

Use of Artificial Intelligence in the Judiciary of the People's Republic of China

Grzegorz Borkowski

Wroclaw University of Economics and Business

e-mail: grzegorz.borkowski@ue.wroc.pl

ORCID: [0009-0002-9189-2747](https://orcid.org/0009-0002-9189-2747)

© 2024 Grzegorz Borkowski

This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/>

Quote as: Borkowski, G. (2024). Use of Artificial Intelligence in the Judiciary of the People's Republic of China. *Business Informatics. Informatyka Ekonomiczna*, 1-2(67-68), 127-139.

DOI: [10.15611/ie.2024.1-2.13](https://doi.org/10.15611/ie.2024.1-2.13)

JEL: K42, C45, O33

Abstract

Aim: The article analyses the application of artificial intelligence (AI) in the judiciary of the People's Republic of China, focusing on "smart courts" and their functionalities, such as data analysis, speech recognition, and automated judgment generation. It also discusses challenges, including the "black box" problem and accountability for errors.

Methodology: The analysis includes a case study of the FITS (Full-Process Intelligent Trial System) and other examples of AI implementation in the Chinese judiciary, such as ODR platforms. The study also considers the historical context of AI technology development in law, providing a broader perspective on the Chinese solutions.

Results: AI enhances judicial efficiency by streamlining processes and improving citizens' access to justice. However, excessive reliance on AI poses risks, such as reducing the role of judges, lack of algorithmic transparency, and data protection issues.

Implications and recommendations: Implementing AI in the Polish judiciary requires caution, balancing automation and human oversight, and ensuring data protection and technological transparency.

Originality/value: The article offers a unique analysis of the Chinese judicial system and its technologies, providing valuable insights for countries planning to digitalise their judicial systems.

Keywords: competent courts, AI, judiciary, China, digitalisation

1. Introduction

In October 2024, the Ministry of Digital Affairs published a document titled *The Digitalisation Strategy of State*, outlining a plan for the country's digital transformation over the next decade (Ministerstwo Cyfryzacji, 2024). One of the strategy's key objectives is to enhance the functioning of the judiciary and increase its transparency. Among the proposed solutions is the implementation of artificial intelligence-based tools to support the creation of clear and accessible legal frameworks. Similar issues are addressed in the report "Ensuring the Effective Functioning of the Judiciary" which resulted from an audit conducted by the Supreme Audit Office (Najwyższa Izba Kontroli, NIK) and was published in July 2024 (Najwyższa Izba Kontroli, 2024). The report emphasises, among other findings, that citizens require an efficient and transparent judicial system.

Although neither the Strategy nor the NIK report proposes the comprehensive implementation of AI in the judiciary, such technologies have been successfully adopted internationally. A notable example is the People's Republic of China, where so-called "smart courts" have been developed to enable the automated resolution of legal disputes between citizens. The Supreme People's Court, the highest judicial authority in China, aims to equip all courts nationwide with AI systems by 2025 and achieve full operational functionality of these solutions by 2030 (Supreme People's Court, 2022).

This article analyses the AI systems and technologies employed in the Chinese judicial system, as China is widely recognised as the country implementing AI in this domain on the most significant scale. Furthermore, it examines whether introducing similar solutions would be feasible in Poland.

2. Literature Review

2.1. Pioneering Research on the Use of Artificial Intelligence in Judicial Systems

The use of artificial intelligence (AI) in the judiciary is a concept with a long tradition, dating back to the 1970s. As early as 1970, an article titled "Some Speculation About Artificial Intelligence and Legal Reasoning" was published, in which a lawyer and a computer scientist proposed an interdisciplinary approach combining computer science and law to explore the potential of simulating legal reasoning processes through computers (Buchanan & Headrick, 1970). The article highlighted limitations stemming from flawed assumptions in both fields: lawyers predominantly viewed computers as data storage and retrieval tools. In contrast, computer scientists reduced law to a set of simplistic rules. The authors argued for developing more complex models that could account for the intricacies and context of legal processes.

A decade later, the study "Mathematical Models for Legal Prediction" detailed three primary modelling techniques (linear models, catastrophe models, and the nearest neighbour algorithm) and their potential for predicting judicial outcomes (Keown, 1980). The author demonstrated that mathematical models could achieve accuracy comparable to expert legal forecasts, advocating for an interdisciplinary perspective on legal analysis that could significantly influence future research and applications of predictive analytics in law.

The 1980s saw an intensification of research on AI in the legal context. The article "The Potential of Artificial Intelligence to Help Solve the Crisis in Our Legal System" examined how AI might support the American legal system to mitigate its crisis (Berman & Hafner, 1989). This work presented a pioneering view on the potential of AI to enhance the accessibility and fairness of law, particularly in light of evolving social norms and economic demands. Meanwhile, Susskind (1986) in the publication "Expert Systems in Law: A Jurisprudential Approach to Artificial Intelligence and Legal Reasoning" discussed the application of expert systems in law from the perspective of jurisprudence and artificial intelligence. Susskind argued that effective AI tools in law must integrate both heuristic practical knowledge and formal theoretical knowledge derived from legal theory. He emphasised the necessity of combining

these two types of knowledge as the foundation for efficient expert systems – a point previously underappreciated.

