

AI AND ADMINISTRATION OF JUSTICE IN CHINA

By Haiyan Wang *

Abstract: AI technology is playing an increasingly important role in criminal justice. China is also deeply integrating AI with technology justice, not only releasing a series of guiding policies, laws and regulations, but also applying AI technology in the whole litigation stage of examination and prosecution and court trial. In addition to this, AI-driven evidence is also one of the important applications. However, AI technology also gives rise to urgent issues and challenges, such as algorithmic discrimination and privacy violation. These issues may infringe on the fundamental rights of citizens (e.g., equality, privacy, communications freedom and confidentiality). In order to achieve better application of AI technologies under the premise of risk control, the following solutions are currently proposed by Chinese academics: (1) when discrimination arises, algorithmic explanation is first conducted, and class action lawsuits can be filed if the algorithm user refuses to explain; (2) equality between prosecution and defense is achieved through information disclosure and information disclosure; (3) due process restricts mandatory measures to protect citizens' personal information rights; (4) judicial review system should be established to protect privacy, etc.

1 Overview of Intelligent Justice Construction and Artificial Intelligence

The world is now stepping into the fast lane of digital and intelligent development. Driven by the troika of algorithm, computing power and data, while supplemented with big data, extreme algorithm, cognitive science and artificial neural network, artificial intelligence (AI) technology is now deeply affecting and reshaping various aspects of social development based on deep learning, driven by logic calculus and by means of command output. Based on this, in 2017, the State Council issued The Development Plan for a New-Generation Artificial Intelligence (新一代人工智能发展规划), marking the rise of AI technology to a national strategic level, and providing directional guidance for the in-depth R&D and wide penetration of China's intelligent technology. The Guidelines for The Construction of National New-Generation Artificial Intelligence Standard System (国家新一代人工智能标准体系建设指南) jointly issued in 2020 by the Standardization Administration of China and other four departments points out that by 2023, an AI standard system will be preliminarily established, focusing on the development of key urgently needed standards such as data, algorithms, systems and services; the AI standard system will be firstly applied in key industries and fields such as manufacturing, transportation, finance, security, home, elderly care, environmental protection, education, health care and judicial justice, so as to build AI standard test and verification platforms, and to empower such platforms to provide public services. Under

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the new technological revolution, AI is now empowering traditional policing, public prosecution and court trial to move towards the intelligent justice stage characterized by digitization, networking and intelligence, which is an inevitable requirement to adapt to the development of the times.

The legal implication of AI integrating with intelligent justice is “digital justice”.¹ Fairness and justice is an unremitting pursuit on the way towards judicial modernization; in the AI era, fairness and justice have been transformed into a “digital justice” driven by science and technology. “Digital justice” not only represents justice, but also measures justice efficiency by digits. It requires to minimize the waste of judicial resources and use limited judicial resources to maximize the justice effect, so as to optimize the allocation of judicial resources. Of course, during integrating the justice artificial intelligence with the intelligent justice construction, we should, on the one hand, be vigilant against ignoring or even sacrificing justice due to the pursuit of justice efficiency, and on the other hand, strike a balance between justice and justice efficiency.

At present, AI technology is applied from case investigation, examination and prosecution to court trial. The public security and judicial organs across the country all put forward the goals of empowering the police and the procuratorial organ by technology, building smart courts, as well as improving the intelligent level of public security and judicial organs in office, case handling, service provision, decision-making and supervision, based on information technologies such as big data, cloud computing, Internet and AI. It can be predicted that AI will play an increasingly important role in China’s intelligent justice construction, reform and practice; it is also of great significance to accelerate the construction of “Digital China” and “Safe China” and continuously promote the modernization of national governance system and governance capacity.

To absorb cutting-edge technologies such as AI, to broaden the scalability of integrating technology with justice, and to build the largest concentric circle are an irresistible trend in the digital age. At the same time, we must clearly understand that with the rapid development of AI technology, here come many ethical challenges and emerging legal issues. However, at present, the construction of intelligent criminal justice mostly focuses on the development and utilization of a new-generation AI technology, and the transformation, upgrading and effective utilization of AI technology itself, but lacks the standard construction and regulation path of the application of AI technology in criminal justice.

2 Policy Planning, Laws and Regulations of Integrating Artificial Intelligence with Criminal Justice Add first subheading

¹ Bin Wei, ‘Difficulties and Paths of Integrating Judicial Artificial Intelligence into Judicial Reform’ (2021) 43 MLS 4

The development and innovation of AI technology not only promote the operation of criminal justice and the construction of intelligent justice, but also give rise to urgent issues and challenges such as algorithmic bias and privacy infringement. We should, on the basis of fully mastering the development and prospects of AI technology, speed up the formulation of justice protection schemes for the development of AI technology, safeguard the deep integration of AI technology with intelligent criminal justice, and strive to make the people feel fairness and justice in each judicial case. Therefore, around the overall strategic planning and specific application design of AI and criminal justice construction, China has issued a series of guiding policies, laws and regulations to facilitate AI to inject new momentum into criminal justice.

2.1 Policy planning

China pays more and more attention to the huge potential and application possibility of AI in the construction of criminal justice, which is embodied in the transformation from the iterative updating of AI technology itself to the upgrading of AI technology in the field of intelligent justice construction, so as to enhance the technological support for the innovation of fair justice and justice for the people, promote the social fairness and justice, and maintain social harmony and stability. Based on this transformation, China has successively issued pertinent policies and plans regarding the examination and prosecution and court trial, as well as promoted and guided the integration of AI with intelligent justice construction step by step.

2.1.1 *Examination and prosecution*

In 2016, the Supreme People's Procuratorate issued The Outline of Procuratorial Work Development Plan During the 13th Five-Year Plan (“十三五”时期检察工作发展规划纲要), which established the overall goal of intelligent procuratorial work application system and the task of procuratorial big data construction of procuratorial organs at all levels, marking that the construction of intelligent procuratorial work has entered the intelligent development stage. Thereafter, the Supreme People's Procuratorate officially issued The Opinions of the Supreme People's Procuratorate on Deepening Intelligent Procuratorial Work Construction (最高人民检察院关于深化智慧检务建设的意见) on January 3, 2018, outlining the grand blueprint of intelligent procuratorial work construction in the future. In January 2021, the Supreme People's Procuratorate issued The Provisions of the People's Procuratorate on Handling Cybercrime Cases (人民检察院办理网络犯罪案件规定), which once again emphasized the active exploration of using big data, cloud computing, AI and other information technologies to assist in case handling, so as to improve the professional level of handling cybercrime cases. It can be seen that AI in the construction of intelligent procuratorial work has moved from the overall blueprint planning to the specific application design.

2.1.2 *Court trial*

In January 2016, the Supreme People's Court proposed for the first time to build smart courts. It refers to a people's court organization, construction, operation and management form, which relies on AI supporting judicial adjudication, litigation services and judicial management in a highly information-based way. They intend to process full business online and provide full range of intelligent services, based on the state of the technology.

