

# AI Court's Transformation and Reshaping of Traditional Judicial Trial Mode and the Role of Judicial Personnel

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**Abstract:** With the rapid development of artificial intelligence technology, AI courts have gradually become an important innovative model in the judicial field, bringing profound changes and reshaping to traditional judicial trial methods and the roles of judicial personnel. AI courts have significantly improved trial efficiency and consistency of judgment results through intelligent case diversion, automated evidence review, and data-driven judicial decision-making, while achieving standardization and transparency of the trial process. This article analyzes the redefinition of the roles of judges, lawyers, and judicial assistants in AI courts, explores their advantages in efficiency, transparency, and fairness, as well as the challenges they face in terms of technological limitations, ethical controversies, and privacy protection. Finally, this article proposes optimization directions for the future development of AI courts, including deep integration of technology and law, improvement of legal regulatory frameworks, cultivation of composite judicial talents, and enhancement of public trust, in order to promote the widespread application of AI courts in the judicial system and facilitate the realization of social fairness and justice.

## 1. Introduction

With the rapid development of artificial intelligence technology, the judicial field is gradually introducing AI technology to improve trial efficiency, reduce trial costs, and solve many problems in traditional judicial models. AI courts, as a product of the combination of artificial intelligence and justice, are having a profound impact on the traditional judicial trial mode and the role of judicial personnel. This article aims to explore the application of AI courts in the judicial field and their impact on the transformation of traditional judicial systems and the reshaping of the roles of judicial personnel, analyzing their advantages, challenges, and future development directions.

## 2. The Rise and Background of AI Courts

### 2.1. Development of Artificial Intelligence Technology

In recent years, artificial intelligence technology has made breakthrough progress in multiple fields, especially demonstrating powerful capabilities in data processing, pattern recognition, and natural language processing (NLP). These technological advancements provide fundamental support for the intelligent reform in the judicial field.

Firstly, the improvement of data processing capabilities enables AI to quickly analyze and process massive amounts of case information, including legal documents, evidence materials, and historical precedents. By efficiently integrating and analyzing this data, AI can identify key elements of cases and generate corresponding analysis reports to provide auxiliary support for judges and lawyers <sup>[1]</sup>.

Secondly, pattern recognition technology enables AI to identify potential patterns from complex data, such as case types, trends in judgment outcomes, and associations between different pieces of evidence. This capability provides strong support for the application of AI in case classification and legal risk assessment.

In addition, the maturity of natural language processing technology enables AI to understand and

process language expressions in legal texts, litigation materials, and court records. This ability can not only help AI generate referee suggestions, but also enable human-computer interaction, such as assisting in case processing through voice recognition or question answering systems.

With the continuous iteration of these technologies, the application of AI in the judicial field is gradually transitioning from an auxiliary role to a core link. AI courts, as a combination of artificial intelligence technology and the judicial system, have become an important force in promoting judicial reform.

## **2.2. The Challenges of Traditional Judicial Models**

Although the traditional judicial model plays an important role in the development of a rule of law society, its limitations have become increasingly apparent with the rapid development of society. Firstly, the problem of case backlog is becoming increasingly serious, and the rapid increase in the number of cases makes it difficult for the traditional manual trial mode to withstand pressure, resulting in longer trial cycles and the inability of parties to obtain timely judicial relief. Secondly, the problem of low efficiency is particularly prominent, with complex case processing procedures, tedious procedural links, and repetitive work that consume a lot of time and human resources. The overloaded workload of judges further exacerbates this problem <sup>[2]</sup>. In addition, uneven distribution of judicial resources is another major challenge, as underdeveloped court facilities and a shortage of legal talent in economically underdeveloped areas make it difficult for vulnerable groups to access fair judicial services. Finally, judicial biases that are difficult to completely avoid in traditional models, such as unfair judgments caused by judges' subjectivity or social structural inequality, weaken public trust in the judicial system. Overall, these challenges of the traditional judicial model indicate that introducing technological innovation, especially artificial intelligence technology, has become an inevitable choice to improve efficiency, optimize resource allocation, and ensure judicial fairness.

## **2.3. Definition and Characteristics of AI Courts**

AI court is an innovative judicial trial platform built using artificial intelligence technology in the modern judicial system. Its core goal is to improve trial efficiency, optimize judicial resource allocation, and promote judicial fairness. As a product of the deep integration of artificial intelligence and legal rules, AI courts achieve the intelligence, automation, and transparency of case handling processes through technological means.

