June 2019) <https://www.chinadaily.com.cn/a/201906/28/WS5d156cada3103dbf1432ac74.html> accessed 23 May 2025.

2 *State v Loomis* 881 NW2d 749 (Wis 2016).

3 Jennifer L Skeem and Christopher T Lowenkamp, 'Risk, Race, and Recidivism: Predictive Bias and Disparate Impact' (2016) 54(4) Criminology 685-700. doi:10.1111/1745-9125.12123.

cases highlighted the changing role of AI in the justice system: one driven by digital convenience, the other shadowed by intentional and inherent opacities.[4]

In Europe, Estonia briefly became the subject of international media speculation in 2019 when reports claimed it was developing a "robot judge" to decide small claims disputes. The Estonian government later clarified that no such fully autonomous judicial project was underway and that its efforts were limited to exploring digital tools to improve efficiency in the justice system.[5] This episode illustrates how quickly narratives concerning AI in adjudication can drift from reality, feeding public anxieties about automation in the judiciary.

Yet all four cases reflect a deeper transformation quietly underway in courtrooms across the world. AI is no longer a speculative concept in law; it has become a practical tool used to evaluate evidence, predict outcomes, streamline caseloads, and increasingly, to assist in adjudication. From automated case sorting in the Netherlands to predictive analytics in UK asylum rulings, and from Tax Foresight in Canada to algorithmic mediation in Singapore's small claims tribunals, AI is beginning to shape who receives justice, when, and on what terms.

But with this transformation comes a set of paradoxes. While AI is expected to resolve judicial backlogs and democratise legal access, it also presents significant challenges to fundamental rights: human dignity, fairness, and open justice.

2 METHODOLOGY

This research adopted a doctrinal legal methodology to examine the integration of artificial intelligence in European judicial systems, specifically in courts and dispute resolution processes. It addresses growing scholarly and regulatory concerns about whether AI can enhance the delivery of justice without compromising foundational legal values, including judicial independence, transparency, human dignity, and the right to a fair trial. The study is particularly timely, given the recent proliferation of AI tools designed to assist or, in some cases, replace judicial decision-making in Europe. The following core objectives guide the research:

- To examine how far the use of AI in court decision-making aligns with legal principles supporting justice in Europe.

4 Jenna Burrell, 'How the Machine "Thinks": Understanding Opacity in Machine Learning Algorithms' (2016) 3(1) Big Data & Society 1-2. doi:10.1177/2053951715622512.

5 Maria-Elisa Tuulik, 'Estonia Does Not Develop AI Judge' (*Ministry of Justice and Digital Affairs, Republic of Estonia*, 16 February 2022) <https://www.justdigi.ee/en/news/estonia-does-not-develop-ai-judge> accessed 23 May 2025.

- To assess the extent to which artificial intelligence can replace human judges in judicial systems.
- To evaluate whether the integration of AI into judicial processes can enhance the quality and effectiveness of justice delivery without undermining core legal values.

To achieve these objectives, the study conducted a thorough analysis of primary sources, including the EU Artificial Intelligence Act, the European Convention on Human Rights (ECHR), and case law from US and Chinese jurisdictions, with particular attention to Articles 6, 13, 14, and 45 of the ECHR. It also examined relevant domestic and international soft law instruments, such as the CEPEJ Ethical Charter, the OECD AI Principles, and UNESCO's Recommendation on the Ethics of AI, selected for their influence on the EU AI Act and their guidance on court-level practices.

Secondary sources—including journal articles, books, dissertations, conference papers, newspaper articles, reports, and blogs—were critically analysed to provide context, assess current scholarly debates, and identify normative gaps. These sources were collected from legal databases and academic repositories and evaluated using the CRAAP test.

The methodology incorporated multiple complementary approaches: A comparative legal analysis to examine regulatory and judicial frameworks across Europe, the US, and China, highlighting similarities, divergences, and lessons learned. A systematic legal method, analysing the EU AI Act alongside ECHR provisions and relevant case law to provide a structured assessment of legal norms, principles, and obligations. A critical legal method, assessing the ethical, procedural, and human rights implications of AI in judicial decision-making, identifying risks, and proposing normative and regulatory recommendations. This layered approach, combining doctrinal, comparative, systematic, and critical methods, supported an interpretive, evaluative, and normative analysis: interpreting legal norms and jurisprudence, comparing institutional frameworks across jurisdictions, and evaluating the adequacy of current legal regimes.

While no empirical data collection was conducted, illustrative global case references were used to contrast regulatory approaches and highlight practical concerns. This methodology enables the research to provide a well-reasoned, independent legal perspective on the role of AI in judicial systems.

3 RESULTS AND DISCUSSION

AI systems are increasingly permeating the judicial sector worldwide—not only in terms of digital case management but also in supporting core legal tasks such as legal reasoning, data retrieval, and procedural structuring. While the use of AI as a substitute for judicial decision-making—popularly referred to as "robot judges"—remains highly contested, its application in a supportive or assistive role has gained greater legitimacy in contemporary

legal research. As recognised and encouraged by the CEPEJ, such supportive uses of AI can contribute to procedural efficiency, broaden access to justice, and strengthen institutional accountability.