In 2017, the Supreme People's Court issued The Opinions of the Supreme People's Court on Accelerating the Construction of Smart Courts (最高人民法院关于加强建设智慧法院的意见), proposing to explore the establishment of a knowledge map for court business such as case filing, court trial, judgment rendering and enforcement, construct AI perception interactive system and knowledge-based AI aided decision-making system for various users, use big data and AI technology to provide targeted and intelligent services on demand, and promote the "similar judgments for similar cases" and the standardization of sentencing. In 2018, The Artificial Intelligence Standardization White Paper (2018 Edition) (人工智能标准化白皮书(2018版)) specifies that the construction and application of smart courts need to rely on several AI technologies such as intelligent big data analysis, speech recognition, image and video analysis, so as to realize the functions such as case element analysis, automatic transcription of court speech recognition, analysis of court trial video, forwarding and scheduling of court video streaming media, etc. In 2022, the Supreme People's Court issued The Opinions on Regulating and Strengthening the Applications of Artificial Intelligence(最高人民法院关于加强和规范人工智能司法应用的意见) in the Judicial Fields, aiming at constructing an improved functional system for the application of AI in the judicial field by the year 2025.

China not only pays attention to the application of technology, but also to exploring practical samples for the construction of intelligent justice, thus producing advanced experience that can be duplicated and popularized, and giving full play to the leading and exemplary role of smart courts in concept innovation, technological innovation and institutional innovation, so as to effectively promote judicial reform and innovation.

2.2 Laws and regulations

At present, although China has not promulgated special legal provisions on the integration of AI with criminal justice, the relevant provisions present possibility of AI being applied in criminal justice. For example, Article 53 of The National Security Law of China (国家安全法) stipulates that "in carrying out intelligence information work, we should make full use of modern technologies to strengthen the identification, screening, synthesis, research, judgment and analysis of intelligence information." Intelligence information work is an important part of criminal justice, especially in the investigation stage, which provides guidance for the integration of modern technologies represented by AI technology with the analysis/judgment of intelligence information. Act 21,28,44,52 of The Network Security Law of China (网络安全法) also stipulates the application of relevant technical measures and other necessary measures.

Compared with the foregoing two laws, The Data Security Law of China (数据安全法) and The Personal Information Protection Law of China (个人信息保护法) newly issued in 2021 further clarify the application scenarios of AI technology, and preliminarily regulate the application of AI technology in principle. For example, the provisions of The Data Security Law of China on the data development and utilization technology and the construction of standard system provide reference for integrating AI with the construction of intelligent criminal justice. The Personal Information Protection Law of China regulates automated decision-making for the first time. According to Article 24 of The Personal Information Protection Law, “when using personal information for automated decision-making, personal information processors shall ensure the transparency of decision-making and the fairness and impartiality of the results.” Article 55 further stipulates that “a personal information processor who uses personal information for automated decision-making shall conduct a personal information protection impact assessment in advance and record the processing.” It means that transparency, impact assessment and fairness of the results are conditions of automated decision-making. Besides, The Personal Information Protection Law of China also pays further attention to new technologies and applications such as facial recognition and AI, as well as stipulates special personal information protection rules and standards.

It can be seen that most of the relevant laws and regulations on AI in China are still of a guiding and fundamental nature, without much operability. At the same time, there is also no specific legal provisions on the integration of AI with intelligent criminal justice. The Standing Committee of the National People’s Congress clearly mentioned the need to strengthen the relevant legislative work concerning the new applications and technologies such as digital economy, Internet finance, AI, big data and cloud computing in 2021, so as to create a law-based environment for healthy development. This provides a significant guiding value for the integration of AI with the legal regulation of criminal justice.

2.3 Relevant industry rules or standards

In order to promote the healthy development of AI in the new era, in June 2019, China’s National Professional Committee for the Governance of New-Generation Artificial Intelligence issued The Governance Principles of New-Generation Artificial Intelligence - Developing Responsible Artificial Intelligence (新一代人工智能治理原则——发展负责任的人工智能) in Beijing, explicitly proposing eight principles, i.e., harmonious and kind, fair and justice, inclusive and sharing, respect for privacy, safe and controllable, shared responsibility, open and cooperation, and agile governance. The foregoing principles provide an important reference for the application of AI in criminal justice. In September 2021, China’s National Professional Committee for the Governance of New-Generation Artificial Intelligence issued The Code of Ethics for New-Generation Artificial Intelligence (新一代人工智能伦理规范), which aims to integrate ethics with the whole life cycle of AI and provide ethical guidance for natural persons, legal persons and other relevant institutions engaged in AI related activities. The Code of Ethics puts forward six

fundamental ethical requirements, i.e., enhancing human well-being, promoting fairness and justice, protecting privacy, ensuring controllability and credibility, strengthening sense of responsibility and improving ethical literacy. Besides, The Code of Ethics puts forward 18 specific ethical requirements for specific activities such as AI management, R&D, supply and use. This also provides fundamental guidance for the integration of AI with intelligent criminal justice.

3 Practical Application of Artificial Intelligence in Criminal Justice

3.1 Application of artificial intelligence in examination and prosecution

At present, the application of AI in the process of examination and prosecution in China is mainly reflected in the guidance of evidence standards, evidence verification, evidence chain examination, procurator performance assessment (supervision), accuracy of sentencing suggestions, examination and arrest, etc. The specific application examples are as follows.

3.1.1 Application of data intelligence

The core of intelligent procuratorial work lies in the construction of intelligent system. In recent years, local procuratorial organs have earnestly implemented the requirements of The Action Guide for Procuratorial Big Data (2018-2020) (《检察大数据行动指南(2018—2020年)》), strengthened the construction of intelligent system of procuratorial organs through independent innovation and external forces, and made a breakthrough in the application of data intelligence.

The case intelligent research and judgment system is a typical application. This application is to use intelligent analysis in the system to make a pre-research and judgment on the nature of the case and the standard of evidence. For example, the procuratorial organs of Guizhou Province has developed an intelligent case research and judgment system, which can use the crime constitution theory in China's criminal law theory and the crime constitution system of different crimes in the specific provisions of criminal law to produce the knowledge map of different crime constitution elements. At the same time, it compares the weights of various statutory sentencing circumstances and discretionary sentencing circumstances in the criminal law to produce a standardized map of conviction and sentencing, as well as systematically analyzes and weights the criminal evidence standards involved in The Criminal Procedure Law (《刑事诉讼法》) and the probative force of the evidence chain.

3.1.2 Application of perceptual intelligence

The application of perceptual intelligence is an important aspect of enriching the construction of intelligent procuratorial work through the continuous application of high-end perception technologies such as image recognition, character recognition, speech recognition and biometric recognition in the construction of intelligent procuratorial work system.

First, the application of video recognition technology. For example, the perceptual intelligent application system of Shanghai procuratorates mainly uses video recognition technology to improve the business application level: by installing video recognition technology system in the penalty execution organ, it can automatically identify the behavior and status of the personnel under supervision, and can carry out intelligent analysis and behavior early warning in the system; it can standardize the behavior of procurators responsible for reception through video recognition technology to provide better procuratorial services; it can supervise the behavior of lawyers, parties and relevant personnel in related businesses, and prevent the occurrence of unnecessary trouble and unreasonable request through video recognition technology.

