

Article

2025 2nd International Conference on Business Economics, Education, Arts and Social Sciences (EASS 2025)

The Potential Risks and Improvement Paths of Intelligent Algorithms Assisting Civil Trials under the Perspective of Civil Litigation Intelligence

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Abstract: In recent years, with the rapid development of intelligent science and technology, intelligent algorithms have emerged in an endless stream. Deep interaction with justice occurs with face recognition algorithms, speech recognition algorithms, natural language processing algorithms, which has broadened the path of the construction of the digital court and the application of intelligent civil litigation scenarios. Intelligent algorithm-assisted civil trial is of great significance in enhancing judicial justice and trial efficiency. However, there are also risks that algorithm failure may mislead civil trial, lack of empirical rationality and moral ethics, alienation of algorithmic power affecting trial fairness, which should be perfected in terms of improving the supervisory mechanism of algorithm-assisted civil trial, constructing a systematic responsibility system for intelligent algorithmic assistance in civil trials, and limiting the application scenarios of intelligent-assisted civil trial in an effort to promote intelligent civil litigation.

Keywords: intelligent algorithms; civil trial; potential risks; improvement paths; civil litigation

1. Introduction

Over the past few years, a number of enterprises and organizations at home and abroad have carried out the research and development of legal big models, and the revolution of generative intelligent algorithms in the field of civil trial is underway. In the context of statutory law, the civil litigation logic of intelligent algorithms is to determine the right to claim according to the litigation claims of the parties, to deconstruct the elements after finding the norms of substantive law, and to clarify the allocation of the burden of proof and legal effects [1]. Intelligent algorithm assisted civil trial includes intelligent generation of referee documents, intelligent analysis and application of evidence, and intelligent recommendation of class cases etc. This intelligent assistance plays a positive role in promoting judicial justice and enhancing judicial efficiency. At the same time, it also hides risks that cannot be ignored.

Received: 19 February 2025

Revised: 22 February 2025

Accepted: 28 February 2025

Published: 02 March 2025



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2. The Value of Applying Intelligent Algorithms to Assist Civil Trials

2.1. *Promoting Fairness in the Administration of Justice*

2.1.1. Help Maintain the Consistency of Judgments in Similar Cases

For a long time, the phenomenon of different judgments in similar cases has prevailed in Chinese courts, triggering the public skepticism about judicial impartiality. Intelligent algorithms provide judges with a searchable database of similar cases, which helps to unify the legal application standards of similar cases, standardize the exercise of judges' discretion, promote the equal adjudication of similar cases, and enhance the credibility of the judiciary.

2.1.2. Help Overcome the Influence of Judges' Subjectivity

Intelligent algorithms rely on objective data when analyzing civil cases, can effectively reduce the cognitive bias of judges in consequence-oriented trials, [2] and can correct judges' empathy partiality and judicial bias [3]. In addition, intelligent algorithmic assistance helps to limit judges' interest tendencies and safeguard the impartiality of adjudication [4]. Such objectivity helps to achieve more impartial rulings, ensuring that all types of cases are treated fairly and avoiding unfair application of the law caused by the subjective judgment of individual judges.

2.1.3. Help Reduce the Error Rate in Civil Cases

Intelligent algorithm-assisted civil trial is an indispensable practice in the digital transformation of civil litigation and helps to improve the accuracy of case processing. The traditional trial mode is limited by human carelessness and excessive workload, and there are problems of omission of evidence analysis and deviation of law application. In terms of accurate matching in the application of law, the intelligent algorithm builds a multi-dimensional feature model based on 30 million referee documents, realizing the dynamic mapping between the legal provisions and the facts of the case. Data from the pilot project in Shanghai showed that the error rate in the application of the law dropped from 4.1% to 1.3%.

2.2. *Enhancing Trial Efficiency*

By using data mining analysis and natural language processing technology, the intelligent algorithm automatically identifies legal facts, relevant legal provisions and evidence chains, intelligently summarizes the disputed facts and civil litigation subject matter and intelligently classifies and diverts cases, saving a great deal of time and energy for the judge to deal with civil disputes.

In the evidence review process, the intelligent algorithm quickly identifies and analyzes the evidence chain through pattern recognition and data processing technology, helps the judge effectively assess the authenticity, relevance and legality of the evidence, and analyzes the evidence capacity and relevancy of the evidence in court, which improves the efficiency of the evidence review.