The examples cited demonstrate that research on applying artificial intelligence in law has a long history and is not merely a contemporary phenomenon.

2.2. Implementing the Concept of Smart Courts in the People's Republic of China

The concept of competent courts, popularised in 2016, is a component of a broader programme of judicial informatisation in China, which has been under development for two decades but gained significant momentum after 2012 as part of Xi Jinping's reforms (Rosenzweig et al., 2017). Since assuming power, Xi Jinping has sought to strengthen party control over all aspects of social life, including the judiciary. Under this strategy, extensive reforms are needed to improve court efficiency and transparency while increasing judicial discipline (Papagiannas & Junius, 2023).

In 2014, as part of the "rule of law" policy (*yifa zhiguo*), Chinese judicial reforms included the introduction of lifelong accountability for judicial decisions, the professionalisation of judicial personnel, and mechanisms to ensure the consistency of court rulings (Papagiannas & Junius, 2023).

In January 2016, China's Supreme People's Court proposed the creation of competent courts, and Chief Justice Zhou Qiang used the term "smart court" (*zhahui fayuan*) in his 2016 annual report (H. Wang, 2023). The plan envisioned courts leveraging advanced digital applications for comprehensive monitoring of case proceedings and enforcement, standardising judicial procedures, and building by the end of 2017 a comprehensive, mobile, transparent, secure, and reliable information system.

In 2017, the Chinese State Council announced the Artificial Intelligence Development Plan (AIDP) which set long-term goals for AI development in China through 2030. The document proposed establishing an integrated judicial data platform to monitor court processes, personnel, and data dynamically. AI applications were also promoted for evidence collection, case analysis, and legal document processing to achieve complete digital intelligence in courts and enhance their operations (N. Wang & Tian, 2023).

Notably, the concept of competent courts extends beyond AI, encompassing broader technological advancements. However, implementing innovations under this program is left to individual courts, leading to varying technological solutions across different judicial units.

Developing Online Dispute Resolution (ODR) platforms in e-commerce played a significant preparatory role in implementing competent courts in China. As early as 2010, the ODR system was initiated on the Taobao platform (part of the Alibaba Group), initially focusing on resolving consumer-seller disputes through human arbitration (Shang & Guo, 2020).

To enhance the sense of fairness and transparency, the Taobao ODR Centre introduced a public arbitration system called the "Alibaba Public Jury," modelled on a jury system (Shang & Guo, 2020). In cases of conflict, the reporting party can choose whether a designated Taobao employee or a jury-like arbitration panel handles the case. Taobao community members can voluntarily apply to serve as jurors, selected based on reputation metrics determined by the Taobao system. For cases put to a vote, decisions are made by a majority vote of the public jury. This solution enables Taobao to manage the large and growing number of disputes effectively. The Taobao ODR model has also served as a prototype for ODR systems on other Chinese online platforms such as WeChat and Didi (Shang & Guo, 2020).

2.3. Hypothesis

Amid growing interest in applying artificial intelligence (AI) within the judiciary, particularly in light of its implementation in the People's Republic of China, this study evaluates the feasibility of adopting similar technologies in the Polish judicial system. The central hypothesis of this analysis is as follows.

Implementing artificial intelligence technologies in the Polish judiciary, modelled on solutions utilised in the People's Republic of China, can significantly enhance the efficiency and accessibility of the

judicial system, provided these solutions are adapted to local legal conditions, data protection standards, and procedural transparency requirements.

This hypothesis is a foundation for further analysis of the feasibility of adapting Chinese solutions – widely regarded as among the most advanced globally in applying AI to the judiciary – to the European context, including Poland.

3. Smart Courts in Practice

3.1. Methodology of the Research

This section discusses the research which analysed the practical applications of artificial intelligence in the judicial system of the People’s Republic of China. Particular attention was given to the FITS (Full-Process Intelligent Trial System), a prime example of advanced AI implementation in this domain, as described in detail by its developers in the article “A Full-Process Intelligent Trial System for Smart Court” (Wei et al., 2022).

The study was conducted according to the following procedure.

The first phase focused on describing the functions of the FITS system. This step provided an overview of the system’s capabilities and intended use cases, highlighting its role in automating and streamlining judicial processes. Subsequently, the technologies and algorithms utilised in the system were analysed. This exploration aimed to provide a deeper understanding of the technological underpinnings and mechanisms driving the operation of AI-based judiciary systems.