Second, the intelligent speech recognition system. For example, the “intelligent speech recognition system” developed by iFLYTEK has been adopted by many judicial organs. The system empowers the information equipment and system to “listen and remember” through speech recognition and speech synthesis technology, so as to realize the man-machine speech interaction. By automatically converting voice into text, the system has outstanding performance in document preparation, file reading and excerption. The case handling personnel only need to make dictation, and the system will automatically convert the oral content into written text and generate documents immediately, which greatly improves the case handling efficiency. The court trial speech recognition system developed by the Suzhou Intermediate People’s Court under entrustment by the Supreme People’s Court can automatically transcribe speech into text, automatically distinguish the speakers and contents of the court hearing, and the judges, parties and other participants can see the transcribed text in real time.²

The procuratorial organs of Anhui Province have achieved good results in terms of taking the initiative to embrace modern technology, making use of the application of intelligent voice technology, and developing a new intelligent procuratorial work model with Anhui characteristics. They have also implemented “Three Applications”: the application of intelligent voice input method (it is widely used in office/case handling scenarios such as document drafting, case information input, making file-reading notes, legal instrument drafting, etc.), the application of intelligent voice conference system (it is widely used in Procuratorial Committee, Party group meeting, office meeting and other occasions. Through human-computer interaction, it can realize the functions of role separation, text segmentation, key mark, audio delayed play, recording playback, rapid generation of meeting minutes, and the recognition accuracy is more than 90%), and the application of intelligent voice inquiry system (it is mainly used in the inquiry process of investigation supervision, public prosecution and other departments. Through speech recognition technology, the voice of both sides of the inquiry will be transcribed into text in real time according to the inquiry record format, to produce a standardized inquiry

² Guofeng Ding, ‘The Construction of ‘Smart Courts’ in Jiangsu Injects New Impetus into the Modernization of Judicial Capacity’ *Legal Daily* (Beijing, 20 March 2017) 1

record in time; “Two Integrations”: to promote the application of intelligent case handling aided system in cases applicable to summary procedures and the application of voice file-reading and evidence presentation system in cases applicable to ordinary procedures; “One Center”: to explore and establish the first procuratorial intelligent voice cloud center and intelligent voice cloud computer room of procuratorial organs in China.³

3.1.3 *Application of cognitive intelligence*

In the application of robot intelligence, cognitive intelligence is that machines have the ability of active thinking and understanding similar to human beings. The application of cognitive intelligence in intelligent procuratorial work is to develop intelligent systems step by step and tap the cognitive system and understanding ability of machines in intelligent development during the construction of intelligent procuratorial work, so that robots can learn the “general expression” closest to human brain cognition and obtain the perception ability, understanding and analysis ability similar to human brain, so as to push the AI-enabled intelligent procuratorial work construction to a new level and further promote the intelligent construction level of intelligent construction.⁴

First, the case management robot. For example, the procuratorial organs of Jiangsu Province have developed a “case management robot”. The “case management robot” can compare and analyze the case card filling and various legal documents of the procuratorial organs. Through the comparative analysis, it can check the obtained data, and further remind, warn and evaluate the possible qualitative or evidential problems of the case itself. It can correct errors through robots, analyze data or clerical errors, and timely find out mistakes and defects in case handling documents.

Second, the procuratorial work robot. For example, the Xiqing District People’s Procuratorate of Tianjin Municipality has developed a procuratorial work robot in the 12309 Procuratorial Service Center. The procuratorial work robot can not only provide a touch operation menu for handling related businesses, but also make available the function of man-machine interaction and communication. Through the facial recognition function of the procuratorial work robot, the new visitor’s face will be registered and automatically remembered. In addition to serving as the “guide” of the procuratorial service hall, the basic responsibilities of the procuratorial work robot can also handle preliminary businesses such as case management, prosecution/appeal reception and business consultation according to the different needs of the public, freeing human personnel from many basic operation services.

³ Mian Zhang, ‘Embracing the New Technology of Intelligent Voice and Creating a New Engine of Intelligent Procuratorial Work’ (2017) 753 PPS 28

⁴ Shu Xie, ‘How Can Artificial Intelligence “Unbiasedly” Help Criminal Justice -- From “Evidence Guidance” to “Proof Assistance”’ (2020) 38 JNUPSL 109,117

3.1.4 Others

As early as 2005, the Minhang District People's Procuratorate of Shanghai Municipality had developed the feasibility evaluation system of non-custodial measures for minors, and then Beijing Municipality, Taiyuan City and other places had developed a variety of quantitative evaluation tools.⁵

The public prosecution in court.⁶ The procuratorates of Tianjin Municipality have conducted evidence presentation by multimedia through all links of court trial, forming a new mode of multimedia-driven cross examination of evidence in special case handling; the Ziyang Procuratorate of Sichuan Province has developed the "integrated platform for court appearance" (a "integrated platform for court appearance" system containing pre-trial preparation, charges during court trial and background support) evidence presentation system based on electronic files, which endeavors to solve the contradiction between the diversity of evidence types and the lag of evidence presentation methods by multimedia-driven evidence presentation, and to improve the public prosecution in court; the procuratorates of Beijing Municipality have developed a court appearance management system, which integrates various functions such as court appearance information collection and release, court appearance observation and appointment, online comments on court appearance, court appearance problems and experience summary, and court appearance experience value ranking, so as to strengthen court appearance management.

As regard to the application of AI in the process of examination and prosecution, the academic circle has also made relevant responses. In the application of AI in evidence judgment, some scholars believe that in terms of evidence validity, AI cannot conduct substantive examination, but can conduct formal examination, such as whether the interrogation meets the procedural requirements; in terms of probative force, AI cannot function independently, and may play an auxiliary and reference role in examining the authenticity of evidence; in terms of standard of proof, the role of AI is not to judge the standard of proof regarding evidence specification and analysis, but is only an auxiliary means for judges to judge the standard of proof.⁷ Some scholars believe that evidence standard and proof standard occur in different stages; the evidence standard mainly appears in the pre-trial stage, such as case filing, arrest, investigation conclusion and public prosecution; the proof requirements of evidence on the facts of a case can be referred to as the evidence standard. However, what generally appears in the court trial

⁵ Zhenhui Wang, 'Principle and Construction of Quantitative Model for Review of Social Risk Assessment of Arrest' (2016) 34 PLF 73,74

⁶ Qian Sun, 'Promoting the Deep Integration of Procuratorial Work and New Technology, Effectively Improving the Quality and Efficiency of Case Handling and Judicial Credibility' (2017) 752 PPS 7

⁷ Bo Zong, 'Analysis on the Application of Artificial Intelligence in Criminal Evidence Judgment' (2018) 37 JNUPSL 61

is the proof standard; therefore, the participants of evidence standard and proof standard are different. The standard of evidence in the pre-trial stage is the result of unilateral investigation of the facts of the case, which is monopolized by the public power; the standard of proof is the degree to which the three parties (i.e., the prosecution, the defense and the judge) jointly procure the evidence to prove the facts of the case through cross-examination, debate, and investigation.⁸ Some scholars have pointed out that the limitations (the subjectiveness in perception, the uncertainty in practice, the unity of the criminal procedure, the idealization of value) of the standard of proof have become the direct cause of the establishment of basic evidence standard guidelines in judicial practice. We can achieve a revolutionary leap in criminal examination by developing an intelligent case handling aided system, turning the evidence standards into rigid requirements, transforming them into standardized data models, and embedding them into the intelligent case handling aided system to give full play to the advantages of big data such as objectivity, accuracy, and resistance to external factors, if organically combined with the subjective initiative of law enforcement personnel, and together with the transformation from manual examination only to the combination of manual and artificial intelligent examination.⁹ Some scholars have put forward the concept “unified standard of evidence” in response to the standard of evidence. They believe that the standard of evidence is a derivative concept from China’s judicial practice, and is sometimes interchangeable with the standard of proof; sometimes it is used to distinguish the standard of proof (evidence standard) in the pre-trial stage from the standard of proof in the trial stage. The AI in criminal proof can take “unified standard of evidence” as the core, and develops around the guidance of evidence standard, the guidance of evidence rules, the verification of single evidence, the examination and judgment of evidence chain and whole case evidence, the guidance of factor-based interrogation and the exclusion of illegal verbal evidence.¹⁰ In this regard, some scholars have put forward the “digital evidence standard”, that is, the digital evidence standard uses AI technology to machine learn and deeply mine the typical criminal cases, judicial information resources, case handling experience accumulated in judicial practice, as well as the evidence standards, evidence rules and evidence models formulated by local judicial organs, as well as to enumerate the types of evidence and procedures that should be available before trial for certain types of cases from the long-term accumulated judicial experience and form a list of guidelines, and to verify the consistency of each evidence to be verified, the logical consistency between different evidence and the controversy

