Practical Attempts at Building Smart Courts with the Assistance of Generative Artificial Intelligence

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ABSTRACT

In today's era of big data, information technology continues to advance by leaps and bounds, generative artificial intelligence rises with it, is changing the development of many fields, law is one of them. Today, with the general improvement of national literacy, the traditional court model is difficult to solve the various problems caused by the explosion of litigation. Therefore, the construction of intelligent court has become an inevitable trend. Under the support of the principle of person-host supplement, the new model of "1+3+1" is adopted to promote the high-quality development of the work of smart courts. At the same time, it is also necessary to pay attention to data quality, privacy and security issues to further avoid risks.

KEYWORDS: smart court; class case push; judicial service; case diversion of pre-trial procedures

BACKGROUND EXPLORATION OF BUILDING SMART COURTS

Nowadays, the rapid development of social economy has brought about increasingly complex legal relations and a large number of cases. The traditional judicial model is facing great pressure when dealing with such a large number and complexity of cases, and its efficiency and quality need to be improved. The Supreme People's Court accepted 10.003 million cases in the first quarter of 2024, up 1.49 percent year on year, and closed 8.748 million cases, down 1.32 percent year on year. In order to better meet society's demand for judicial fairness and efficiency, innovation and optimization need to be carried out with the help of scientific and technological means. That is, the use of generative artificial intelligence to assist the construction of smart courts to reduce the burden in many ways.

First, the rapid development of information technology has provided strong technical support for the construction of smart courts. High-speed network communication, powerful computing power, advanced data storage and processing technology, etc., enable courts to integrate and utilize information resources more effectively. By means of information technology, the rapid transmission, storage and analysis of case information can be realized, providing a more accurate basis for judicial decision-making.

Second, there is a growing public demand for convenience and transparency in judicial services. Therefore, under the background of the general improvement of national literacy, the increasing concept of rights and obligations, and the remarkable improvement of public awareness of litigation, the construction of smart courts is particularly important. According to the data from the annual report on government information disclosure work of the Ministry of Justice in 2023, the total number of visits to the official website of the Ministry of Justice in 2023 is about 4.65 billion times, compared with that in 2020 the 1.79 billion clicks represent a significant increase. At the same time, the public also put forward more expectations for China's judiciary, that is, people hope to have more convenient access to judicial information and participate in the judicial

process, but also hope that the judicial process is more open and transparent, so as to enhance trust and recognition of the judiciary. By using the Internet and smart technology, smart courts can expand the channels and methods of judicial services, and enhance the convenience and accessibility of judicial services.

At the same time, digital transformation of government governance is being actively promoted around the world. In Europe, for example, IDC's Global AI and Gen AI Spending Guide report states that generative AI spending in Europe will account for 9.6% of total AI spending in Europe in 2023, and this proportion is likely to increase to 25% in the next three years. China's courts, as an important part of the country's governance system, also the larger pattern of digital governance and enhance the effectiveness and role of the need to keep up with this trend. By building smart courts, we can better integrate into judiciary in national governance.

In this context, the construction of smart courts has become an inevitable trend. It aims to make use of modern information technology to build a digital, intelligent and convenient judicial service and management system, so as to realize the organic unity of judicial justice and efficiency, better serve social development and the people, and push the judicial cause to a new height. The construction of smart courts is not only a major reform in the judicial field, but also an important measure in the process of modernization of national governance, and has far-reaching significance for safeguarding social fairness and justice and ensuring social harmony and stability.

RESEARCH ON THE PATH OF BUILDING SMART COURTS—THE "1+3+1" SMART COURT AUXILIARY MODEL

In the new wave of artificial intelligence, the advantages of generative artificial intelligence are gradually highlighted, and it also plays an important role in the work of the court. Compared with human judges, generative artificial intelligence can put forward more objective opinions. Moreover, with the general improvement of national literacy today, the phenomenon of litigation explosion is increasingly apparent. Generative artificial intelligence can fully alleviate this situation by making use of its efficient operation characteristics. But generative artificial intelligence can not completely replace human judges, human judges are warm, modern society is also warm. Therefore, in the construction process of the smart court, it is necessary to adhere to the principle of human - host auxiliary, adhere to the "1+3+1" smart court auxiliary mode, and further

promote the reasonable and efficient development of the court work.

A. Case Splitting in Pre - trial Procedures

Before a case is tried, the pre - trial procedure is an important link, of which case diversion is the most critical. Generative artificial intelligence can achieve efficient triage of cases through deep learning and analysis of case information. Specifically, natural language processing (NLP) technology can be used to conduct semantic analysis and keyword extraction of texts such as case indictments and evidence materials to quickly identify the nature, type and laws and regulations involved in cases. Based on these analyses, the AI system can initially classify cases, providing important references for subsequent case allocation and trial. The case triage of pretrial procedures has the following significance：

First, Generative AI is able to analyze and process a large amount of case information quickly and accurately. By learning and understanding data such as case texts and evidentiary materials, it can automatically extract key information, such as the type of case, the appeals of the parties, the focus of the dispute, and classify and sort the information. Compared with traditional manual analysis methods, generative AI greatly improves the speed and accuracy of information processing, and reduces errors caused by human negligence or subjective judgment.