3.2. Technological Foundations of the FITS System

During the COVID-19 pandemic, China developed initiatives to transition court proceedings to online platforms. Among these was the FITS (Full-Process Intelligent Trial System), created through collaboration between Zhejiang University, Alibaba Group, and the Supreme People’s Court of Zhejiang. FITS was designed to assist judges at every stage of judicial proceedings (Wei et al., 2022). The system aims to emulate judicial reasoning and support decision-making by integrating methods based on legal knowledge with big data analytics.

The core operational principle of FITS relies on first-order logic and formal legal knowledge, enabling the system to comprehend the legal context and arguments presented by parties and make decisions consistent with the principles of legal application. FITS uses logic-based reasoning and representation of legal knowledge to analyse facts and evidence. Simultaneously, it utilises machine learning and deep learning models to process extensive datasets of legal information, performing tasks such as classification, summarisation, and outcome prediction.

Big data techniques empower the system to identify similar cases and detect patterns in jurisprudence, thereby facilitating predictions of judgments aligned with the principle of “treating similar cases similarly.”

By combining legal reasoning with data analysis, FITS provides comprehensive support to judges throughout the judicial process, from evidence evaluation to generating verdict documents.

3.3. Functions of the FITS System

The FITS system encompasses several advanced functions to support judges throughout the judicial process. These functions align with the sequence of judicial proceedings and the operational workflow of the system.

1. Information extraction

To assist judges in identifying the most critical aspects of a case, the system processes legal documents such as indictments, loan agreements, and court transcripts. It extracts key elements, including parties involved, dates, monetary amounts, essential facts, and evidence. This functionality leverages models like BiLSTM-CRF (Bidirectional Long Short-Term Memory with Conditional Random Fields) and Automatic Speech Recognition (ASR) for efficient and accurate data extraction.

2. Evidence analysis

This involves verifying the evidence's authenticity, legality, and relevance and classifying it into appropriate categories (e.g., loan agreements and guarantees). The system evaluates documents by integrating textual data with visual features, enabling precise classification and assessment of evidentiary value. Optical Character Recognition (OCR) technology converts documents into text. Hierarchical Attention Networks, a form of deep learning, facilitate the classification and legal validation of evidence within its contextual framework.

3. Automatic question generation

The system supports judges by generating procedural and factual questions relevant to the case.

Procedural questions focus on the judicial process, such as identifying parties, generated using Finite State Machines (FSMs) to ensure proper sequencing within legal proceedings.

Factual questions target the specifics of a case, such as circumstances surrounding a debt, based on context analysis and prior dialogues. Neural network attention mechanisms enable the generation of contextually appropriate factual questions.

4. Dialogue summarisation

FITS identifies critical segments of courtroom debates and pinpoints contentious issues between parties. The system extracts fragments that highlight significant disputes by analysing dialogues, allowing judges to grasp key points and arguments quickly. Real-time summarisations facilitate case progress monitoring and decision-making. This process employs multi-task learning models and specialised summarisation algorithms like Dialogue Inspectional Summarisation (DIS).

5. Judgment prediction

The system assists in judicial decision-making by analysing case facts and forecasting potential outcomes based on comparisons with similar cases. FITS integrates legal principles with predictive analytics to assess probable judgments. Combining First-Order Logic with Deep Neural Networks (DNN) ensures that predictions adhere to legal rules while enhancing interpretability.

6. Judgment document generation

After the trial, the system produces a comprehensive, logically coherent, and legally compliant judgment document. This document encapsulates the judge's decision and its legal rationale, integrating key aspects of the case, party arguments, and judicial reasoning. Natural Language Generation (NLG) models, such as Attention and Counterfactual Natural Language Generation (AC-NLG), are employed to construct these documents, ensuring unbiased and contextually accurate outputs through counterfactual mechanisms.

3.4. Applied Technologies

Based on the analysis of the FITS system, the following key technologies can be identified as integral to the functioning of artificial intelligence in judiciary systems.

1. Automatic Speech Recognition (ASR)

ASR converts spoken language into text, enabling real-time transcription of courtroom dialogues and other oral exchanges. This technology facilitates data extraction and analysis. For example, the Supreme Court in Suzhou employs an ASR system developed by iFLYTEK, which boasts a 90% accuracy rate. This system reduces trial durations by 20-30% for more straightforward cases and up to 50% for more complex ones (N. Wang, 2020). The system's ability to recognise 100 different Chinese dialects underscores its adaptability to diverse linguistic environments.

2. Optical Character Recognition (OCR)

OCR transforms scanned documents and images into machine-readable text. Leveraging computer vision, image processing, and machine learning, OCR enables digitising physical documents. The process begins with preprocessing steps such as binarisation, noise removal, and skew correction to enhance text readability. Character segmentation follows, facilitating recognition. Finally, unique features of characters are extracted and mathematically represented, enhancing differentiation. Advanced OCR systems, utilising deep neural networks, recognise complex patterns, significantly improving accuracy and efficiency (Wei et al., 2022).