Firstly, AI courts have the function of intelligent case diversion. With the help of big data analysis and machine learning technology, AI systems can efficiently allocate cases to appropriate processing programs or trial departments based on their type, complexity, and priority, reducing the workload of judges and avoiding case backlogs. Secondly, AI courts have achieved automated evidence review. The system uses technologies such as image recognition, text mining, and natural language processing to conduct preliminary screening and analysis of the authenticity and relevance of evidence, significantly reducing the time required for evidence verification <sup>[3]</sup>.

In addition, AI courts provide auxiliary judgment suggestion generation functions. Based on legal provisions, precedents, and case characteristics, the system can automatically generate judgment suggestions to provide reference for judges, thereby reducing the interference of subjective bias. Finally, the AI court emphasizes the transparency of the case handling process. The system records and makes public the key steps in handling cases, ensuring the traceability of case information to the parties and the public, which helps to enhance judicial credibility and public participation. These characteristics make AI courts show great potential in improving judicial efficiency and fairness.

## **3. AI Court's Transformation of Traditional Judicial Trial Mode**

### **3.1. Improvement of Case Handling Efficiency**

The introduction of AI courts has significantly improved the efficiency of case handling. Firstly, AI courts can intelligently classify and divert cases. Through big data analysis and natural language processing technology, the system can quickly extract the core information of a case, including the

cause of action, legal relationships, and the needs of the parties involved, in order to accurately classify the case. Simple cases can be directly handled by AI systems, while complex cases are assigned to human judges, fundamentally optimizing the case diversion mechanism.

Secondly, the automated processing flow of AI courts significantly reduces human intervention. In the traditional judicial model, cases often need to go through multiple stages from filing to trial, while AI courts have automated the process by integrating intelligent tools, such as online filing, evidence review, and judgment generation. Especially in evidence processing, AI systems can quickly screen and analyze massive amounts of materials, reducing the time cost of human review <sup>[4]</sup>.

In addition, the technical support of AI courts effectively reduces the possibility of case backlog. When dealing with a large number of repetitive and high-frequency cases (such as traffic violations or small disputes), AI systems can quickly generate judgment results, thereby freeing up judges' human resources. By optimizing the speed and quality of case handling, AI courts not only reduce the workload of the judicial system, but also improve the timeliness of parties obtaining judicial relief.

### **3.2. Standardization and Transparency of Trial Process**

The application of AI courts has played an important role in improving the standardization and transparency of the trial process. Firstly, AI technology achieves standardization of judicial standards through algorithmic models. In the traditional trial mode, judges' personal experience, judgment ability, and emotions may lead to inconsistent discretion standards, while AI courts can match legal provisions, judicial interpretations, and case precedents with specific cases, automatically generating judgment recommendations that comply with legal norms. With the help of big data technology, AI systems can also analyze massive past cases, extract key rules and patterns, thereby establishing more consistent trial standards and reducing unfair phenomena caused by subjective factors.

Secondly, AI courts greatly enhance the traceability and transparency of the trial process. Every step of the case, including filing, evidence review, trial records, and judgment results, can be digitally recorded through the system. The parties and the public can check the progress of the case in real time, ensuring that the case handling process is open and transparent. This not only enhances public trust in the judiciary, but also helps judges and other judicial personnel to accept supervision, thereby reducing the possibility of corruption or covert operations.

Through standardization and transparency improvements, AI courts have achieved a more efficient, fair, and open judicial system, fully embodying the spirit of the rule of law and further bringing the judiciary and the public closer together <sup>[5]</sup>.

### **3.3. Objectivity and Consistency of Judgment Results**

The AI court has significantly improved the objectivity and consistency of the judgment results through deep learning and big data analysis technology. Traditional judicial trials are often influenced by factors such as the judge's personal experience, emotions, and social background, which may result in biased or inconsistent rulings. AI courts analyze massive judicial data and rely on legal rules and precedents to automatically generate judgment recommendations, making the judgment results more objective and accurate. When handling cases, AI systems can provide data support and legal reasoning based on the specific circumstances of the case and relevant legal provisions, reducing the interference of subjective judgments and ensuring judicial fairness.

In addition, AI algorithms can identify and extract consistent judicial logic through the analysis of historical cases, and establish a unified set of judgment standards. This makes the rulings of similar cases tend to be consistent, avoiding the problem of uneven judgments caused by individual differences among judges. In this way, AI courts not only enhance the objectivity of judgments, but also strengthen the consistency of legal application, which helps to improve society's trust and satisfaction with the judicial system.