Second, generative AI can make use of its powerful forecasting ability to provide scientific suggestions for the triage of cases. Based on historical case data and algorithm models, it can predict and evaluate the development trend of new cases, the difficulty of hearing them, and the possible outcome. This helps adjudicators have a more comprehensive understanding of the case situation, reasonably allocate the case to the appropriate trial resources, and avoid trial delay or waste of resources caused by improper case allocation.

Third, generative artificial intelligence can realize the standardization and normalization of case triage. It follows the preset rules and standards for analysis and judgment, avoiding the inconsistency and randomness of standards caused by human factors. This helps to improve the fairness and transparency of the triage of cases and enhance the trust of the parties in the judicial process.

Fourth, generative AI can also monitor and optimize the effect of case triage in real time. By tracking and analyzing the trial progress and results of cases after the diversion, it can find potential problems and shortcomings, and adjust the diversion strategy and

algorithm in it to continuously improve the accuracy and rationality of the case diversion.

B. Auxiliary Applications in The Trial Process
➤ Case pushing based on big data
Class case push refers to pushing historical cases and judgment documents similar to current cases to judges through intelligent recommendation algorithms. Generative Al can build correlation and similarity models between cases through deep learning and analysis of a large number of historical cases and judgment documents. When a judge hears a case, the Al information and characteristics of the current case, providing important references and can automatically push similar historical cases and judgment documents based on the references for the judge.

In addition, generative Al can also predict the difficulty of hearing a case, possible dispute points and possible verdict results based on historical data and similar cases. The information has important reference value for judges, which can help them better formulate trial plans and strategies and improve trial efficiency and quality. This can not only improve judges' trial efficiency and accuracy, but also promote the standardization and consistency of judicial decisions.

➤ Visualize statements under speech recognition
During a trial, a lot of oral presentations and arguments are made by the judge, lawyers, parties, etc. The traditional way of recording trial often has problems such as incomplete record and low efficiency. Generative Al can use speech recognition technology (ASR) to convert trial audio into text in real time and automatically correct grammatical and semantic errors. This will not only improve the accuracy and completeness of trial records, but also facilitate judges and lawyers to quickly review and analyze trial content after the trial.

In addition, generative Al can also process and analyze unstructured data such as audio and video related to a case. On the one hand, audio can be converted into text through speech recognition technology, and sentiment analysis and topic extraction of text through natural language processing technology can be carried out; On the other hand, key images in the trial video can be identified and marked through image recognition technology. The processing and analysis of these unstructured data can provide the court with more comprehensive and in-depth case information, which helps the court to better understand the case situation and improve judicial efficiency.

➤ Making judgment documents under language generation
Judgment documents are one of the important achievements of court trials, and their quality and efficiency directly affect judicial justice and efficiency. Generative artificial intelligence can assist in the production of judgment documents through natural language generation technology (NLG). Specifically, the Al system can automatically generate the first draft of judgment documents based on case information and laws and regulations, including parts such as case facts, evidence analysis, legal basis and verdict results. Judges can modify and improve the draft on this basis, which greatly improves the production efficiency and quality of judgment documents.

C. Information Induction After the Trial Process
After the trial, generative Al can also summarize and summarize the case information. The Al system can automatically extract key information and data in a case, such as the nature of the case, the type of case, the person involved, the amount involved, the verdict, etc., and store and display the information in a structured way. Generative Al can not only quickly process massive information, but also complete the analysis and induction of a large number of texts and data in a short period of time. At the same time, it will not be affected by factors such as human emotion, bias or fatigue, and can summarize information in a relatively objective and consistent standard.

The assistance of generative Al greatly reduces the workload of manually generalizing information, freeing up court human resources to engage in more creative and strategic work. And with its powerful computing power and data processing ability, it can reduce human errors and improve the accuracy of information induction. The induction and processing of information by generative artificial intelligence not only facilitates the judges and lawyers to quickly consult and use the information in the follow-up work, but also provides support for the data analysis and decision-making of the court.

BUILD THE RISK ANALYSIS OF THE SMART COURT
A. Data-related Risks
➤ Data quality and accuracy risks
As the most basic problem of database, the quality and accuracy of data are crucial, and wrong or incomplete data may lead to wrong judicial judgment of generative artificial intelligence, resulting in a series of harms.

On the one hand, carelessness, fatigue or lack of training of input personnel can easily lead to errors in manual operation. On the other hand, the input system

lacks an effective data verification mechanism, does not carry out strict verification and review of the input data, and fails to correct the data in time.

For example, if no data verification rules are established and no automatic checksum reminder is set in the input link, the improper operation of the personnel responsible for system input may lead to data missing or data duplication, resulting in some key information not being entered or being entered multiple times, resulting in incomplete or redundant data. The improper training of relevant personnel may also input data in a format that does not meet the requirements, resulting in the wrong format of data, affecting the consistency and usability of data.