3. Deep Neural Network (DNN)

DNNs, comprising multiple hidden layers, effectively learn complex patterns from large datasets. In the FITS system, BiLSTM-CRF models are employed for advanced text analysis and information extraction: Bidirectional Long Short-Term Memory (BiLSTM) captures long-term dependencies in text, and Conditional Random Fields (CRF) ensures precise sequence labelling. These models enable FITS to extract key case details, such as parties involved, dates, claims, and evidence categorisation, thereby streamlining document processing and analysis.

4. Natural Language Generation (NLG)

NLG generates coherent and contextually accurate legal documents, including court judgments and justifications. This process involves analysing case facts, claims, and applicable laws to produce structured text. NLG utilises rule-based approaches, statistical models, and neural networks to ensure linguistic and legal accuracy. Challenges include maintaining objectivity, addressing legal language complexity, and accommodating case diversity. In FITS, NLG employs techniques such as AC-NLG (Attention and Counterfactual Natural Language Generation) to generate unbiased, comprehensive justifications (Papagianneas & Junius, 2023).

5. Attention mechanisms

Attention mechanisms, widely used in natural language processing (NLP), focus on key input data segments, improving model efficiency and accuracy. Evidence classification identifies critical features for categorisation; text generation highlights relevant case details for judgment drafting; judgment prediction prioritizes influential arguments affecting judicial outcomes. Claim-aware attention models like AC-NLG enhance interpretability and computational efficiency, optimising intelligent judicial systems (Wei et al., 2022).

6. First Order Logic

FOL serves as a framework for representing legal knowledge in AI systems. It formalises legal rules using logical expressions (e.g., "if...then...") and supports symbolic reasoning. Components: symbols for legal concepts, logical operators (AND, OR, NOT), and quantifiers (\forall for "all," \exists for "exists"). Applications: FOL enables precise rule-building, supports interpretable models, and introduces inductive bias to enhance prediction accuracy. In judiciary applications, it aids in judgment prediction and automates document generation, including legal justifications (Wei et al., 2022).

4. AI Agents in Chinese Research

In addition to significant transformations in the judiciary system, Chinese researchers continue to advance in artificial intelligence. One of the emerging trends in AI research is the development of intelligent agents. AI agents based on LLMs are conceptualised as systems that operate along a spectrum of autonomy and adaptability rather than conforming to a rigid binary classification. Unlike traditional AI agents, which are broadly defined as entities that perceive and act upon their environment, LLM-based agents demonstrate varying degrees of agentic behaviour. Their capabilities depend on factors such as their ability to process and respond to complex environments, operate with minimal user supervision, and leverage advanced system architectures, including tool integration, planning, and dynamic decision-making (Kapoor et al., 2024). The potential applications of AI agents are vast and continuously expanding.

One of the most notable examples of Chinese AI research is the study “Agents on the Bench: Large Language Model Based Multi-Agent Framework for Trustworthy Digital Justice” by Jiang and Yang (2024). This paper introduces AgentsBench, a multi-agent framework leveraging large language models (LLMs) to enhance judicial decision-making by simulating the deliberative processes of a judicial panel. The framework addresses critical challenges in legal AI, particularly transparency, fairness, and explainability, essential for fostering public trust in digital justice systems. AgentsBench consists of multiple LLM-driven agents, each representing a distinct judicial role, such as judges and lay jurors. These agents engage in iterative deliberations, closely replicating real-world judicial procedures involving discussion, debate, and consensus-building. The system is empirically evaluated using the Prison Term Prediction Task, a subset of legal judgment prediction (LJP), applied to real-world Chinese legal cases.

The study “AgentsCourt: Building Judicial Decision-Making Agents with Court Debate Simulation and Legal Knowledge Augmentation” presents AgentsCourt, a multi-agent framework that simulates court proceedings within China’s judicial system, incorporating trial debates, legal resource retrieval, and judge-like decision refinement (He et al., 2024). The framework follows authentic judicial workflows, leveraging SimuCourt, a benchmark dataset of 420 Chinese court rulings covering key case types, and Legal-KB, a large-scale legal knowledge base for AI-powered legal analysis. Empirical evaluations demonstrate that AgentsCourt outperforms state-of-the-art legal AI models, achieving F1 score improvements of 8.6 and 9.1% in legal text generation for first- and second-instance verdicts, respectively. These results highlight the transformative potential of AI-driven judicial reasoning in enhancing legal decision-making in China and on a broader scale.

The research on AI-driven agent systems for judicial decision-making represents a significant breakthrough in the legal domain, demonstrating the potential of large language models to replicate and enhance court proceedings. Frameworks such as AgentsBench and AgentsCourt showcase how AI can simulate judicial deliberation, refine legal decision-making, and improve transparency, fairness, and efficiency in legal processes. With empirical evidence showing superior performance compared to traditional legal AI models, these advancements suggest a future where AI could play a central role in judicial systems. As technology continues to evolve, it is conceivable that judges, lawyers, and other legal professionals may eventually be partially or wholly replaced by AI, reshaping the legal landscape and challenging long-standing notions of human-led justice.