3.1. AI's Transformative Potential in the Judicial Sector

As AI systems evolve, their potential to streamline courtroom procedures becomes more apparent. In its assistive role, AI can contribute to a wide range of courtroom and pre-trial tasks,[6] including drafting judgments, intelligent case routing, transcription and translation of legal documents, anonymisation of judgments, and integration with national e-Government systems for the verification of documentary evidence.

Particularly notable is AI's potential in managing repetitive, low-value claims through online dispute resolution (ODR) platforms[7]—a development that can reduce case backlog without excluding legal recourse.[8] Moreover, AI can assist judges in technical domains, such as the calculation of financial penalties, the evaluation and distribution of property in family disputes, and the identification of applicable statutes or precedents through efficient legal research algorithms. For example, natural language processing (NLP) models can be used to analyse the factual matrix of cases, and those can suggest relevant legal provisions with remarkable speed and precision.[9]

While these tools do not exercise discretion, they enhance the accuracy and consistency of judicial outputs, contributing to the predictability of legal decisions—an important component of legal certainty and the rule of law. The breadth of AI applications in LegalTech is supported by recent data from the CEPEJ-AIAB, which reported that 125 AI and cyberjustice tools[10] are currently in use or undergoing testing across various European jurisdictions.

6 Ignacio N Cofone, 'AI and Judicial Decision-Making' in Florian Martin-Bariteau and Teresa Scassa (eds), *Artificial Intelligence and the Law in Canada* (LexisNexis Canada 2021) ch 13, 8.

7 Tania Sourdin, 'Judge v Robot? Artificial Intelligence and Judicial Decision-Making' (2018) 41(4) UNSW Law Journal 1114; Tania Sourdin and others, 'COVID-19, Technology and Family Dispute Resolution' (2020) 30(4) Australasian Dispute Resolution Journal 270.

8 Jessica Rosberger, 'AI Mediation for Reducing Court Congestion' (26 November 2024) Cornell Journal of Law and Public Policy <https://publications.lawschool.cornell.edu/jlpp/2024/11/26/ai-mediation-for-reducing-court-congestion/> accessed 22 May 2025.

9 Harry Surden, 'Artificial Intelligence and Law: An Overview of Recent Technological Changes in Large Language Models and Law' (2025) 96 University of Colorado Law Review 376. doi:10.2139/ssrn.5135305.

10 CEPEJ, '1st AIAB Report on the Use of Artificial Intelligence (AI) in the Judiciary Based on the Information Contained in the Resource Centre on Cyberjustice and AI' (CEPEJ-AIAB(2024)4Rev5, 28 February 2025) <https://rm.coe.int/cepej-aiab-2024-4rev5-en-first-aiab-report-2788-0938-9324-v-1/1680b49def> accessed 2 June 2025.

These tools, in turn, present distinct benefits and regulatory challenges. For instance, tools supporting document discovery and legal research undoubtedly enhance efficiency but can also amplify existing biases if not regularly audited. Similarly, ODR platforms improve accessibility but raise fairness concerns when human oversight is minimal. Moreover, AI-based predictive tools can support in organising and prioritising cases; however, their heavy reliance on previous datasets risks uniform adjudication, which can undermine individualised justice.[11] In addition, decision-support systems that propose sentencing or summarise case facts should augment, not substitute, judicial reasoning; otherwise, they risk diminishing the role of human conscience in adjudication. At the same time, anonymisation tools help safeguard data privacy but can inadvertently hinder transparency in legal scholarship and appellate review. Equally important, translation and transcription tools must be highly accurate, as even slight misinterpretations can lead to unfair outcomes.

Nowadays, NLP models are also reshaping the broader landscape of legal practice. Various law firms already employ either customised or general generative artificial intelligence (GenAI) tools.[12] Between 2023 and 2024, these models became increasingly recognised for their ability to generate human-like text, making them valuable assets for tasks such as legal document drafting, contract analysis, and the provision of preliminary legal advice.[13] Additionally, the integration of GenAI has expanded the range of AI-supported functions in legal workflows, including summarising complex legal content, producing tailored documents, and facilitating interaction through question-answer systems.

Open-source generative AI platforms, such as those evaluated by French institutions,[14] are also contributing to increased transparency and usability by offering clearer insights into the architecture and governance of generative models. In the private legal sector, GenAI tools are already being explored for their potential to improve productivity and reduce routine workload. Although deployment within judicial institutions remains cautious due to higher ethical and procedural standards, the commercial legal sector has seen a growing interest in adopting these systems for case preparation, legal research, and client communication. As user involvement in system design and testing increases, generative AI is likely to become a practical instrument for enhancing the speed, efficiency, and accessibility of justice delivery.

Although these tools are efficient and automate court procedures, this automation does not come at the cost of due process.

11 Bhishm Khanna, *Predictive Justice: Using AI for Justice* (Centre for Public Policy Research 2021) 6.

12 Jonathan Kewley and others, 'Fast Law: Why Speed is the Priority for Lawyers Using AI' (*LexisNexis*, 2024) <www.lexisnexis.co.uk/insights/fast-law-why-speed-is-the-priority-for-lawyers-using-ai/index.html> accessed 2 June 2025.

13 David Uriel Socol de la Osa and Nydia Remolina, 'Artificial Intelligence at the Bench: Legal and Ethical Challenges of Informing—or Misinforming—Judicial Decision-Making through Generative AI' (2024) 6 Data & Policy e59. doi:10.1017/dap.2024.53.