## **4. AI Court Reshapes the Role of Judicial Personnel**

### **4.1. The Transformation of the Role of Judges**

With the introduction of AI courts, the role of judges has undergone significant changes. From traditional case handlers, judges have gradually transformed into supervisors and coordinators of AI systems. Under the traditional judicial model, judges bear full responsibility for the trial of cases, responsible for making rulings, determining evidence, and making judgments. However, in the environment of AI courts, AI systems handle a large number of cases through automation technology, especially common simple cases and procedural affairs. The main responsibility of judges is no longer to directly participate in the trial of each case, but to focus on the specificity of the case and the rationality of legal application.

Judges need to review and supervise the results of AI judgments to ensure that the judgments of AI systems comply with the principles of fairness and impartiality, especially in cases involving complex legal or ethical issues. Judges also need to coordinate the cooperation between AI systems and judicial procedures to handle special situations that AI cannot cover or handle. In addition, judges need to strengthen their understanding of AI technology, ensure the correct use of the system, and prevent bias that algorithms may bring. Overall, the role of judges in AI courts has transformed into more strategic and prudent decision-makers, ensuring the fairness of AI judgments while fully utilizing AI technology to enhance judicial efficiency<sup>[6]</sup>.

### **4.2. Transformation of the Lawyer profession**

The popularization of AI courts is driving the transformation of the legal profession. With the deepening application of artificial intelligence technology in the legal field, lawyers not only need to possess traditional legal knowledge and litigation experience, but also need to pay more attention to the cultivation of technical abilities in legal services. For example, data analysis, the use of AI tools, and the ability to process legal data have become essential skills for lawyers. Lawyers need to master how to use AI for case analysis, quickly retrieve relevant precedents, and even use AI for risk assessment and prediction in the formulation of case strategies, in order to improve work efficiency and accuracy.

In addition, the role of lawyers is gradually shifting from traditional litigation representatives to collaborative partners with AI systems. Lawyers need to enhance their ability to interact with AI systems in order to participate more effectively in litigation. For example, lawyers may need to collaborate with AI systems to review evidence, generate preliminary legal opinions, or develop more precise litigation strategies during the case preparation process. With the continuous development of AI technology, lawyers will become more of a bridge between technology and law, ensuring that the legal system can operate more fairly and transparently. Therefore, the profession of lawyers will face more diverse skill requirements to adapt to the increasingly changing judicial environment<sup>[7]</sup>.

### **4.3. Reduction of Judicial Auxiliary Personnel**

With the widespread application of AI technology in the judicial field, the number of traditional judicial assistants will gradually decrease. AI systems can efficiently replace many manual tasks, such as document processing, evidence review, and legal retrieval. For example, AI can automatically generate judgment documents, analyze evidence materials in cases, and quickly match relevant legal provisions and precedents through big data technology, significantly improving the efficiency and accuracy of case processing. This eliminates the need for manual intervention for a large amount of basic work that originally relied on manual labor, thereby reducing the demand for traditional judicial assistants.

However, with the introduction of AI technology, the demand for technical support personnel will significantly increase. The court will need more professional talents with artificial intelligence, data science, and technical operation and maintenance capabilities to ensure the smooth operation and optimization of AI systems. In addition, technical support personnel need to participate in the development, maintenance, and regular updates of AI systems to ensure their accuracy and fairness. Therefore, although the number of traditional judicial auxiliary personnel may decrease, the demand

for technical talents has significantly increased, promoting the technological transformation of the judicial profession.

## **5. Advantages and Challenges of AI Courts**

### **5.1. Advantages of AI Courts**

The application of AI courts has demonstrated significant advantages in multiple aspects, particularly in terms of efficiency and cost, fairness, and transparency. Firstly, AI courts have significantly reduced labor costs and improved case processing efficiency through automated trial systems. In the traditional judicial model, case backlog and trial delays often lead to the waste of judicial resources, while AI systems can quickly analyze a large amount of case information, automatically divert cases and conduct preliminary trials, thereby accelerating the trial process [8].

Secondly, by introducing standardized processes, AI courts can effectively reduce biases and misjudgments caused by individual differences and subjective judgments of judges. The AI system generates unified judgment standards based on big data and precedents, making the judgment results of similar cases tend to be consistent and ensuring the fairness of the judiciary.

Finally, the transparency of AI trials enhances public trust in judicial fairness. The trial process of AI courts usually has traceability and openness, allowing the public and parties to the case to have a clear understanding of the trial process and judgment basis, greatly enhancing the credibility of the judiciary and reducing the risk of judicial corruption and opacity.

### **5.2. Challenges of AI Courts**

Despite the many advantages brought by AI courts, their application also faces a series of challenges. Firstly, technological limitations are a major bottleneck for AI courts. AI algorithms may not fully understand the social and cultural background behind complex cases, especially in cases involving ethical, emotional, or social value judgments, where AI judgments may lack accuracy.