⁸ Kun Dong, ‘Evidence Standard: Connotation Reinterpretation and Path Prospect’ (2020) 19 CLR 109

⁹ Guosheng Cai, ‘Origin, Development and Function of Criminal Evidence Standard Guidance’ (2021) 306 SSS 187

¹⁰ Qihong Xiong, ‘Application of Artificial Intelligence in Criminal Proof’ (2020) 34 CLR 75

between evidence, which is a standard to regulate the “quantity” and “quality” in a lesser significance of conclusive evidence.¹¹

In the application of AI technology to assist procuratorial organs in the accuracy and standardization of sentencing suggestions, most studies are carried out in the context of plea for leniency. Focusing on “AI-assisted accurate prediction and sentencing”, a scholar proposes that theoretical prediction and data prediction form a “dual core” collaboration, the two links “match” and verify each other, and the necessary manual intervention mechanism is configured to ensure the output of accurate sentencing suggestions analyzed and determined jointly by theoretical basis, data support, prediction verification and manual intervention. It can be seen that the scholar believes that the supporting status and reference function are the “double drive” fulcrum for the implementation of AI-assisted accurate prediction and sentencing.¹² Some scholars have proposed that procuratorial organs at all levels can adopt mandatory regulations to require case handlers to make full use of technological means such as big data and AI to assist in accurate sentencing. The procuratorial organ shall provide material guarantee for prosecutors to use big data for sentencing.¹³ The deviation degree early warning mechanism based on legal reasoning, intelligent prediction and deviation degree analysis function proposed by some scholars can not only ensure the correct exercise of judges’ jurisdiction, but also effectively ensure the accuracy and standardization of procurators’ sentencing suggestions under the current background of plea for leniency.¹⁴ In addition, some scholars believe that in the field of criminal procedure, the intelligent judgment aided system, including aided sentencing and similar judgments for similar cases, has been applied to judicial practice, providing a strong “external brain” support for judicial decision-making. After the plea for leniency system was written into the law, local procuratorial organs have gradually routinized their case handling relying on the sentencing suggestion aided system. This intelligent judgment aided system can not only effectively help procurators put forward sentencing suggestions, but also shorten the time for procurators to handle cases of plea for leniency, which has become a critical link in deepening the construction of “intelligent procuratorial work”.¹⁵

¹¹ Tao Yang, ‘Rationality and Limit Analysis of Digital Evidence Standard -- Focusing on Shanghai “206” Intelligent System’ (2020) 47 JSNU 45

¹² Daocui Sun, ‘Artificial Intelligence Assisted Accurate Prediction of Sentencing in China -- Taking Plea for Leniency Cases as the Applicable Field’ (2020) 42 JJU 76,77

¹³ Yong Yang, ‘Problems and Optimization in the Practice of Sentencing Suggestions in Plea for Leniency Cases’ (2020) 312 AE 93

¹⁴Ran Wang, ‘Research on Judicial Supervision Mechanism of Big Data’ (2021) 24 HUST (SSE) 136

¹⁵ Siyuan Wu, ‘The Dilemma and Transformation of China’s Plea Bargain Mode -- from “Confirmation and Approval Mode” to “Negotiation and Review Mode”’ (2020) 1 CS 154

In addition, some scholars have conducted a quantitative assessment of the social risk of arrest from the perspective of "arrest", and put forward the quantitative assessment model of the social risk of arrest, which is to use the social learning theory in criminology theory to predict the social risk by analyzing the factors affecting people's social learning progress; the index system of the model is generally developed around the "core eight indicators", including criminal history or litigation evasion history, antisocial personality, criminal attitude, criminal connection, educational background and occupation, family members and military service, drug abuse, entertainment and rest habits.¹⁶ In addition to the deviation early warning mechanism, some scholars, from the perspective of judicial supervision, also propose that big data provides a new path for the supervision of judicial power, which is reflected in the real-time supervision mechanism based on data collection, the performance evaluation mechanism based on data portrait and the evidence examination mechanism based on knowledge map.¹⁷ Some scholars, from the perspective of preventing criminal wrongful conviction, put forward three stages for AI to intervene in the prevention of criminal wrongful conviction, namely, data coding stage, text generation-data link stage and standardized judicial product output stage.¹⁸ Some scholars have put forward the application of AI in the fields of judicial case handling, management and service based on the construction of electronic procuratorial project; specifically, in the field of judicial case handling, it mainly includes intelligent speech recognition, criminal sentencing suggestions and automatic generation of legal documents; in the field of judicial management, it mainly includes the dynamic circulation of procuratorial office and the team management data portrait; in the field of judicial services, it mainly includes procuratorial work publicity and intelligent services.¹⁹

Of course, we should be vigilant about the application of AI technology in the judicial field. In terms of AI technology in the criminal law application, we should not consider or excessively consider the limitations of criminal law, but should prevent AI technology from stepping into the legal forbidden zone such as case-based rule²⁰ and informal

¹⁶Tong Gao, 'Research on Quantitative Assessment of Social Risk of Arrest -- From the Perspective of Automated Decision-making and Algorithmic Regulation' (2021) 15 NLS 135

¹⁷Ran Wang, 'Research on Judicial Supervision Mechanism of Big Data' (2021) 24 JHUST (SSE) 132

¹⁸ Xiumei Wang and Ling Tang, 'Application and System Design of Artificial Intelligence in Preventing Wrongful Conviction' (2021) 42 LM 100

¹⁹ Xia Cui, 'Towards Intelligentization: The Practical Path of Artificial Intelligence Embedded in Procuratorial Work Reform' (2021) 290 SS 132

²⁰ Case-based rule, that is, Cases in the Criminal Trial Reference compiled by the business department of the Supreme People's Court to guide law enforcement and handing cases. Local people's courts at all levels compile and publish "Case Reference" "Model cases" "Typical Cases" to summarize judicial experience and guide judicial work.