14 PEReN, 'Open Source GenAI Comparator' (*Government of France, PEReN - Centre of Expertise for Digital Platform Regulation*, 2025) <https://www.peren.gouv.fr/en/compare-os-iag/> accessed 29 April 2025.

3.2. Ethical Guidelines for AI in the Justice System

Moving forward, it is important to consider the ethical standards guiding AI's integration into the judicial process. The European Ethical Charter on the use of AI in judicial systems, adopted in 2018, articulates five ethical principles to guide the responsible integration of AI, often referred to as LegalTech[15] within judicial institutions.[16] These principles, though not binding, have emerged as soft law instruments that have influenced both national legislation and court-level policy reforms across Europe.

As the integration of AI tools in the judicial process becomes more widespread, attention must be paid to their ethical governance. Although AI tools promise significant procedural benefits, their deployment must remain aligned with constitutional principles. As judicial reliance on algorithmic systems increases, legal systems must simultaneously reinforce mechanisms for auditability, human review, and accountability.

While current AI systems cannot substitute for judicial conscience or legal reasoning, they can serve as valuable co-pilots by streamlining processes, improving institutional performance, and broadening access to legal remedies when governed ethically.[17]

AI technologies are being deployed in adjudication in various ways: as *assistive tools* supporting judges, *procedural aids* managing administrative or evidentiary processes, and, more controversially, in *fully autonomous* roles that aim to replace human judicial discretion altogether. While each of these applications raises legal and ethical questions, the risks intensify as AI moves from assistive to fully autonomous functions.[18]

3.3. Assistive AI in Judicial Decision-Making

Despite their potential, assistive AI systems show varied levels of prediction accuracy. While deep learning and large language model–based tools can achieve around 85–90% accuracy on benchmark datasets for tasks such as charge prediction and legal article recommendation, their performance drops to 70–80% in more complex tasks like sentencing and multi-label judgment prediction.[19]

15 Z Seldağ Güneş Peschke and Lutz Peschke, 'Artificial Intelligence and the New Challenges for EU Legislation' (2022) 2 Yıldırım Beyazıt Hukuk Dergisi 1278. doi:10.33432/ybuhukuk.1104344.

16 CEPEJ, *European Ethical Charter on the Use of Artificial Intelligence in Judicial Systems and Their Environment* (Council of Europe 2018) <https://rm.coe.int/ethical-charter-en-for-publication-4-december-2018/16808f699c> accessed 29 April 2025.

17 Filippo Donati, 'The Use of Artificial Intelligence in Judicial Systems: Ethics and Efficiency' in Mireia Artigot i Golobardes and others (eds), *Artificial Intelligence, Judicial Decision-Making and Fundamental Rights* (2nd edn, Scuola Superiore della Magistratura 2024) 15.

18 UNESCO, *Draft Guidelines for the Use of AI Systems in Courts and Tribunals* (CI/DIT/2025/GL/01, May 2025) <https://unesdoc.unesco.org/ark:/48223/pf0000393682> accessed 25 September 2025.

19 Chuyue Zhang and Yuchen Meng, 'Bridging the Divide: Technical Research and Application on Legal Judgment Prediction' [2025] Artificial Intelligence and Law. doi:10.1007/s10506-025-09473-7.

At the same time, this integration of AI in court processes raises substantial human rights risks, particularly when individuals have no viable alternatives.[20] Although the idea of AI assisting judges in sentencing, bail, or probation decisions offers greater efficiency in justice delivery, it can pose significant threats to the right to a fair trial,[21] due process, the right to an effective remedy, transparency, and protection against discrimination, while undermining the obligation of courts to provide reasoned judgments.[22]

AI systems used as assistive risk assessment tools are only as fair as the data on which they are trained. When fed historical data embedded with structural biases, these systems are prone to replicating and even amplifying those injustices. The phenomenon of the "feedback loop" further exacerbates the discriminatory potential of AI-driven judicial systems. When sentencing algorithms are trained on biased historical data, they can disproportionately impose harsher penalties on certain demographic groups. As these biased precedents are continuously fed back into the system for retraining,[23] they reinforce and perpetuate existing discriminatory patterns.[24]

Unlike algorithms, human judges can identify and rectify errors, prevent the same mistakes from being repeated in future adjudications, and be held accountable for discriminatory practices.[25] This danger is well illustrated in the case of *State of Kansas v. John Keith Walls* (2017), where the appellate court held that the defendant must be granted full access to the LSI-R (Level of Service Inventory-Revised) assessment, which the lower court had relied upon to determine the conditions of his probation. Denying the defendant access to this assessment prevented him from disputing the accuracy of information that played a critical role in the adjudication,[26] thereby violating his constitutional right to procedural due process.

By citing the case *Kansas v. Easterling*, the court concluded that the district court's refusal to provide the complete LSI-R report violated the defendant's constitutional right to

20 Recommendation CM/Rec(2020)1 of the Committee of Ministers to member States on the Human Rights Impacts of Algorithmic Systems (8 April 2020) Preamble, para 11 <Https://Search.Coe.Int/Cm?I=09000016809e1154> Accessed 29 April 2025.

21 Charter of Fundamental Rights of the European Union [2012] OJ C 326/391, art 47.

22 Convention for the Protection of Human Rights and Fundamental Freedoms (4 November 1950) [1955] UNTS 213/222, arts 6, 13, 14 and 45.