Secondly, the applicability of law is a difficult point in technology research and development. Legal provisions often have ambiguity and flexibility, and the algorithms of AI systems mainly rely on data and rules for inference. Therefore, how to enable AI to accurately understand and apply various complex legal provisions, especially those related to non fixed provisions such as judicial interpretations and case law, is a major challenge in technological development.

In addition, data privacy and security issues cannot be ignored. The AI court involves a large amount of sensitive personal information and case data, and the privacy protection and security of these data need to be strictly guaranteed to prevent data leakage and abuse.

Finally, the ethical issues brought by AI courts, such as algorithm transparency, bias control, and accountability, require joint efforts from judicial personnel and technology developers to address. Ensuring the fairness and reliability of AI systems is the key to promoting the healthy development of AI courts.

## **6. Development Direction of Future AI Courts**

### **6.1. Strengthening the Deep Integration of Technology and Law**

In order to fully leverage the advantages of AI courts, future AI courts need to integrate more legal logic into technology research and development. At present, although AI technology has performed well in data processing and pattern recognition, there are still certain limitations in AI algorithms for complex legal issues, interpretation of legal provisions, and their flexible application. To achieve effective application of AI in the judicial field, it is necessary to make AI algorithms have stronger legal understanding and applicability. This not only means that AI needs to be able to understand the literal meaning of legal provisions, but also needs to be able to grasp the practical application background of the law, including precedents, legal interpretations, and considerations of social values in judicial practice.

To this end, AI courts need to work closely with legal experts, combine legal theory and

technological development, promote the systematic expression of legal rules, and enhance AI's judgment reasoning ability. In addition, through technologies such as natural language processing and machine learning, AI can continuously learn from actual cases, thereby achieving precise analysis and judgment of complex cases. This deep integration will help improve the quality of AI court judgments, ensuring the accuracy, fairness, and operability of AI in legal affairs <sup>[9]</sup>.

## **6.2. Improving the Legal and Regulatory Framework**

In order to ensure that the operation of AI courts complies with the principles of fairness and justice under the law, clear legal and regulatory frameworks must be established. With the gradual deepening of the application of AI technology in the judicial field, how to ensure the fairness, transparency, and legality of AI decision-making has become an urgent problem to be solved. Therefore, the government and judiciary need to provide clear legal basis and regulatory requirements for the operation of AI courts through legislation and policy-making.

Firstly, the legal framework should clarify the scope, authority, and responsibilities of AI courts in judicial trials, ensuring that AI judgments and recommendations are based on legal foundations. Secondly, regulatory mechanisms should ensure that the development and use of AI systems follow strict standards, including algorithm transparency, fairness, and data privacy protection. In addition, it is necessary to establish effective supervision and review mechanisms, regularly evaluate the results of AI decisions, and promptly identify and correct potential deviations and injustices.

Through a sound legal and regulatory framework, the application of AI technology in the judicial field can be regulated to ensure that it meets the basic requirements of fairness, justice, and social ethics, thereby enhancing public trust in AI courts and promoting the healthy development of judicial intelligence.

## **6.3. Cultivating Composite Judicial Talents**

With the development of AI courts, future judicial personnel will face new challenges. They not only need to have solid legal expertise, but also possess certain technical abilities, especially in AI technology and data analysis. Therefore, cultivating versatile judicial talents has become a key link in the development of AI courts.

The cultivation of composite judicial talents requires an interdisciplinary education model that combines legal education and information technology education to cultivate legal talents with innovative thinking and technological sensitivity. Judicial personnel should learn how to use AI tools for case analysis, data processing, and decision support, while understanding the application of AI in the judiciary and its potential limitations, to ensure effective supervision and adjustment of AI judgment results. In addition, compound talents also need to have a certain level of ethical awareness, be able to identify and avoid algorithmic biases in the AI decision-making process, and ensure the fairness of trials.

By cultivating versatile judicial talents, not only can the work efficiency of judicial personnel be improved, but their understanding and operational ability of technology in AI courts can also be enhanced, promoting the intelligent development of AI courts and better serving social fairness and justice.

## **7. Conclusion**

The rise of AI courts marks an important step in technological innovation in the judicial field, which has had a profound impact on the transformation and reshaping of traditional judicial trial models and the roles of judicial personnel. Despite facing various challenges such as technology, law, and ethics, the advantages of AI courts in improving judicial efficiency, fairness, and transparency cannot be ignored. Through technological advancements, legal improvements, and public education, AI courts are expected to become an important component of the future judicial system, safeguarding social fairness and justice.

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