5. AI in European Union: The Judiciary in Terms of Usage and the AI Act

5.1. Provisions of the AI Act

Starting from February 2, 2025, the initial provisions of the AI Act came into effect, aiming to enhance citizen safety and improve workforce competencies in AI systems, which is particularly crucial for the potential use of AI in the judiciary (Regulation (EU) 2024/1689..., Art. 1, p. 5). The AI Act categorises AI

systems into four risk levels: minimal or no risk, limited risk, high risk, and unacceptable risk (Regulation (EU) 2024/1689..., Art. 6, p. 12).

According to the AI Act, systems that autonomously determine judicial rulings are prohibited; however, AI systems designed to support judicial decision-making are permitted. Such systems are high-risk (Regulation (EU) 2024/1689..., Annex III, p. 97). A high-risk system is either one associated with the safety of a product requiring certification or a system operating within one of eight sensitive domains, such as justice, education, or employment, that may significantly impact individuals' rights, health, or safety (Regulation (EU) 2024/1689..., Art. 7, p. 15). Classifying an AI system as high-risk entails compliance with additional legal requirements, including system registration, documentation of its operation, and undergoing a conformity assessment before market deployment (Regulation (EU) 2024/1689..., Art. 43, p. 55).

AI-based systems supporting judicial work, in line with the AI Act, can be utilised for fact research and interpretation through case document analysis, retrieval of relevant information from records, comparison of testimonies and documents, and identification of inconsistencies in materials (Regulation (EU) 2024/1689..., Recital 38, p. 24). They assist in legal interpretation by retrieving applicable legal provisions, analysing similar cases and precedents, identifying related legal regulations, and summarising key rulings (Regulation (EU) 2024/1689..., Art. 50, p. 61). Furthermore, they aid in applying the law to specific facts by suggesting possible interpretations in the context of a given case, identifying similar past cases, and analysing legal arguments. In the context of alternative dispute resolution, they support mediation processes and analyse potential compromise solutions (Regulation (EU) 2024/1689..., Art. 68, p. 83).

5.2. Use of AI in the Judiciary Within the European Union

The European Commission for the Efficiency of Justice (CEPEJ), through the Resource Centre on Cyberjustice and Artificial Intelligence, provides an interactive map illustrating the artificial intelligence (AI) systems implemented in the judiciary across various European Union countries.

Based on this source, Germany emerges as the leading country in AI development within the judiciary. Since 2022, a total of 30 initiatives have been under development in various domains, including Document Search, Review, and Large-scale Discovery; Online Dispute Resolution; Decision Support; Anonymisation and Pseudonymisation; Triaging, Allocation, and Workflow Automation; Recording, Transcription, and Translation and Information and Assistance Services.

At the national level, these initiatives can be categorised based on their functions as follows.

1. Document Processing Systems

- CODEFY – structuring legal documents, particularly those submitted by lawyers.
- ASTRA – assisting judges in analysing extensive civil case files.
- DOKUMENTENERGLEICH – comparing electronic case files for similarities.
- JANO – automating the anonymisation of judgments and decisions.

2. Case-Specific Assistance Systems

- OLGA – analysing and classifying cases related to emissions regulations, including over 13,000 cases associated with the Dieselgate scandal.
- Assistant Judge for Social Courts – supporting social court cases by assisting in case review and drafting judicial decisions.

3. Judicial Support Systems

- JURIS COLLECT – integrating and categorising judicial content and decisions.
- SPEECH RECOGNITION – speech recognition system designed for judges.
- MACHINE TRANSLATION – legal translation tool.
- Structuring and Text Recognition Tool – AI infrastructure designed for mass case analysis.

Most of these systems are in the pilot or beta phase, with some already marked as “functional.” German public institutions are implementing all initiatives. The primary objective of these AI systems is to enhance efficiency, particularly in handling mass litigation and complex legal documentation (CEPEJ, n.d.).

6. Challenges Facing Artificial Intelligence

The automation of judicial processes brings significant benefits. The application of AI enhances court efficiency (Shi et al., 2021), improving citizens' access to justice. AI provides decision-making support and procedural standardisation for court staff, positively influencing institutional functioning, increasing citizen satisfaction, and delivering economic benefits. However, overdependence on technology introduces several challenges, as presented below.