23 Justice GC Martin, 'How Far has Technology Invaded the Criminal Justice System?' (ANZELA Legal Studies Teachers' Conference, Brisbane, 11 May 2018) 20 <https://www.sclqld.org.au/catalogue/records/89130> accessed 5 May 2025.

24 European Union Agency for Fundamental Rights, *#BigData: Discrimination in data-Supported Decision Making* (FRA 2018) <https://fra.europa.eu/en/publication/2018/bigdata-discrimination-data-supported-decision-making> accessed 5 May 2025.

25 Frank Pasquale and Glyn Cashwell, 'Prediction, Persuasion, and the Jurisprudence of Behaviourism' (2018) 68(1) University of Toronto Law Journal 66. doi:10.3138/utlj.2017-0056. See also: Lord Sales, 'Algorithms, Artificial Intelligence and the Law' (2020) 25(1) Judicial Review 46. doi:10.1080/10854681.2020.1732737.

26 *State of Kansas v John Keith Walls* no 116027 [2017] Kan Ct App.

procedural due process during the sentencing stage of the criminal proceedings.[27] Such risks show how even assistive AI can compromise fairness when defendants cannot understand or contest algorithmic reasoning.

3.4. Procedural AI in Court Administration

AI is also increasingly used in procedural roles, such as managing evidence, facilitating e-discovery, scheduling hearings, and providing translation or interpretation. While these applications appear less controversial, they directly affect the right to effective participation in proceedings. For instance, effective participation, as emphasised consistently by the ECtHR, involves more than physical presence; it requires that the accused fully comprehend, respond to, and contest the proceedings. If an AI translation system fails to provide accurate interpretation, or if automated scheduling denies adequate preparation time, the fairness of the trial is compromised. Even seemingly minor procedural issues, such as inadequate courtroom acoustics,[28] can impede participation. Procedural AI must therefore be critically evaluated to ensure that its efficiency gains do not come at the expense of defendants' rights.

3.5. Fully Autonomous AI ("Robot Judges")

The most serious challenges arise when AI is deployed as a fully autonomous adjudicator, replacing human judicial discretion. While human judges are entrusted with evaluating factors such as an offender's intent, remorse, and socio-personal circumstances,[29] AI systems are inherently devoid of emotional intelligence and contextual sensitivity.[30] By relying exclusively on quantitative metrics and pre-programmed logic,[31] such systems risk reducing the rich complexity of human conduct into inflexible algorithmic determinations.[32] For instance, an AI judge could impose an identical sentence on a coerced, first-time juvenile offender and a habitual adult recidivist, merely because the statutory elements of their offences align.[33] This mechanistic approach, lacking the capacity to discern the moral gravity or mitigating factors of each case, not only generates

27 *State of Kansas v David E Easterling* no 100,454 [2009] 213 P.3d 418 Kan Sup Ct.

28 Aleš Završnik, 'Criminal Justice, Artificial Intelligence Systems, and Human Rights' (2020) 20 ERA Forum 576. doi:10.1007/s12027-020-00602-0.

29 Richard Susskind, *Online Courts and the Future of Justice* (OUP2019) 206-7.

30 Benjamin Alarie, Anthony Niblett and Albert H Yoon, 'How Artificial Intelligence will Affect the Practice of Law' (2018) 68(1) University of Toronto Law Journal 108-9. doi:10.3138/utlj.2017-0052.

31 Australian Government, *Automated Assistance in Administrative Decision Making: Better Practice Guide* (Office of the Privacy Commissioner 2007) 4.

32 Robert J Condlin, 'Online Dispute Resolution: Stinky, Repugnant, or Drab' (2017) 18(3) Cardozo Journal of Conflict Resolution 723.

33 Isaac Taylor, 'Justice by Algorithm: The Limits of AI in Criminal Sentencing' (2023) 42(3) Criminal Justice Ethics 193. doi:10.1080/0731129X.2023.2275967.

disproportionate and potentially unjust outcomes but also undermines judicial discretion, proportionality, and substantive equality before the law.

The principle of judicial independence is also directly threatened by fully autonomous adjudication. Robot judges can inadvertently shift discretion from judges to engineers and programmers who design these systems, thereby hollowing out the independence of the judiciary. In such scenarios, the tribunal is no longer "independent" in substance, even if formally constituted under law. The independence and neutrality of verdicts rendered by robot judges can be jeopardised by even minor changes in the datasets on which they rely; a slight modification by a programmer could entirely alter the outcome of a case. Such vulnerability undermines the very concept of an impartial and independent tribunal.[34]

A particularly pressing concern is the absence of explainability in algorithmic decision-making. AI tools often function as opaque "black boxes",[35] generating outcomes that are neither transparent nor comprehensible to defendants or their legal counsel.[36] This deficiency contravenes the core principles of adversarial proceedings and the equality of arms by placing the defence at a marked disadvantage.[37] Judgments rendered by robot judges risk violating Article 45 of the ECHR, which mandates that "reasons shall be given for judgments as well as for decisions declaring applications admissible or inadmissible." If a convicted person cannot comprehend the *ratio decidendi*, the legal reasoning underpinning the judgment, they are effectively deprived of the opportunity to exercise their right of appeal.[38] This directly threatens Article 2 of Protocol No. 7 of the ECHR, which guarantees that "everyone convicted of a criminal offence by a tribunal shall have the right to have his conviction or sentence reviewed by a higher tribunal." Without a clear understanding of how and why a decision was reached, the exercise of this right becomes illusory, eroding one of the fundamental safeguards of the criminal justice system.