institution²¹. At the same time, we should explore the scientization and standardization of AI-driven criminal justice in practice.²² Some procuratorial personnel fail to properly update their ideas and actively make full use of technology to serve case handling; generally speaking, the application of intelligent prosecution still requires further improvement and cannot fully meet the needs of case handling; the working mechanism innovation cannot keep up with the technological innovation; problems such as the unbalanced development of intelligent case handling among different regions cannot be ignored. Some scholars have also put forward three principles to be followed by AI-enabled evidence judgment, including: (1) the auxiliary principle, that is, AI can only play an auxiliary role in evidence judgment, but cannot replace the judge's examination and judgment of evidence; (2) limitation principle, that is, when AI is used for evidence judgment, it can only be limited to specific aspects, and not all evidence judgment can be made by AI; (3) rebuttable principle, that is, when AI is used in one aspect of evidence judgment, it must be clear that the calculation results of AI in evidence judgment are not "absolutely accurate", but refutable and revocable. Not only can judicial personnel directly abandon the calculation results of AI with justified reasons, the party concerned may also raise an objection to the AI calculation results and ask the judicial organ not to consider unreasonable calculation results. Some scholars have pointed out the problems existing in the sentencing proposal in the event of plea for leniency: the interval sentencing proposal accounts for the vast majority and the range of sentencing proposal is too wide, the proposal for the application of fine and probation is relatively arbitrary, the expression of sentencing circumstances is relatively messy, the laws and regulations referred to for sentencing are not unified, the application of non-prosecution is pretty rare, and the production of bill of prosecution is not standardized. It also puts forward that procuratorial organs at all levels can mandatorily require case handlers to make full use of technological means such as big data and AI to assist in accurate sentencing. The procuratorial organ shall provide material support for procurators to use big data-driven sentencing.²³ Some scholars have put forward handling suggestions for the weakening of rational factors in evidence judgment due to the combination of AI and evidence standard, and the hidden worries of case handling personnel suffering from case handling inertia and path dependence. For example, some case handling personnel think that the cases handled meet the system requirements is the end of story. However, this is not only an escape from the responsibility of handling cases, but also may lead to mechanical justice. In order to solve foregoing problems, first of all, it should be made clear from the concept that the integration of evidence standard and AI should be moderate rather than absolute, and the legal problems must not be

²¹ Informal institution refers to criminal policy, reform experiment and local regulation.

²² Jingping Huang, 'Negative List of Criminal Justice Artificial Intelligence' (2017) 10 EFV 85,94

²³ Yong Yang, 'Problems and Optimization in the Practice of Sentencing Suggestions in Plea for Leniency Cases' (2020) 312 AE 93

completely trusted to the algorithm, which will lead to the weakening or even elimination of factors such as human rationality and goodness in judicial case handling. Secondly, we should clarify the functional boundaries of two different fields: online intelligent operation and offline independent case handling. Finally, regarding the path dependence of case handling personnel, the usual practice is to link the case handling accountability system of case handling personnel with the case handling quality. Through the evaluation of case handling quality, case handling personnel are forced to actively improve their competence and get rid of the bad working habit of path dependence. However, at a deeper level, the real purpose of eliminating path dependence lies in the mutual restriction among case handling organs. Especially under the background of trial-centered litigation system reform, we should further substantiate the court trial, and give priority to the role of the prosecution, the defense and the judge in examining evidence in court trial, so as to solve a series of problems such as mechanized justice caused by path dependence in the pre-trial stage.²⁴ Some scholars have put forward that the application of AI in the construction of intelligent procuratorial work is affected by the people's feelings of fairness and justice, the internal business needs of procuratorial organs and the driving force of AI integrating into judicial reform. Although AI has been widely used in procuratorial work, it is also restricted in many aspects. The lack of data samples, the defects of data quality and the shackles of data sharing are still unavoidable difficulties in terms of judicial data; there are also problems such as legal reasoning and knowledge labeling in the representation of legal knowledge with judicial logic; problems such as algorithm discrimination and algorithm black box associated with the operation of AI algorithms have not been solved. However, generally speaking, the application of AI in the construction of intelligent procuratorial work has become the mainstream trend. We should not only pay attention to the resource integration of judicial big data from vertical dimension, horizontal dimension and practical dimension, but also strengthen the in-depth integration of AI with procuratorial work.²⁵

3.2 Application of artificial intelligence in court trial

In the judicial field, the article *Some Speculation about Artificial Intelligence and Legal Reasoning* by Buchanan and Headrick published in 1970 ushers in the research on AI in the field of judicial adjudication.

At present, AI in China's court trial is mainly used in evidence judgment (examination), aided sentencing, similar cases pushing, deviation prediction, remote trial, online

²⁴ Kun Dong, 'Evidence Standard: Connotation Reinterpretation and Path Prospect' (2020) 19 CLR 118

²⁵ Xia Cui, 'Towards Intelligitization: The Practical Path of Artificial Intelligence Embedded in Procuratorial Work Reform' (2021) 290 SS 132

judicial confirmation, performance evaluation (judgment evaluation), etc. The specific application examples are as follows.

3.2.1 *Similar cases retrieval*

Based on the core needs of judges in case handling, the courts in Beijing have innovatively constructed a “Smart Judge” system serving unified judgment standard by using emerging technologies such as big data, cloud computing and AI and based on ZhiHuiYun Platform. Relying on the unified trial information resource database of the three-level courts in Beijing, “Smart Judge” integrates multiple data resources such as judicial trial, judicial personnel, judicial administration and shared data, mines and analyzes the data resources, and automatically pushes the information such as case analysis, legal provisions, similar cases and judgments reference in the process of case handling, so as to provide unified and comprehensive trial norms and case handling guidelines for judges. “Smart Judge” has access to multi-dimensional data support, automatically conducts the parties’ information analysis, the trend analysis of this type of cases, comprehensive analysis of previous cases and the like according to the cases heard by the judge, as well as pushes all similar cases by relying on the legal rule database and the semantic analysis model. “Smart Judge” also creates a whole process data service, which automatically extracts case information regarding the case filing stage, generates a “case portrait”, automatically generates a trial outline and record template regarding the trial stage, and automatically generates judgment documents regarding the case closing stage, so as to realize the big data-driven service from case filing to case closing.²⁶

The “Enforcement AlphaGo” of Guizhou High People’s Court is an “enforcement big data application analysis system” with independent learning ability and can assist judges in handling cases. It is composed of Enforcement Think Tank + Senior Judge Database + Machine Artificial Intelligence Autonomous Learning. It uses AI and big data technology to deeply integrate various systems to form a unique system with autonomous learning ability to assist judges in decision-making through big data. When the presiding judge encounters a difficult case, the “Enforcement AlphaGo” can automatically call similar cases and expert instructions from Enforcement Think Tank, generate more than two enforcement schemes and push them to the judge. The 37 process nodes of the enforcement case can have access to automatic case push, laws and regulations push, enforcement work specifications push, expert suggestions push, and videos push, etc., to make available intelligent services, so as to help judges quickly solve practical problems and improve enforcement efficiency.

²⁶ ‘Beijing “Smart Judge” Promoting Similar Judgments for Similar Cases’ (People’s Court Daily, 1 September 2017) < http://rmfyb.chinacourt.org/paper/html/2017-09/01/content_129653.htm> accessed 18 December 2021

3.2.2 Evidence standardization

In March 2006, the Zichuan District Primary People's Court of Zibo City, Shandong Province launched the computer sentencing software jointly developed with high-tech companies in the reform of sentencing standardization, realizing the application of AI in court sentencing.²⁷ Since 2016, Guizhou Province has taken the lead in trying to formulate the "evidence standard guidelines" for the cases handling by public security organs, procuratorates and courts, and used big data to embed the element-oriented and structured evidence standards into the case handling system, so that public security organs, procuratorates and courts can pay attention to the unified use of evidence and prevent wrongful conviction.²⁸ For another example, the Shanghai High People's Court developed the "Shanghai intelligent case handling aided system for criminal cases" in 2018. By "embedding the statutory unified evidence standard into the digital criminal case handling system of public security organs, procuratorates and courts", it tries to realize "the unified evidence standard for the case handling personnel of public security organs, procuratorates and courts" Specifically, this system should solve the problems such as inconsistent application of evidence standards in some significant, multiple and new types criminal cases. It requires on what evidence should be collected and has the functions of inspection, check and supervision, so as to timely find flaws and contradictions in evidence, make case handling personnel correct or explain.