- The “Black Box” Problem. The lack of transparency in AI decision-making algorithms within complex systems creates challenges. These systems learn from historical data, and without complete contextual understanding, they may produce erroneous conclusions in cases where single but critical details determine outcomes (N. Wang, 2020).
- Accountability for Errors. In traditional judicial processes, judges are entirely accountable for rulings. Conversely, when errors arise from AI analyses, accountability becomes ambiguous—should it rest with the judge relying on flawed results or the system developers (Shen, 2024).
- Data Security.
- Citizen data within judicial systems faces external and internal threats and risks. Protecting this data from unauthorised access, including from administrative personnel, requires stringent safeguards (N. Wang, 2020).
- Overreliance on AI. Excessive delegation of judicial responsibilities to AI may lead judges to adopt system recommendations without critical reflection. This could reduce judicial roles to mere executors of AI outputs, potentially compromising judgment quality and undermining public trust in the judiciary (H. Wang, 2023).

7. Prospects for Implementing AI in the Polish Judiciary

As indicated in the introduction, there is a pressing need to reform the Polish judiciary to enhance its efficiency and transparency. Findings from the study suggest that drawing inspiration from solutions implemented in the People's Republic of China could serve as a step toward modernising the Polish judicial system. However, there is a significant disparity between developments in China and those in Europe. In China, humans have increasingly become mere elements confirming and taking responsibility for the system's functioning. Scientific research and technological advancements are progressively limiting human involvement in these processes. Given the rapid development of technology and scientific studies in this field, it is plausible that within a few years, simple judicial matters could be entirely resolved without the intervention of a human judge.

Notably, the work of an AI-driven judicial system could be more efficient, cost-effective, and precise. This, in turn, would mitigate concerns regarding human errors and biases, thereby enhancing the credibility and acceptance of artificial intelligence in the public domain. In contrast, the European approach follows an opposite trajectory, prioritising human involvement as the central element of the system. The prevailing tendency in Europe is to ensure that humans retain full responsibility and oversight over artificial intelligence systems.

7.1. Key Areas for AI Integration in the Polish Judiciary

A crucial component of judicial transformation in Poland would involve digitalisation, including implementing systems such as Optical Character Recognition (OCR) and Automatic Speech Recognition (ASR). Adopting these technologies would facilitate the conversion of judicial documentation into

digital formats, improving the speed and accuracy of data processing. Furthermore, introducing systems automatically retrieving precedents and historical cases based on analysed data could significantly support judges by providing relevant context and comparisons with previously adjudicated cases.

However, the comprehensive implementation of more advanced functionalities, like those offered by systems such as FITS, still raises numerous concerns, particularly regarding security and transparency. Despite their considerable potential, technologies based on deep neural networks and sophisticated attention mechanisms require further research and development to ensure adequate levels of public trust and privacy protection. At present, the widespread deployment of such solutions in Poland or Europe appears to be premature.

Despite limited research interest in Poland, studies like this by Greńczuk and Kęsik (2023) demonstrate that decision modelling notation (DMN) can effectively structure legal decision-making, predict judicial outcomes, and enhance transparency in court proceedings. This approach can potentially increase public trust in the justice system and support its digital transformation through automation and AI-driven decision support.

Given that in Poland the only available systems are those used for the random selection of courts and judges, there is significant potential to enhance the judicial system through technological advancements. By implementing more advanced digital solutions, Poland could significantly improve its judiciary's efficiency, transparency, and reliability. Automation and artificial intelligence could streamline case management, reduce procedural delays, and enhance decision-making processes, ultimately leading to a more effective and modernised legal system.

7.2. Proposed Roadmap for AI Implementation

The proposed roadmap for AI implementation in the Polish judiciary consists of four key stages:

1. Digitization of Documents and Transcriptions – The introduction of OCR and ASR will facilitate the transformation of legal records into machine-readable formats, expediting case processing and document management.
2. AI-Based Legal Translations – AI-driven translation tools will enhance accessibility by enabling efficient multilingual communication, particularly in cases involving international legal frameworks.
3. Automated Case Comparison and Precedent Retrieval – AI will be employed to compare legal disputes with past cases, providing judges with relevant precedents and supporting more consistent rulings.
4. AI-Assisted Verdict Recommendations – As AI advances, it may provide verdict suggestions based on explainable AI (XAI) principles. This phase necessitates minimising the "black box" effect, ensuring judges fully comprehend the rationale behind AI-generated recommendations.

From a regulatory perspective, the European Union's AI Act (Regulation (EU) 2024/1689...) establishes a legal framework for AI applications, ensuring human oversight remains central. According to the AI Act, AI cannot autonomously resolve legal disputes; it may only function as a high-risk decision-support system. Such systems must meet stringent regulatory requirements, ensuring transparency, fairness, and safety. Consequently, any AI integration in the judiciary must comply with these legal obligations, ensuring that the technology enhances judicial processes without compromising fundamental legal principles.

Furthermore, the ultimate goal should be developing AI-driven judicial assistance systems prioritising explainability and fairness. Future AI applications in Poland's judiciary must adhere to the principles of transparent decision-making, ensuring that judges understand and can justify AI-generated recommendations. As AI technology evolves, its role in legal decision-making should remain supportive rather than autonomous, reinforcing the principle of human-centred justice.