Courts occupy a uniquely sensitive role in upholding the rule of law and protecting fundamental rights. Unlike AI applications in commercial or administrative domains, judicial AI must operate in strict conformity with the constitutional guarantees enshrined

34 *Hermi v Italy* App no 18114/02 (ECtHR, 18 October 2006).

35 Ashley Deeks, 'The Judicial Demand for Explainable Artificial Intelligence' (2019) 119(7) Columbia Law Review 1833.

36 Monika Zalnieriute and Felicity Bell, 'Technology and Judicial Role' in Gabrielle Appleby and Andrew Lynch (eds), *The Judge, the Judiciary and the Court: Individual, Collegial and Institutional Judicial Dynamics in Australia* (CUP 2021) 116. doi:10.1017/9781108859332.

37 Council of Europe MSI-NET, 'Study on the Human Rights Dimensions of Automated Data Processing Techniques (in Particular Algorithms) and Possible Regulatory Implications' (MSI-NET(2016)06 rev3 FINAL, 6 October 2017) 10-1 <https://rm.coe.int/study-hr-dimension-of-automated-data-processing-incl-algorithms/168075b94a> accessed 30 April 2025.

38 Harry Surden, 'The Ethics of AI in Law: Basic Questions' in Markus D Dubber, Frank Pasquale and Sunit Das (eds), *The Oxford Handbook of Ethics of AI* (online edn, Oxford Academic 2020) 730-2. doi:10.1093/oxfordhb/9780190067397.013.46.

in regional legal frameworks.[39] The deployment of AI in this context, where decisions can directly impact fundamental rights and judicial independence, demands legal instruments that extend beyond general-purpose technological governance.[40] Notably, empirical data from the AI on Trial project indicates that 46 disputes involving the use of AI technologies across various sectors have already reached European courts.[41] In some instances, overly restrictive or innovation-averse judgments have risked stifling the development of beneficial AI tools,[42] including those designed for legal research, document management, and procedural efficiency. These developments highlight the urgent need for a coherent, robust legal framework to govern the use of AI across all sectors, and particularly within the judiciary.

3.6. EU AI Act (2024) and Soft Laws

The recent EU AI Act, the first comprehensive regulation on AI, adopts a structured risk-based regulatory model, under which AI systems intended for use in the administration of justice are designated as "high-risk".[43] This classification is not arbitrary; it reflects the recognition within the Act that such systems can produce flawed predictions,[44] introduce biases, and even generate misleading[45] or hallucinated content[46] when applied to legal reasoning or case-specific recommendations.

39 Paweł Marcin Nowotko, 'AI in Judicial Application of Law and the Right to a Court' (2021) 192 Procedia Computer Science 2220. doi:10.1016/j.procs.2021.08.235.

40 Giulia Gentile, 'Trial by Artificial Intelligence: How Technology Is Reshaping Our Legal System' (*LSE - London School of Economics and Political Science*, 8 September 2023) <https://blogs.lse.ac.uk/politicsandpolicy/trial-by-artificial-intelligence-how-technology-is-reshaping-our-legal-system/> accessed 13 May 2025.

41 Isadora Valadares Assunção, 'Beyond Regulation: What 500 Cases Reveal about the Future of AI in the Courts' (*TechPolicy Press*, 20 May 2025) <https://www.techpolicy.press/beyond-regulation-what-500-cases-reveal-about-the-future-of-ai-in-the-courts/> accessed 21 May 2025.

42 Neel Guha, Peter Henderson and Diego A Zambrano, 'Gamesmanship in Modern Discovery Tech' in David Freeman Engstrom (ed), *Legal Tech and the Future of Civil Justice* (CUP 2023) 112. doi:10.1017/9781009255301.008.

43 Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 Laying Down Harmonised Rules on Artificial Intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), para 26 <http://data.europa.eu/eli/reg/2024/1689/oj> accessed 30 April 2025.

44 ibid, para 61.

45 *Mark Walters v OpenAI* no 23-A-04860-2 [2025] Ga Super Ct.

46 *Mata v Avianca Inc* no 22-CV-1461 [2023] 678 F Supp. 3d 443 SDNY. See also: James E Dority, Christian E Mammen and Jill Rothstein, 'A "Brief" Hallucination by Generative AI Can Land You in Hot Water' (*Mondaq*, 15 June 2023) <https://www.mondaq.com/unitedstates/new-technology/1329860/a-brief-hallucination-by-generative-ai-can-land-you-in-hot-water> accessed 22 May 2025.