In addition, with the aid of intelligent algorithms, the court can arrange suitable judges and trial teams according to the complexity and processing time frame of the case, and allocate trial resources more rationally, thus improving the overall trial efficiency of the court.

In Suzhou Industrial Park Court, for example, after the introduction of the intelligent algorithm-assisted civil trial system, the average processing cycle of a single financial lending dispute case was shortened from 32 days to 14 days, and the efficiency of the synchronized processing of batch cases was increased by three times.

3. Potential Risks of Intelligent Algorithms Applied to Civil Trials

3.1. *Failure of Algorithms May Mislead Civil Trials*

3.1.1. Inability to Accurately Understand Complex Legal Terminology and Contexts

The non-quantification of the expression of legal terminology, its ambiguity and the unpredictability of the future determine the open-ended structure of the law. Some legal terms are pluralistic concepts and will be adopted by judges in different legal scenarios with different criteria. So Intelligent algorithms may not be able to accurately understand legal terms and complex legal contexts such as reasonableness and manifest injustice when processing natural language. In addition, civil trials often involve more complex abstract concepts and value judgments, such as the principle of public order and morality. Currently intelligent algorithms are still insufficient in their ability to synthesize and consider various legal principles and discretion, making it difficult for them to respond as flexibly as judges.

3.1.2. Reliance on Prior Knowledge and Inability to Provide Accurate Data

Firstly, the algorithm operates on massive data. It cannot cope with new types of cases such as meta-universe virtual property disputes. Secondly, despite the massive case data support, there are still different or even contradictory decision results in similar historical cases, which puts judges in a dilemma of choice. Furthermore, sometimes algorithms provide judges with case bases with missing samples and jurisprudence that contradicts judges' empirical judgments, resulting in pushed case-like data that cannot effectively assist judges in adjudicating cases and may be misleading to judges in civil trials. Lastly, historical case matching is misleading. when the algorithm recommends similar cases, due to incomplete data coverage or mislabeling, it provides precedents that are not of reference value. For example, some intelligent algorithms incorrectly associate "commercial contract disputes" with "labor contract disputes", interfering with judges' analogical reasoning.

3.1.3. Possible Errors in Findings of Fact and Application of Law

Even if the intelligent algorithm-assisted civil trial can improve the correct rate of the case, the intelligent algorithm-assisted civil trial still has a certain probability of error, which is manifested in the determination the facts of the case and the application of the law. In the fact-finding link, the algorithm may wrongly interpret evidence such as documentary evidence, audiovisual materials, electronic data etc., resulting in fact-finding deviation. In civil tort disputes, if the algorithm analyzes the correlation of indirect evidence incorrectly, it may affect the determination of tort causation and thus mislead the division of tort liability. In terms of legal application, the algorithm incorrectly matches legal provisions due to insufficient data, resulting in an erroneous verdicts. For example, the algorithm fails to recognize the specific context of the "Force Majeure Clause" in the contract in the case of contractual disputes, and incorrectly applies the ordinary breach of contract liability clause, which will lead to the judge applying the law incorrectly.

3.2. *Alienation of Algorithmic Power May Affect Trial Fairness*

3.2.1. Algorithmic Black Box

The term "algorithmic black box" refers to the fact that when an intelligent algorithm makes a decision or predicts the outcome of a case, its internal working mechanism and decision-making process are opaque and inexplicable to the judge. which makes it difficult for the judges and plaintiffs to scrutinize and understand the algorithm's decision-making logic, thereby affecting the fairness of the trial. However, judges and plaintiffs are unable to directly observe and understand the internal details of the algorithms including the processing of data, the extraction of features etc. This opacity makes it impossible to

understand the system's decision-making process and to explain and verify the algorithm's decisions or predicted results, which inevitably leads to a crisis of trust.

3.2.2. Algorithmic Bias

Algorithmic bias is systematic bias due to data, design choices, historical bias, or other factors in the design, training, or application of an algorithm. Intelligent algorithms rely on data from prior judicial decisions and use it to assist in civil trial decision-making or prediction. In this practical process, the AI inevitably passively learns the judge's value bias, and the output may be biased, thus affecting the fairness of the judgment. Moreover, the algorithm itself is also inevitably biased, in divorce cases, the algorithm defaults to favor child custody to the high-income party, ignoring the assessment of emotional support ability. Because algorithms are systematic and constitutive, algorithmic bias may reproduce past social discrimination, including historical injustices such as geographic discrimination, perpetuating and amplifying the bias and causing the algorithm to treat a certain type of group unfairly [5].