It is also important to recognise that artificial intelligence systems employed in China, which form the foundation of their judicial reforms, are part of a broader state-driven strategy within an authoritarian framework. Consequently, their implementation processes differ significantly from those in democratic countries, where concerns over privacy, data security, and accountability for system errors are particularly critical. In this context, while solutions such as those adopted in China may provide an interesting reference point, they should be implemented cautiously, ensuring full transparency and respect for civil rights.

In the Polish scientific community, there is a lack of serious interest in complete automation to explore technological possibilities tailored to the needs of the Polish judiciary. Additionally, cooperation between technology-related and legal communities is necessary to build synergy and ensure that technological advancements align with the requirements of the judicial system.

7.3. Balancing AI Implementation and Human Oversight

Therefore, it is crucial to maintain an appropriate balance between automation and human oversight. The overly rapid integration of modern technologies into the judiciary could minimise the human role in judicial processes, resulting in overly mechanised procedures that overlook the essential elements of reflection, analysis, and empathy, indispensable for delivering fair judgements.

In conclusion, reforming the Polish judiciary through modern technologies should be a well-considered process based on analysing both benefits and potential risks. It will be crucial to strike a balance between innovation and the necessity of maintaining the human element in judicial processes to ensure that the reform does not degrade justice quality but contributes to its improvement and accessibility for citizens.

8. Conclusions

The subject of this study is the analysis of the potential for implementing artificial intelligence-based solutions in the judicial system of the People's Republic of China. The research focuses on the possibilities of utilising these technologies to streamline judicial processes, as supported by available sources. In the context of studies on the adaptation of such solutions within the legal systems of the European Union and Poland, detailed consultations and investigations addressing legal and ethical aspects would be essential.

Implementing a system based on standards and procedures applicable in Poland would require the involvement of legal professionals and consideration of the specificities of local regulations. It is crucial to emphasise that the judiciary constitutes a particularly sensitive area; therefore, successive stages of digitalisation must ensure that the introduced solutions deliver tangible benefits without compromising the rights and interests of citizens.

References

- Berman, D. H., & Hafner, C. D. (1989). The Potential of Artificial Intelligence to Help Solve the Crisis in Our Legal System. *Communications of the ACM*, 32(8), 928-938. <https://doi.org/10.1145/65971.65972>
- Buchanan, B. G., & Headrick, T. E. (1970). Some Speculation About Artificial Intelligence and Legal Reasoning. *Stanford Law Review*, 23(1), 40-62. <https://doi.org/10.2307/1227753>
- CEPEJ. (n.d.). *Resource Centre on Cyberjustice and Artificial Intelligence*. European Commission for the Efficiency of Justice. Retrieved February 13, 2025, from <https://public.tableau.com/app/profile/cepej/viz/ResourceCentreCyberjusticeandAI/AIToolsInitiativesReport?publish=yes>
- Greńczuk, A., & Kęsik, K. (2023.) Application of DMN Notation to Create Legal Rules in the Expert System. In L. Kiełtyka (Ed.), *Wykorzystanie technik informacyjnych w zarządzaniu* (pp. 78-84). Wydawnictwo Politechniki Częstochowskiej.