These concerns are not merely technical; they implicate foundational legal principles such as legal certainty, procedural fairness, and the right to a fair trial (as mentioned above). By explicitly acknowledging the serious impact judicial AI can have on democratic institutions and individual rights, the regulation signals that the administration of justice requires heightened vigilance where automation is introduced.[47]

In doing so, the Act draws an important conceptual line between AI tools that influence judicial decision-making and those that serve administrative or ancillary purposes. AI systems that assist in the interpretation of facts, the application of law, or the adjudication of disputes—whether in formal courts or ADR mechanisms—are subjected to greater regulatory oversight, particularly when their outputs bear legal consequences. This distinction reflects a principled commitment to preserving human discretion within the judicial process.[48]

The regulation appears to endorse the use of AI as a supportive instrument, but not as a surrogate for judicial conscience or interpretive reasoning.[49] Notably, the Act exempts systems designed solely for administrative tasks, such as anonymisation or internal document handling, from the high-risk category, demonstrating regulatory proportionality and avoiding undue constraint on harmless innovation.[50]

Moreover, the AI Act explicitly embodies the normative ethos of earlier soft law instruments such as the EDDRP,[51] the CEPEJ-AIAB guidelines, and the recommendations of the EU AI-HLEG,[52] despite their non-binding nature. Although these bodies operate independently, they converge around key ethical principles applicable to high-risk AI systems, particularly those deployed in the justice sector.

The principle of human agency and oversight, consistently emphasised in soft law frameworks, is mirrored in the AI Act's requirement that final legal determinations remain within the remit of human judges. By mandating human oversight, the AI Act acknowledges that judicial independence is not merely formal; it is functional and interpretive, demanding

47 Christoph K Winter, 'The Challenges of Artificial Judicial Decision-Making for Liberal Democracy' in Piotr Bystranowski, Bartosz Janik and Maciej Próchnicki (eds), *Judicial Decision-Making: Economic Analysis of Law in European Legal Scholarship* (Springer Cham 2022) 179. doi:10.1007/978-3-031-11744-2_9.

48 Socol de la Osa and Remolina (n 13) e59-21.

49 Benjamin Minhao Chen, Alexander Stremitzer and Kevin Tobia, 'Having Your Day in Robot Court' (2022) 36(1) Harvard Journal of Law & Technology 168.

50 Artificial Intelligence Act (n 43) para 61.

51 European Declaration on Digital Rights and Principles for the Digital Decade (15 December 2022) <https://digital-strategy.ec.europa.eu/en/library/european-declaration-digital-rights-and-principles> accessed 30 April 2025.

52 High-Level Expert Group on Artificial Intelligence, *Ethics Guidelines for Trustworthy AI* (European Commission 2019) 26-31 <https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai> accessed 30 April 2025.

sustained cognitive engagement from the judge.[53] Overreliance on AI-generated recommendations risks diminishing the judge's active role in legal interpretation and could, over time, degrade the very faculties upon which just adjudication depends.[54]

Thus, the hybrid adjudication model endorsed by the AI Act—a collaborative interface between human judgment and algorithmic assistance—aims not only to safeguard legality but also to preserve public confidence in the judiciary.[55] A first-ever international legally binding treaty on AI under the Council of Europe has already been signed by 46 countries.[56]

3.7. International Legal Instruments

Global soft law instruments play a crucial role in the governance of AI, complementing hard-law frameworks. Though non-binding, these principles have significantly informed legislative agendas and regulatory discourse, particularly within jurisdictions committed to fundamental rights, democratic governance, and responsible innovation.

A widely accepted framework outlines five key principles that underpin the concept of trustworthy AI.[57] From a judicial perspective, these principles collectively form a normative foundation that complements European regulatory instruments. The emphasis on transparency and explainability addresses the legal need to understand how AI systems reach decisions. By promoting human oversight, the framework safeguards judicial independence amid increasing automation. The principle of robustness and accountability principles further advocate traceability and risk assessments to uphold fairness. Together, the OECD principles serve as a coherent ethical blueprint, reinforcing the broader international consensus around the responsible use of AI.

Another international framework presents ten core principles that demonstrate an effort to embed human rights, sustainability, and democratic accountability into the full lifecycle of AI systems.[58] Even though these recommendations are non-binding, they establish universally accepted criteria for the use of AI in an ethical manner, especially in the judicial sector, where the use of technology must respect fundamental human rights. Of particular importance is the principle of proportionality and the mandate to "do no harm," which

53 Michael E Donohue, 'A Replacement for Justitia's Scales? Machine Learning's Role in Sentencing' (2019) 32(2) Harvard Journal of Law & Technology 672.

54 Cofone (n 6) 7.

55 Chen, Stremitzer and Tobia (n 49) 163.

56 'US, Britain, EU to Sign First International AI Treaty' (*Reuters,* 6 September 2024) <https://www.reuters.com/technology/artificial-intelligence/us-britain-eu-sign-agreement-ai-standards-ft-reports-2024-09-05/> accessed 21 May 2025.

57 OECD, *Recommendation of the Council on Artificial Intelligence* (OECD/LEGAL/0449, OECD Legal Instruments 2025) 8-9 <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0449> accessed 21 May 2025.

58 UNESCO, *Recommendation on the Ethics of Artificial Intelligence* (SHS/BIO/PI/2021/1, UNESCO 2022) 20-3 <https://unesdoc.unesco.org/ark:/48223/pf0000381137> accessed 21 May 2025.

echoes the European risk-based regulatory approach by requiring that AI uses remain strictly necessary to achieve legitimate objectives.