3.2.3. Blurring of Algorithmic Responsibility

The core of judicial accountability system is that judges independently assume responsibility for adjudicating cases, and that judges need to bear the responsibility for illegal adjudication in the event of "intentional violation of laws and regulations" or "gross negligence leading to adjudication errors and causing serious consequences" [6]. However, the intelligent algorithm assisted civil trial challenges the principle of "the adjudicator referee, the adjudicator is responsible for", resulting in the trial of fuzzy rights and responsibilities of the main body, the fault attribution difficulties in realizing the reality [7]. The complexity and opacity of algorithms have led to the blurring of responsibility. Once an intelligent algorithm recommends an incorrect case that leads to a judgment error with serious consequences, it is difficult to clarify the responsibility of the developer of the intelligent algorithm, the judge, and the algorithm itself.

3.2.4. Weaker Subjects of Civil Litigation

In the interaction between intelligent algorithms and civil litigation, both the judge's position and the litigants' subjective position may be weakened to a certain extent, which will have an impact on the independence and impartiality of the judiciary. On the one hand, the intelligent trial system forms a prediction or even a conclusion before the trial, eroding the substantive hearing of the civil trial. The judge's decision-making power is gradually ceded to the judicial artificial intelligence, and the super artificial intelligence justice weakens the judge's position. On the other hand, the source of the subjective feeling of the litigant is no longer its participation in the case behavior or defense speech characteristics and other distinctive character personality traits, but more from the algorithmic data. In the case of judge-led civil trials where judges are overly reliant and trusting of intelligent algorithms, it is inevitable that the procedural rights of the parties will be unfairly affected [8].

3.3. *Lack of Empirical Rationality and Moral Ethics in Intelligent Algorithms*

3.3.1. Absence of Emotional Judgement and Humanistic Care

Satisfying the public feelings and emotional experience is an indispensable basis for judicial trust, and it is important to make a decision that meets the emotional needs of the parties and satisfies their emotional expectations within the legal framework. In judicial cases, the judge's over-reliance on intelligent algorithms will lose the humanistic concern for civil litigants and make judicial decisions lose the humanistic warmth [9]. In addition, the operation of artificial intelligence is based on algorithms and data processing, and lacks emotional judgement. For example, in divorce cases, the judgment of child custody belongs to the need to consider irrational factors such as parent-child emotional ties. In

the case of moral damages, the assessment of the degree of "mental pain" is based on human empathy, and algorithms cannot truly experience or simulate emotional trauma.

3.3.2. Lack of Empirical Rationality and Value Judgments

The logic of intelligent algorithms is mathematical logic, and its mechanized operation may not be able to fully take into account the specific circumstances and complexity of the case. However, fair adjudication requires the judge's empirical rationality, moral and ethical concepts, as well as value judgments combined with the social and cultural background and other comprehensive factors, which cannot be replaced by intelligent algorithms. For example, in contract disputes, how to balance the "freedom of contract" and "substantive fairness", the determination of "manifest unfairness" needs to be combined with social ethics, protection of vulnerable groups and other value judgment. In inheritance cases, the degree of "failure to fulfill the obligation of support" needs to be judged by understanding the historical background of long-term interactions within the family and specific regional cultural background.

4. The Paths to Refinement of Intelligent Algorithm-Assisted Civil Trials

4.1. *Constructing a Systematic and Clear Responsibility System for Intelligent Algorithmic Assistance in Civil Trials*