3.2.3 Sentencing prediction (aided sentencing)

Both the "Legal Mirror System"²⁹ of Guizhou Province and the "intelligent case handling aided system" developed by Shanghai "Project 206" have the function modules of sentencing assistance, while the Hainan High People's Court has specially developed the "standardized intelligent sentencing aided system"³⁰ to provide decision-making reference for judges to handle cases.³¹

3.2.4 Text generation

²⁷ QiuHong Xiong, 'Application of Artificial Intelligence in Criminal Proof' (2020) 34 CLR 79

²⁸ 'Guizhou Political and Legal Organs Solidly Promote the Deep Integration of Technological Innovation and Judicial System Reform -- Accurate and Fair Case Handling Driven by Big Data' *People's Daily* (Beijing, 10 July 2017)

²⁹ Xia Cui, 'Towards Intelligentization: The Practical Path of Artificial Intelligence Embedded in Procuratorial Work Reform' (2021) 290 SS 132, 137

³⁰ 'Shanghai's Application of "Artificial Intelligence" in Case Handling to Prevent Wrongful Conviction, the Launch of China's First "Intelligent Case Handling Aided System' *Legal Daily* (Beijing, 11 July 2017)

³¹ 'Let Modern Technology Better Help Judicial Reform -- Hainan Intelligent Sentencing System Operates "Faster, Better and More Cost-effectively"' *People's Court Daily* (Beijing, 9 December 2017)

The court trial speech recognition system developed by the Suzhou Intermediate People's Court under entrustment by the Supreme People's Court can automatically transcribe speech into text, automatically distinguish the speakers and contents of the court hearing, and the judges, parties and other participants can see the transcribed text in real time.³² In the trial operation of the system, the correct rate of speech recognition has reached more than 90%, and the clerk can finish the complete record of the court trial with only a small amount of correction. According to the comparative test, the court trial time is shortened by 20% ~ 30% on average, the court trial time of complex cases is shortened by more than 50%, and the integrity of court trial records reaches 100%.

3.2.5 *Deviation warning*

According to incomplete statistics, Shanghai, Jiangsu, Zhejiang, Guizhou, Yunnan and other provinces and cities have launched a trial aided system including the "deviation early warning" function module.³³ Taking Jiangsu Province as an example, it has the first "People's Court Justice Big Data Research Base" established by the Supreme People's Court nationwide (jointly built by Jiangsu High People's Court and Southeast University). Relying on the advantages of scientific research, the "early warning platform for different judgments for similar cases" developed by the Research Base produces a sentencing algorithm through in-depth learning of many criminal documents, and automatically provides early warning for cases with great deviation, so as to provide technical support for unifying the judgment standard.³⁴ To be specific, when the judge determines the verdict result and completes the writing of the judgment document, the system will automatically capture the judgment document for intelligent analysis. Cases with high deviation are automatically warned. The reasons for high deviation are explained to judges by using judicial big data visualization technology, or analyzing the distribution of similar cases and deviation status of judgment results.

3.2.6 *Other applications of AI in the trial stage*

In addition to the foregoing types of applications, the courts of Zhejiang Province have further promoted the "Internet + trial" reform, conducting supervision through online traces and information disclosure.³⁵ The procuratorial organs of Jiangsu Province

³² Guofeng Ding, 'The Construction of 'Smart Courts' in Jiangsu Injects New Impetus into the Modernization of Judicial Capacity' *Legal Daily* (Beijing, 20 March 2017) 1

³³ Lusheng Wang, 'Technical Barriers to the Development of Judicial Big Data and Artificial Intelligence' (2018) 20 CLR 48

³⁴ 'Upgrading the Informatization Construction of Jiangsu 'Smart Courts' Injects New Impetus into the Modernization of Judicial Capacity' *Legal Daily* (Beijing, 20 March 2017)

³⁵ 'New Highlights of Judicial Reform: Power and Responsibility Unification under the Judicial Accountability System' <<http://lxfy.chinacourt.gov.cn/article/detail/2016/07/id/2042348.shtml>> accessed 18 December 2021

launched the “procurator performance evaluation software”, which realizes the automatic capture and calculation of relevant data, and establishes the digital personal files of procurators.³⁶ The courts in the Yangtze River Delta have established a professional judge meeting system of “cross-region inquiry, pulse taking by expert and online prescription”, which uses “big data + AI” to gather judicial data resources in the Yangtze River Delta, analyzes regional judgment differences, law application, disputed issues and evidence citation, and promotes the cross-region “similar judgments for similar cases”.

Based on the court trial stage, many Chinese scholars mainly discuss the application of AI in such links as evidence judgment (examination), aided sentencing, similar cases pushing, deviation prediction, remote trial, online judicial confirmation, performance evaluation (judgment evaluation).

Evidence judgment (examination). Some scholars believe that the use of AI in the trial stage is basically the same as that in the procuratorial stage in terms of evidence validity and the probative force of a single evidence. The auxiliary function of AI in the judgment of proof standard should be mainly used in the trial stage, and the judgment of evidence in the trial stage has conclusive significance. Therefore, different requirements should be made for different stages of the trial. In AI systems, certain functional limitations should be imposed on the links used by the judge before the trial (including court trial preparation and pre-trial meeting), such as the discovery of flaws, defects, contradictions and judgments on whether the evidence meets the evidence specifications, and should not have the function of judging the probative force of single evidence or all evidence; in the court trial stage, AI shall not and cannot be used to assist in evidence judgment. the substantiation of court trial requires judges to form inner conviction during the court trial, and the principle of directness and verbalism should be implemented in the court trial, so that “the investigation of factual evidence is conducted in the court and the judgment results are formed in the court”. However, the use of AI in the court trial process is bound to affect the judges’ hearing and judgment of evidence, and will damage the authority and seriousness of the court trial as well. Therefore, judges should be prohibited from using AI at this stage; after the court trial, AI is used to assist the formation of inner conviction, but attention should be paid to inputting all evidence and cross examination before and during the court trial into the system to avoid missing necessary evidence or information and thus affecting the judgment results. Moreover, conviction evidence and sentencing evidence should be separated as far as possible to avoid affecting the accuracy of AI-driven judgment.³⁷ Some scholars believe that evidence is the core of litigation, an important basis for restoring the facts of the case and

³⁶ Yonglian Zhuang, ‘How to Build a Case Handling Performance Evaluation Mechanism for Procurator Quota System’ (2017) 753 PPS 48

³⁷ Bo Zong, ‘Analysis on the Application of Artificial Intelligence in Criminal Evidence Judgment’ (2018) 37 JNUPSL 68

an important basis for fair judgment. Evidence examination is an important part of court trial. Evidence standardization is to summarize the experience of evidence authentication from many effective judgments through big data technology, transform the personal experience of multiple judges into collective experience, and ensure the unity of evidence authentication standards.³⁸ In this regard, some scholars have proposed to establish a unified and electronic evidence standard, that is, to summarize the case handling experience through legal big data, and embed it in the digital case handling system of public security organs, procuratorates and courts, so as to standardize the judicial practice of public security organs, procuratorates and courts and their personnel.³⁹ In addition, some scholars suggest that the standing of human beings as the decision-maker in judicial practice should not be shaken. AI can be used as an aid to supplement knowledge and support calculation, but it cannot be expected to become a “vending machine” for judicial decision-making. If AI is to contribute to justice without prejudice, it should turn from “evidence guidance” in formal sense to “evidence assistance”⁴⁰ in substantial sense, and realize comprehensive upgrade based on proof principle, probability measurement based on evidence evaluation and cognitive monitoring based on holism. At the same time, human beings should not be shaken as the subject of judicial decision makers, and the algorithm plays a supporting role rather than a dominating role, so as to avoid the uncontrollable negative effects of “cognitive bias” hidden in AI on judicial practice.