Similarly, the emphasis on human oversight and determination reinforces the imperative that automated systems must never substitute for human judicial discretion but rather remain subordinate to it. In judicial contexts, this ensures that the legitimacy of decisions remains rooted in legal reasoning rather than algorithmic inference. Transparency, explainability, and accountability also form core elements of the UNESCO framework. These principles are especially salient for courts, as they ensure that litigants can understand, interrogate, and, where necessary, challenge AI-influenced outcomes, an essential safeguard for preserving adversarial proceedings and the right to an effective remedy and trial.

Moreover, the Recommendation's insistence on fairness and non-discrimination reflects the growing awareness that AI systems can entrench or amplify structural biases if left unchecked, particularly in areas such as criminal sentencing, bail, and asylum determinations. The inclusion of sustainability as an evaluative criterion further expands the normative scope of AI ethics, underscoring the responsibility of AI actors to consider not only immediate harms but long-term legal and societal consequences.

4 CONCLUSIONS

Undoubtedly, AI has emerged as a powerful tool for enhancing judicial efficiency, and many jurisdictions have begun integrating AI into courts, primarily in supportive and assistive roles. While these applications show significant potential, they also present considerable legal and procedural challenges. Even when AI is used in an assistive capacity—particularly in tasks such as natural language processing (NLP) and generative AI—issues remain, including the production of inaccurate or legally misleading information. Although human judges can correct such errors, their recurring nature highlights the current fragility and limitations of AI systems.

The risks posed by AI differ depending on its role. In an assistive capacity, AI can support judicial decision-making, provided human oversight, transparency, and interpretability are maintained. In contrast, the deployment of AI in a fully autonomous capacity raises substantial legal concerns. Autonomous AI decision-making could compromise core principles of European law, including the right to a fair trial, judicial independence, the delivery of reasoned judgments, the right to appeal, and principles such as transparency, non-discrimination, and equality before the law.

These risks render the full replacement of human judges by AI both problematic and potentially inconsistent with the rule of law—although future improvements in AI design, explainability, and regulatory oversight may mitigate some of these concerns. Current frameworks, including the EU AI Act, still lack clear guidance for judicial actors on how to

integrate AI outputs into decision-making responsibly. This ambiguity creates gaps in algorithmic accountability, explainability, and procedural fairness.

To address these gaps, judicial councils and legal institutions should establish comprehensive guidelines defining when, and to what extent, AI-generated information may be relied upon in courts. Until AI systems can consistently meet the standards of legal reasoning, accountability, and human dignity, their role in adjudication should remain strictly assistive. Fully autonomous AI decision-making, if pursued at all, should be approached cautiously, with risks carefully managed.

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АНОТАЦІЯ УКРАЇНСЬКОЮ МОВОЮ

Дослідницька стаття

ШТУЧНИЙ ІНТЕЛЕКТ У СУДАХ ТА ВИРІШЕННІ СПОРІВ: ВИКЛИКИ ТА МОЖЛИВОСТІ

Мугаммад Кадір Ашраф

АНОТАЦІЯ

Вступ. *Чи можна використовувати ШІ у судовому процесі без шкоди для правосуддя? Хоча багато хто підтримує потенціал ШІ для підвищення ефективності судової системи, залишаються побоювання щодо його використання в автономному ухваленні рішень та щодо ризиків, які це створює для основоположних прав. Це дослідження оцінює трансформаційний потенціал штучного інтелекту в судовому процесі та аналізує правові проблеми, пов'язані з використанням ШІ в різних сферах, зокрема його допоміжну роль, процесуальні функції та більш суперечливе повністю автономне судочинство. У ньому також досліджується наявна правова база та регуляторні заходи, особливо увагу було звернено на Акт ЄС про ШІ, щоб оцінити, як можна регулювати ШІ, задля забезпечення балансу між ефективністю та захистом прав людини і верховенством права.*

Методи. *У цій статті було використано доктринальний підхід у методології дослідження, проведено ретельний аналіз першоджерел, зокрема Акту ЄС про штучний інтелект, Європейської конвенції з прав людини (ЄКПЛ) та судової практики в юрисдикціях США та Китаю. Крім того, у дослідженні було використано порівняльно-правовий аналіз для вивчення подібностей та відмінностей у регулюванні ШІ, судовій практиці та захисті прав людини в цих юрисдикціях. Було застосовано системний правовий метод під час аналізу Акту ЄС про ШІ у поєднанні з положеннями ЄКПЛ та відповідною судовою практикою для оцінки ширшої правової та регуляторної бази, що застосовується до ШІ у судовому процесі. Вторинні джерела, такі як статті в наукових журналах, книги, дисертації, доповіді на конференціях, газетні статті, звіти та блоги, були критично оцінені за допомогою тесту CRAAP. Нарешті, було застосовано критичний правовий метод для оцінки етичних, процедурних та правозахисних наслідків впровадження ШІ у судовому процесі.*

Результати та висновки. *Результати цього дослідження підтверджують використання ШІ як допоміжної функції в судовому процесі, а не як повністю автономного органу, що ухвалює рішення. Судочинство за допомогою ШІ може бути посилено завдяки надійним етичним та процесуальним гарантіям, зокрема обов'язковому людському контролю, підвищеній прозорості та покращенню інтерпретації алгоритмічних рішень. Такі заходи можуть зменшити ризики, пов'язані зі справедливістю, упередженістю та руйнуванням судової дискреції, виявлені в повністю автономних системах. Коли інструменти штучного інтелекту функціонують виключно як допоміжні, а не як авторитетні суб'єкти, занепокоєння*

щодо порушень права на справедливий суд, незалежність судової влади та ефективну участь значно знижуються. Зрештою, легітимність ШІ в ухваленні рішень у суді залежить не стільки від його самої присутності, скільки від того, як він розроблений, регулюється та сприймається як судовою системою, так і громадськістю. Ґрунтуючись на цих висновках, це дослідження пропонує конкретні рекомендації для судових установ, щоб забезпечити підвищення ефективності ШІ без шкоди для правосуддя.