4.1.1. Delineating the Scope of Responsible Parties for Intelligent Algorithmic Assistance in Civil Trials

Consciousness of human speech action is the human mind in the rational factors and irrational factors organic fusion of the functional manifestation, which is the basis of the human with legal subject status and legal responsibility. It has the uniqueness of exclusively belonging to the human being, which negates the intelligent algorithms of the subject of the law qualification [10]. Therefore, the intelligent algorithms are not liable. According to the existing global development status of intelligent algorithms and the existing legal normative system, intelligent algorithms still belong to the digital products, intelligent algorithms should be conditionally attributed to the algorithm developers, after legitimate technical identification, unless due to defects beyond the scope of the ability of the algorithm designers of the existing level of science and technology leads to the wrong results, intelligent algorithms designer should bear the responsibility for the product. In addition, the parties to civil litigation should also be classified into the scope of the responsible subject of intelligent algorithm-assisted civil trial. Plaintiffs and defendants in civil litigation should be responsible for the authenticity and completeness of the information provided and ensure that the algorithms and data relied upon are legal and effective. If the parties intentionally conceal information or provide false data, which may lead to an unfair ruling, the parties need to bear the corresponding legal responsibility. Intelligent algorithms are merely technical tools to assist judges in handling cases and do not have decision-making independence; judges enjoy the final decision-making power, and thus judges are the subject of judicial responsibility.

4.1.2. Clarifying Standards for Assigning Responsibility in Intelligent Algorithmic Assistance in Civil Trials

Judges are both judges of civil decisions and users of intelligent algorithms. As intelligent algorithms are involved in the exercise of judges' trial rights and have an impact on their judicial decision-making, judges are not solely responsible for wrongful convictions. In the face of intelligent algorithm prediction results and the judge's experience contradicts the judge has the right to decide whether to follow the algorithm to make a judgment, in the distribution of responsibility, should be the principle of the judge to bear the responsibility. However, there are some special circumstances that should be used as mitigating and exempting reasons for the judge. The fault of the algorithm developer, the fault of the parties involved in the wrong judgment led to the consequences of the damage and

play a decisive influence of the judge can be exempted from liability. Under the premise of the judge's duty of reasonable care, technical errors such as errors in the data inputted by the intelligent algorithm, errors in the knowledge of science and technology related to the identification of key evidence in the case, and errors in the recommended cases cannot be attributed to the judge. The judge's liability should be reduced by a percentage if the judge did not fulfill sufficient obligations and was interfered with by a technical error in the algorithm to make a miscarriage of justice. Plaintiffs and defendants in civil litigation should be responsible for the truthfulness and completeness of the information provided and for ensuring that the algorithms and data relied upon are legal and valid. If a party intentionally conceals information or provides false data, which may lead to an unfair ruling, and it is later ascertained that it was not due to an error by the judge and the intelligent algorithm, the party will need to bear the corresponding legal responsibility.

4.2. Establishing a Sound Monitoring Mechanism for Civil Trials Assisted by Intelligent Algorithms

4.2.1. Opening Decision-Making Process of Intelligent Algorithm-Assisted Civil Trials

Algorithmic defects or operational errors caused by the damage will affect the judge and the parties, artificial intelligence in the court should meet the requirements of the quality standards and operational functions. Intelligent algorithms should also have the ability to visualize algorithmic rules and make the operating logic publicly available. It is necessary for the law to give the developer of the algorithm to explain the algorithm operation process and operation logic, and transparently publicize the operation process of the accompanying obligations. Algorithm-assisted civil trial decision-making should follow the principles of openness and transparency, equality and fairness, science and reasonableness, safety and reliability, and the adjudication rules of the platform to disclose algorithmic rules, reasonably explain the technical principles, and third-party professional organizations to verify. The application of algorithms should obtain the informed consent of users, and the results of algorithms should ensure fairness and impartiality. A transparent trial process should be established to ensure transparency of information during the trial, including the use of intelligent algorithms, the legal provisions on which they are based and relevant jurisprudence. Publicly available information can help parties understand the basis of the trial so that they can better pursue their remedies. Detailed records of each step in the trial process, including the application of algorithms and the judge's judgment, can be made so that they can be traced and verified in the event of a wrongful conviction.