Analysis and decision making based on wrong data may lead to wrong judgment and strategy making, resulting in decision-making errors. Moreover, due to the differences and obstacle in many aspects of data between different systems and departments, its integration is often complex and challenging task, and it is difficult to ensure the compatibility and consistency of data, which has a certain impact on the collection and utilization of judicial data.

When collecting and storing data, different systems and departments may adopt different data formats, coding methods, field definitions and naming rules. This makes the data need to undergo a lot of format conversion and standardization processing when integrating, which is prone to errors and inconsistencies. At the same time, there may be problems with different business processes and rules. There are differences in business processes and rules in different departments, leading to different ways of understanding, collecting and processing data.

Without a unified data management strategy and specification, each system and department may act independently in data collection, storage, update and deletion, which makes it difficult to guarantee the integrity, accuracy and timeliness of data, and ultimately affects the judicial judgment of the system.

➢ **Data privacy and security risks**
If the collection, storage and use of data do not comply with regulations, it may lead to data abuse and privacy disclosure in the process of data management and access authorization.

First, in the process of data management, the risk of data leakage is extremely easy to occur. A large amount of case-related data, including the parties' personal information and case details, may be leaked due to cyber attacks, system vulnerabilities or human negligence.

Second, unauthorized access may occur due to the system's weak identity authentication and access control. If the identity authentication mechanism is not perfect, it may enable illegal users to obtain access rights and threaten data security.

In a word, in the age of information, the rapid development of generative artificial intelligence requires us to pay attention to data security.

B. Legal and Policy-related Risks
Relevant laws and regulations may not be able to keep up with new types of problems in the construction of smart courts in a timely manner, leading to regulatory gaps and lagging laws and regulation.

➢ **Imperfection of laws and regulations**
On the one hand, there are legal gaps in the regulation of the application of emerging technologies.

With the widespread application of emerging technologies such as artificial intelligence, big data and blockchain in smart courts, relevant laws and regulations may not have made clear and specific provisions on the application scenario, responsibility definition, rights and obligations of these new technologies, leading to certain confusion.

On the other hand, the norms of electronic litigation procedures are not sound.

Although electronic litigation is advancing, the regulations on electronic service, the process and rules of online trial, and the examination and identification standards of electronic evidence may not be perfect and detailed enough, resulting in inconsistent operating standards in practice.

In short, there may be gaps between the relevant provisions of the Smart Court and other existing laws and regulations in some aspects, The conflict or lack of smooth connection will cause trouble to the practical application. Laws and regulations related to the development should be constantly improved in concrete practice, so that the application of generative AI can be regulated and guaranteed.

➢ **Risk of policy changes**
To a large extent, the adjustment of judicial policies can not guide the focus and direction of judicial reform in a timely manner, and the construction of smart courts has not been planned and distributed accordingly.

The policy changes affect the resource allocation and functional focus in the construction of smart courts. In other words, it affects the investment of capital, wisdom technology, manpower and other resources in the construction of smart court and determines the

priority development order of different functional modules in the construction of smart court.

Therefore, if the judicial policy fails to adjust in a timely manner according to the changes in social and economic development and people's needs, or if the construction of the smart court fails to change accordingly, it will not be able to provide the people with more convenient, efficient and high-quality judicial services.

Acknowledgment

References

[1] Chen Rui, Wang Wenyu. An Analysis of the Role Positioning Between Judicial Artificial Intelligence and Human Judges [J]. Journal of Chongqing University (Social Sciences Edition), 2021.07.27.

[2] Sun Xiaoyong. Application and Prospect of Judicial Big Data in Chinese Courts [J]. China Legal Science, 2021.08.09.

[3] Chen Luolan. On the Construction of the Digital Community in Courts: From the Perspective of AI-Assisted Judiciary [J]. Law Science, 2024.01.20.

[4] Pan Yonglu. Analysis of the Path for Artificial Intelligence to Intervene in the Judicial Field [J]. East China Law Science, 2018.05.10.

[5] Li Xin. The Path and Prospect of Applying Artificial Intelligence in Court Work [J]. Economic and Social Development, 2018.08.25.

[6] Lu Rongjie. ChatGPT Empowering the Construction of Smart Courts: Opportunities, Challenges, and Regulations [J]. Journal of Chongqing University of Posts and Telecommunications (Social Sciences Edition), 2023.12.27.

[7] Feng Yikai. Reflection and Reshaping of Procedural Justice in the Context of AI-Assisted Sentencing [J]. Modern Law Science, 2023.11.15.

[8] Gong Shanyao. Practical Reflection and Improvement of Judicial Applications of Artificial Intelligence [J]. Journal of the National Prosecutors College, 2023.09.10.

[9] Xu Hui, Li Junqiang. The Possibility and Boundary Limitations of Generative AI Assisted Judicial Decisions [J]. Journal of Taiyuan University of Technology (Social Science Edition), 2023.12.