Ключові слова. *ШІ в ухваленні судових рішень, алгоритмічне правосуддя у судах, управління ШІ, права людини та регулювання ШІ, ШІ та доступ до правосуддя, ШІ та правові системи.*

ABSTRACT IN ARABIC

مقال بحثي

الذكاء الاصطناعي في المحاكم وتسوية المنازعات: التحديات والفرص

محمد قدير أشرف

الملخص

خلفية الدراسة: *هل يمكن توظيف الذكاء الاصطناعي في عملية الفصل القضائي دون الإضرار بمبدأ العدالة؟ في الوقت الذي يؤيد فيه كثيرون قدرة الذكاء الاصطناعي على تحسين كفاءة العمل القضائي، ما تزال المخاوف قائمة بشأن استخدامه في اتخاذ القرارات بشكل مستقل وما قد يترتب على ذلك من مخاطر تمس الحقوق الأساسية. يقيّم هذا البحث الإمكانات التحولية للذكاء الاصطناعي في القطاع القضائي، ويحلل التحديات القانونية المرتبطة باستخدامه في أدوار متعددة، تشمل المساعدة الإجرائية والوظائف التقنية، إضافة إلى الدور الأكثر جدلاً المتعلق بالفصل القضائي الذاتي بالكامل. كما يستعرض البحث الأطر القانونية القائمة والاستجابات التنظيمية، مع تركيز خاص على قانون الذكاء الاصطناعي الأوروبي، بهدف تقييم كيفية تنظيم هذه التقنيات بما يحقق التوازن بين الكفاءة من جهة، وحماية حقوق الإنسان وسيادة القانون من جهة أخرى.*

المنهجية: *اعتمد هذا البحث منهجًا فقهيًا يقوم على تحليل شامل للمصادر الأساسية، بما في ذلك قانون الاتحاد الأوروبي للذكاء الاصطناعي، والاتفاقية الأوروبية لحقوق الإنسان، والأحكام القضائية الصادرة في الولايات المتحدة والصين. إضافة إلى ذلك، استخدمت الدراسة منهج المقارنة القانونية لتحليل أوجه التشابه والاختلاف في تنظيم الذكاء الاصطناعي والممارسات القضائية وضمانات حقوق الإنسان عبر*

هذه النظم القانونية. وقد تم تطبيق منهج قانوني منهجي من خلال تحليل قانون الذكاء الاصطناعي الأوروبي جنبًا إلى جنب مع أحكام الاتفاقية الأوروبية لحقوق الإنسان والاجتهادات القضائية ذات الصلة بهدف تقييم الإطار القانوني والتنظيمي الأشمل الذي يحكم استخدام الذكاء الاصطناعي في عملية الفصل القضائي. كما جرى تقييم المصادر الثانوية، بما في ذلك المقالات العلمية والكتب والرسائل الجامعية وأوراق المؤتمرات والمقالات الصحفية والتقارير والمدونات، وفق اختبار CRAAP. وفي النهاية، طُبّق منهج قانوني نقدي لتقدير الأبعاد الأخلاقية والإجرائية وتأثيرات الذكاء الاصطناعي على حقوق الإنسان عند توظيفه في صنع القرار القضائي.

النتائج والاستنتاجات: *تؤكد نتائج هذا البحث جدوى توظيف الذكاء الاصطناعي في دور مساعد ضمن عملية الفصل القضائي، بدلاً من الاعتماد عليه كصانع قرار مستقل بشكل كامل. ويمكن تعزيز فعالية هذا الدور المساعد من خلال وضع ضمانات أخلاقية وإجرائية قوية تشمل الإلزام بالرقابة البشرية، ورفع مستويات الشفافية، وتحسين قابلية تفسير القرارات الخوارزمية. تسهم هذه التدابير في الحد من المخاطر المتعلقة بالإنصاف والتحيز وتراجع السلطة التقديرية للقاضي، وهي المخاطر التي ترتبط بالأنظمة القائمة على الاستقلالية الكاملة. وعندما تعمل أدوات الذكاء الاصطناعي بوضوح كوسائل دعم لا كجهات ذات سلطة تقريرية، تنخفض بدرجة كبيرة المخاوف المرتبطة بانتهاك الحق في محاكمة عادلة واستقلال القضاء وفعالية مشاركة الأطراف. وفي نهاية المطاف، تعتمد شرعية استخدام الذكاء الاصطناعي في صنع القرار داخل قاعات المحاكم على كيفية تصميمه وتنظيمه وصورة استخدامه لدى السلطة القضائية والجمهور، أكثر مما تعتمد على مجرد وجوده. واستنادًا إلى هذه النتائج، يقدم هذا البحث توصيات عملية للمؤسسات القضائية لضمان أن يسهم الذكاء الاصطناعي في تعزيز الكفاءة دون المساس بالعدالة.*