Aided sentencing. Some scholars mention that the judicial application of intelligent sentencing algorithm not only promotes the structural transformation of China’s traditional justice, but also opens up the technical judgment path of “similar judgments for similar cases”. This is mainly due to the subjective logic, quantitative normative logic and empirical normative logic of intelligent sentencing algorithm.⁴¹ Some scholars have pointed out that simple sentencing considerations can be quantified, that is, they can be determined and calculated mechanically by computer programs, but in fact, in the aided sentencing system, the foregoing sentencing considerations need to be confirmed by the human brain (the judge), so the function of the computer is just a simple arithmetic operation. The real problem to be solved in sentencing is not to solve the calculation of punishment, but how to comprehensively consider and balance all factors affecting punishment (including personal and social factors), and finally present the most

³⁸ Hui Zhu and Chenhui Liu, ‘Research on the Application of Big Data in the Trial of Similar Cases’ (2019) 20 JLA 47,54

³⁹ Weimin Zuo, ‘Some Thoughts on the Application Prospect of Legal Artificial Intelligence in China’ (2018) 12 TLJ 108, 124

⁴⁰ Shu Xie, ‘How Can Artificial Intelligence “Unbiasedly” Help Criminal Justice -- From “Evidence Guidance” to “Proof Assistance”’ (2020) 38 JNUPSL 109

⁴¹ Yujie Zhang, ‘Judicial Application of Intelligent Sentencing Algorithm: Logic, Problems and Procedural Law Response’ (2021) 81 OL 187

appropriate punishment for criminals. The punishment obtained through this procedure should reflect the comprehensive balance of social needs for crime retribution, prevention and suppression, correction and demand. Such a complex comprehensive balancing process cannot be undertaken by a programmed machine such as a computer, but should be undertaken by the human brain, that is, the judge.⁴²

Online judicial confirmation. Some scholars have proposed three modes of online judicial confirmation, namely “online reservation, on-site review”, “online reservation, written review”, “online reservation, video review”. In the “AI + online judicial confirmation” mode, the AI-enabled machine independently reviews the judicial confirmation application from four aspects: first, whether the application materials are complete; second, whether the mediation agreement is reached by the parties voluntarily; third, whether the mediation agreement is enforceable; fourth, whether the electronic letter of commitment has been prepared.⁴³

AI-enabled case division mechanism. Some scholars have mentioned the AI-enabled case division mechanism, that is, using AI technology to build an AI system applied to the court case division system to realize the automation and intelligentization of the case division system, that is, to study the basic theory, method and technology of how to apply computer software and hardware to simulate manual case division. At the same time, four modules are preset, namely case module, judge module, comparison module and output module. The setting items and variable values of each module are assigned by DelphiMethod. Through item-by-item comparison, the case division result is finally obtained.⁴⁴

In addition, some scholars did not study a certain application of AI in court trial, but put forward a group of application types. Some scholars have proposed four forms of application of AI in smart courts, namely, the electronization and digitization of information, the intelligentization of case handling aided system, the prediction and supervision of judgment rendering, and the establishment of unified and electronic evidence standards.⁴⁵ Some scholars have pointed out that at present, the application of AI in court trial mainly focuses on the following three aspects: first, through intelligent speech recognition technology, it helps the whole process of court trial by trial records, case evaluation, document preparation and daily office work, so as to free trial assistant

⁴² Qihong Xiong, ‘Application of Artificial Intelligence in Criminal Proof’ (2020) 34 CLR75,88

⁴³ Mingliang Zhong, ‘Practical Observation and Prospect of “Artificial Intelligence + Online Judicial Confirmation”’ (2020) 15 JLA 122

⁴⁴ Changwei Jin, ‘Analysis on the Case Division Mechanism Driven by Artificial Intelligence’ (2020) 76 JCUPSL 171

⁴⁵ Weimin Zuo, ‘Some Thoughts on the Application Prospect of Legal Artificial Intelligence in China’ (2018)12 TL 108,114

personnel from recording or consulting affairs; second, through intelligent image and document recognition technology, it can realize the integration of sending, receiving and collecting electronic files, build smart trial big data, and free judges from simple case processing and cumbersome documents; third, through intelligent data analysis, it can realize judicial affairs management, evidence analysis, case reference, clerical error correction, etc., and assist judges in decision-making and judgment rendering.⁴⁶ Under the background of judicial big data, some scholars have discussed several important AI modules – similar cases recommendation, sentencing assistance and deviation warning from a technical perspective, analyzed their technical obstacles in judicial practice in detail, and proposed that similar cases recommendation, sentencing assistance and deviation warning are the most typical application modules in the development of judicial big data and AI. Their functions follow the technical path of map construction, plot extraction, similar cases recognition, model training, sentencing prediction and deviation measurement.⁴⁷

Of course, in promoting the application of AI technology in the trial stage, we should also pay attention to the following problems. Some scholars have pointed out that legal AI can only be a limited case handling assistance means in the medium- and short-term in China, which is difficult to be applied to the core judicial work, i.e., judgment rendering, let alone to replace the thinking of human judges with technological means.⁴⁸ Some scholars have pointed out that the intelligent case handling system is exposed to the risk of discipline violation, exclusion and misjudgment, and further proposed that in order to effectively avoid the legitimacy risk caused by AI technology in the criminal trial field, we should establish the concept of power regulation, and regulate the intelligent case handling system from three aspects: the application mechanism (automatic judgment rendering), the participation mechanism (equalization of the defense), and the research and development mechanism (reliable decision-making), so as to protect the right of the accused to effectively participate in the intelligent system. In terms of the data, the defense lawyer of the accused can request to view, modify, correct and interpret the data related to their own rights and interests in the intelligent system.⁴⁹

⁴⁶ Xueqiang Gao, 'Chinese Justice in the Era of Artificial Intelligence' (2019) 49 JZU (HSSE) 229,237; Shuqin Zhang, 'Application of Artificial Intelligence in Trial' (2020) 49 JSNU (PSSE) 102,110

⁴⁷ Lusheng Wang, 'Technical Barriers to the Development of Judicial Big Data and Artificial Intelligence' (2018) 20 CLR 46

⁴⁸ Weimin Zuo, 'Some Thoughts on the Application Prospect of Legal Artificial Intelligence in China' (2018) 12 TLJ 108,124; Fuli Zhang and Haishan Zheng, 'Positioning, Prospect and Risk Prevention and Control of Artificial Intelligence Assisted Sentencing in the Era of Big Data' (2019) 283 GSS 92,100; Hongyang Luo and Xianglong Li, 'Ethical Issues in Intelligent Justice and Their Countermeasures' (2021) 1 PL 148,159

⁴⁹ Chenshu Wei, 'Power Logic of Artificial Intelligence in Criminal Trial' (2021) 41 JXJU(SS) 147

By comprehensively analyzing the articles and views of the above scholars, it can be found that at this stage, AI applied in the field of intelligent criminal justice only plays the role of auxiliary tools, and the results obtained from its analysis or technology are only a reference, the adoption of which depends on the judgment of judicial personnel. There are two different views on the function positioning of the judicial application of AI technology in the future: first, the application of AI technology only plays an auxiliary role at any time;⁵⁰ second, the application of AI in the judicial field may stand in a leading-role position in the future.⁵¹