4.2.2. Optimizing the Remedy Channels for Errors in Intelligent Algorithm-Assisted Civil Trials

Intelligent algorithm-assisted civil trial still can not guarantee 100% judgment correctly and may even appear because of the intelligent algorithm error triggered by the wrong case situation. For this reason, a specialized review body for intelligent algorithm-assisted civil trial should be established to perform the supervisory duties. Existing civil trial error relief channels are appeal, retrial, etc., but the complexity of the algorithm technology knowledge principle, the contradiction between the number of cases and the limited judicial resources means that the court needs to set up efficient and convenient specialized intelligent algorithms to assist the civil trial of the wrongful death relief procedures, the author called the review process, the procedure is initiated according to the party's application and the court ex officio initiated in two ways. At the same time, the right to object to the parties, the parties to the litigation rights, the right to object to the right is not the right to appeal, by the specialized intelligent algorithms to assist the civil trial supervisory body to conduct a special review, the review of the case does not exist in the absence of error does not affect the parties to the exercise of the right to appeal. The intelligent algorithm-assisted civil trial supervisory body conducts a double review of the

technical and legal review of cases that enter the review process. This procedure operates as an independent program, and the parties should be informed of cases in which there is no error in the review, so that the parties can decide whether to appeal or file a retrial, avoiding the waste of judicial resources by initiating a second trial or retrial simply because of an error in the intelligent algorithm that led to a trial error.

4.3. Limiting the Application Scenarios of Intelligent Algorithm-Assisted Civil Trials

4.3.1. Limiting the Scope of Cases for Intelligent Algorithm-Assisted Civil Trials

Intelligent algorithm has obvious mechanical characteristics, and it is more applicable to the scope of cases with clear rules and boundaries. From the point of view of the complexity of the case, intelligent algorithms are applicable to the type of dispute for the legal relationship is clear, the evidence is indeed sufficient, the legal basis is clear and simple civil cases, intelligent algorithms are used in this type of cases to a large extent to save manpower and improve efficiency. However, it is not appropriate to apply intelligent algorithms to cases involving large amounts of subject matter, complex legal relationships, or cases in which the application of intelligent algorithms may result in injustice. From the type of cases, marriage and family cases, such as divorce, inheritance and other cases involving empathy, value judgment, social and cultural background and other comprehensive factors, it is not appropriate to apply intelligent algorithms to assist decision-making. Judicial adjudication pursues the unity of heavenly justice, national law and human feelings, however, intelligent algorithms can not really understand human feelings, such as litigation divorce cases, the husband and wife whether the rupture of feelings need to be combined with the feelings of both parties after marriage, the judge can only substitute for the emotions in order to make a lawful and reasonable judgment. In addition, for the maintenance of national security, market economic order and personal information security considerations, cases involving state secrets, commercial secrets and personal privacy also require non-intelligent processing.

4.3.2. Insisting on the Supportive Positioning of Intelligent Algorithms in Civil Trials

Algorithms are not omnipotent, and their assistance in civil adjudication must be kept within appropriate limits. The adjudication of civil cases not only requires technical rationality, but also requires empirical rationality, value consideration and emotional input that artificial intelligence does not possess, which determines that intelligence should not replace the adjudicative function of human judges in the administration of justice. Adhere to the auxiliary positioning of artificial intelligence on the trial work, artificial intelligence auxiliary results can only be used as a reference for the judge's civil trial work, no matter what level of technological development, artificial intelligence shall not replace the judge refereeing to ensure that refereeing powers are always exercised by the trial organization. Artificial intelligence can only be technically considered as an extension of human intelligence, can only be used as an auxiliary tool for judicial staff, to help the judicial staff from the non-judicial cumbersome work, the use of technical rationality to supervise the process of judicial adjudication. In the judicial process, technical rationality and empirical rationality complement each other. The mode of thinking of technical rationality has not been absent in traditional judicial adjudication, which is a linear perspective of perceiving the world and a mode of thinking inherent in human beings. The unity of the two rational thinking, technical rationality to assist empirical rationality, empirical rationality to resist the erosion of technical rationality.

5. Conclusions

Intelligent algorithms have the functions of pattern recognition, assisted decision-making and other functions, which also have the value of enhancing judicial justice and efficiency. However, there is an inherent conflict between the mathematical thinking of intelligent algorithms and the empirical thinking, ethical factors, and multi-value thinking

of civil trials. In view of the risk of algorithmic failure in civil trial assisted by intelligent algorithms, the supervision mechanism of civil trial assisted by algorithms should be improved, a systematic and clear responsibility system for intelligent algorithmic assistance in civil trials should be constructed, and the application scenarios of civil trial assisted by intelligent algorithms should be restricted, so as to give fuller play to the value of the civil procedure law, and to push forward the process of intelligent civil litigation.

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