- He, Z., Cao, P., Wang, C., Jin, Z., Chen, Y., Xu, J., Li, H., Jiang, X., Liu, K., & Zhao, J. (2024). *AgentsCourt: Building Judicial Decision-Making Agents With Court Debate Simulation and Legal Knowledge Augmentation*. arXiv, 2403.02959v3 [cs.CL]. <https://arxiv.org/abs/2403.02959>
- Jiang, C., & Yang, X. (2024). *Agents on the Bench: Large Language Model-Based Multi-Agent Framework for Trustworthy Digital Justice*. arXiv. <https://arxiv.org/abs/2412.18697>
- Kapoor, S., Strobel, B., Siegel, Z. S., Nadgir, N., & Narayanan, A. (2024). *AI Agents That Matter*. arXiv. <https://doi.org/10.48550/arXiv.2407.01502>
- Keown, R. (1980). Mathematical Models For Legal Prediction. *Computer/Law Journal*, 2(1), 829-862. <https://repository.law.uic.edu/cgi/viewcontent.cgi?article=1618&context=ijtpl&httpsredir=1&referer=>
- Ministerstwo Cyfryzacji. (2024). *Strategia Cyfryzacji Państwa. Projekt do konsultacji społecznych*. <https://www.gov.pl/attachment/c8380eb3-fee4-47c5-9eda-b75886888641>
- Najwyższa Izba Kontroli. (2024). *Zapewnienie sprawnego funkcjonowania wymiaru sprawiedliwości*. www.nik.gov.pl/kontrola/P/23/030/
- Papagianneas, S., & Junius, N. (2023). Fairness and Justice Through Automation in China's Smart Courts. *Computer Law & Security Review*, 51, article 105897. <https://doi.org/10.1016/j.clsr.2023.105897>
- 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). (OJ L, 2024/1689, 12.7.2024). <https://eur-lex.europa.eu/eli/reg/2024/1689/oj/eng>
- Rosenzweig, J. (2017). State, Society and the Justice Debate in Contemporary China. In F. Sapio, S. Trevasques, S. Biddulph, E. Nesossi (Eds.), *Justice: The China Experience* (pp. 26-66). Cambridge University Press. <https://doi.org/10.1017/9781108115919.002>
- Shang, C. S., & Guo, W. (2020). The Rise of Online Dispute Resolution-Led Justice in China: An Initial Look. *ANU Journal of Law and Technology*, 1(2), 25-42. <https://ssrn.com/abstract=3702486>
- Shen, R. (2024). Application of Synthetic Data in Artificial Intelligence Trials from the Perspective of Judicial Justice. *Science of Law Journal*, 3(3), 180-192. <https://doi.org/10.23977/law.2024.030324>
- Shi, C., Sourdin, T., & Li, B. (2021). The Smart Court – A New Pathway to Justice in China? *International Journal for Court Administration*, 12(1), article 4. <https://doi.org/10.36745/ijca.367>
- Supreme People's Court. (2022). *Opinions of the Supreme People's Court on Regulating and Strengthening the Applications of Artificial Intelligence in the Judicial Fields*. <https://lawinfochina.com/Display.aspx?LookType=3&Lib=law&Cgid=5145334&Id=40187&SearchKeyword=&SearchKeyword=&paycode=>
- Susskind, R. E. (1986). Expert Systems in Law: A Jurisprudential Approach to Artificial Intelligence and Legal Reasoning. *Modern Law Review*, 49(2), 168-194. <https://doi.org/10.1111/j.1468-2230.1986.tb01683.x>
- Wang, H. (2023). AI and Administration of Justice in China. *Revue Internationale de Droit Pénal*, 94(2), 255-286. <https://cyberjustice.openum.ca/files/sites/102/E-version-RIDP-2023.2-AI-and-administration-of-criminal-justice33-1.pdf>
- Wang, N. (2020). "Black Box Justice": Robot Judges and AI-Based Judgment Processes in China's Court System. In *Proceedings of the 2020 IEEE International Symposium on Technology and Society (ISTAS)*. IEEE. <https://doi.org/10.1109/ISTAS50296.2020.9462216>
- Wang, N., & Tian, M. Y. (2023). "Intelligent Justice": Human-Centered Considerations in China's Legal AI Transformation. *AI and Ethics*, 3(2), 349-354. <https://doi.org/10.1007/s43681-022-00202-3>
- Wei, B., Kuang, K., Sun, C., Feng, J., Zhang, Y., Zhu, X., Zhou, J., Zhai, Y. & Wu, F. (2022). A Full-Process Intelligent Trial System for Smart Court. *Frontiers of Information Technology and Electronic Engineering*, 23(2), 186-206. <https://doi.org/10.1631/FITEE.2100041>

Wykorzystanie sztucznej inteligencji w sądownictwie w Chińskiej Republice Ludowej

Streszczenie

Cel: Artykuł analizuje zastosowanie sztucznej inteligencji (AI) w sądownictwie Chińskiej Republiki Ludowej, koncentrując się na „inteligentnych sądach” i ich funkcjonalnościach, takich jak analiza danych, rozpoznawanie mowy i automatyczne generowanie wyroków. Omawia także wyzwania, w tym problem „czarnej skrzynki” i odpowiedzialność za błędy.

Metodyka: Analiza obejmuje studium przypadku systemu FITS (*Full-Process Intelligent Trial System*) oraz inne przykłady wdrożeń AI w chińskim sądownictwie, takie jak platformy ODR. Praca uwzględnia także kontekst historyczny rozwoju technologii AI w prawie, co pozwala osadzić chińskie rozwiązania w szerszym ujęciu.

Wyniki: AI zwiększa efektywność sądownictwa, usprawniając procesy i dostęp obywateli do wymiaru sprawiedliwości. Jednak nadmierne uzależnienie od AI rodzi ryzyko ograniczenia roli sędziów, braku przejrzystości algorytmów i problemów z ochroną danych.

Implikacje i rekomendacje: Wdrożenie AI w polskim sądownictwie wymaga ostrożności, równowagi między automatyzacją a czynnikiem ludzkim oraz ochrony danych i przejrzystości technologii.

Oryginalność/wartość: Artykuł dostarcza unikalnej analizy chińskiego systemu sądownictwa i jego technologii, oferując wnioski przydatne dla krajów planujących cyfryzację wymiaru sprawiedliwości.

Słowa kluczowe: inteligentne sądy, AI, sądownictwo, Chiny, cyfryzacja