3.3 Application of AI-driven evidence⁵²

3.3.1 *Application overview of AI-driven evidence*

The deep integration of AI with intelligent justice is reflected in the field of evidence science, i.e., the emergence of AI-driven evidence. For example, in the second-instance criminal ruling concerning the crime of fraud committed by Yue Shanshan, the court held that “Yue Shanshan provided a photo of Yang Wei (Wu Ziwei), and the investigation organ found out Geng, who was 95% similar to the photo through facial recognition technology, and Geng testified in court that she was the woman in the photo, but did not know Yue Shanshan and suspected that she had been secretly photographed.”⁵³ For another example, in the first-instance criminal judgment concerning the theft committed by Zhou Zhimin, the court held that “the public security organ used the ‘Hengyang static eagle eye facial recognition system’ to compare the suspect images extracted from the theft scene at Dongliang Supermarket on September 19, 2018. The results showed that 16 people had a similarity of more than 70% with the targeted image, and it was found that the similarity of the fourth defendant Zhou Zhimin reached 69.41%. Viewed from the actual situation, 16 people had a similarity of more than 70% with the targeted image. Although there were many similar targets, the

⁵⁰ Hongyang Luo and Xianglong Li, ‘Ethical Issues in Intelligent Justice and Their Countermeasures’ (2021) 1 PL 148,159

Shuqin Zhang, ‘Application of Artificial Intelligence in Trial’ (2020) 49 JSNU (PSSE) 102,110; Yonglu Pan, ‘Path Analysis of Artificial Intelligence Intervention in the Judicial’ (2018) 3 OL109,118; Han Qin, ‘Theoretical Reflection on AI-enabled Judicial System’ (2021) 15 NLS 115,129; Xi Zheng, ‘Application and Regulation of Artificial Intelligence Technology in Judicial Adjudication’ (2020) 32 PULJ,647,696

⁵¹ Yujie Zhang, ‘Judicial Application of Intelligent Sentencing Algorithm: Logic, Problems and Procedural Law Response’ (2021)3 OL 187,199; Mingliang Zhong, ‘Practical Observation and Prospect of “Artificial Intelligence + Online Judicial Confirmation”’ (2020) 15 JLA 122,130

⁵² The “AI-driven evidence” in this part refers to the evidence formed by the application of artificial intelligence; The judgment and analysis of evidence with the help of AI technology has been mentioned in the application of AI in examination, prosecution and trial.

⁵³ See the second-instance criminal ruling concerning the crime of fraud committed by Yue Shanshan, Case No.: (2020) Ji 02 Xing Zhong No. 210.

defendant Zhou Zhimin was listed as a key suspect because he was a native of Hengshan. However, the comparison result still cannot totally exclude other people from the suspect list, and is not enough to identify the defendant Zhou Zhimin as the real perpetrator of the theft".⁵⁴ This shows that the AI-enabled evidence conclusion represented by facial recognition technology is now concerned by judges and its acceptance has been taken into consideration.

However, the theoretical and practical circles in China have not paid enough attention to the AI-enabled evidence. At present, most of the existing studies focus on the topic of "big data-driven evidence", but there are still disputes on the definition and type of big data-driven evidence. As for the definition of big data-driven evidence, some scholars, from the perspective of technical principles, introduced the three links to transform big data into evidence: the first step is to summarize and clean the data, the second step is to build an analysis model or machine algorithm, and the third step is to carry out operation to form an analysis conclusion; it is pointed out that big data-driven evidence is an analysis result or report based on massive electronic data.⁵⁵ On this basis, some scholars have further proposed that the big data-driven evidence has the dual structure of "big data set" and "big data report".⁵⁶ Other scholars believe that big data-driven evidence is the evidence generated from filtering, summarizing, refining, concluding massive data and is used in the court trial. At the same time, they point out that big data-driven evidence is different from "analyzing and collecting evidence using big data technology". The latter does not pose an obvious challenge to the traditional evidence rules, but the former will lead to an obvious conflict between big data-driven evidence and traditional evidence rules.⁵⁷ Some scholars, based on the methodological concept of big data, have pointed out that big data-driven evidence is a complex of case facts proving and analytical thinking, methods and technologies.⁵⁸ To sum up, it is not difficult to see that big data-driven evidence not only uses "the conclusion formed by filtering, summarizing and refining massive data and then algorithm" as evidence, but also includes "directly using big data in the form of equal copies of data" as evidence. In this case, big data-driven evidence is closer to electronic evidence. Based on this, some scholars have pointed out that for data copies of big data, big data-driven evidence which

⁵⁴ See the first-instance criminal judgment concerning the theft committed by Zhou Zhimin, Case No.: (2020) Xiang 0423 Xing Chu No. 11.

⁵⁵ Pinxin Liu, 'On Big Data-Driven Evidence' (2019) 41 GLR 25

⁵⁶ Yi Yuan, 'Attribute and Objective Verification Standard of Binary Physical Evidence of Big Data-Driven Evidence' (2021) 44 JSU(PSSE) 143

⁵⁷ Fei Zheng and Guoyang Ma, 'Triple Dilemma and Way Out of Big Data-Driven Evidence Application' (2020) 28 JCU(SSE) 208

⁵⁸ Hui Xu and Xiaodong Li, 'Research on Evidence Attribute Verification of Big Data-Driven Evidence' (2020) 36 JPPSUC (SSE) 50

is similar to electronic evidence can be examined according to electronic evidence examination rules and methods, which cannot reflect the particularity of such evidence. The uniqueness of big data-driven evidence lies in the part that draws conclusions through machine analysis, that is, AI-enabled evidence. The examination of this kind of evidence requires a new examination system. In other words, AI-enabled evidence is a machine opinion formed based on AI analysis that can be used to prove the facts of the case.⁵⁹

3.3.2 *Admissibility of cross-border criminal evidence*

Network information technology has profoundly changed the external ecology and internal logic of criminal justice. The boundary between cybercrime and traditional crime is blurring, and electronic data has become a common and even key type of evidence in various crimes. The original criminal procedure system for traditional crimes based on physical field system can hardly deal with such a large-scale crime transformation in time and effectively, and the dislocation between crime and crime governance is increasingly prominent. The cross-border criminal data collection is the exact embodiment of this misplaced relationship. Therefore, the request for assistance in investigation and evidence collection between countries is undoubtedly the focus of the current international criminal judicial assistance, and it is also the key to make the breakthrough progress in terms of international criminal judicial assistance.

The evidence validity under cross-border evidence collection often becomes the focus of litigation in courts.⁶⁰ The evidence validity is a legal issue, which refers to the qualifications and conditions for evidence to be admitted by the court stipulated by the law. The evidence validity is regulated and reflected through the rules of evidence. In criminal judicial assistance, because the parties or other litigation participants often do not appear in court, there are great differences in the legal systems between different places, and some evidence will be excluded due to the lack of evidence validity, which undoubtedly affects the effect of investigating crimes.

According to Paragraph 1 of Article 405 of The Interpretation of the Supreme People's Court on the Application of the Criminal Procedure Law of the People's Republic of China (最高人民法院关于适用〈中华人民共和国刑事诉讼法〉的解释), the court shall examine evidence materials obtained from abroad in terms of material sources, personnel providing or extracting materials and collection time. After examination, the evidence will be admitted generally if it can prove the facts of the case and comply with the provisions of The Criminal Procedure Law; however, if the source of the evidence is unknown or the authenticity thereof cannot be confirmed, it shall not be used as the basis

⁵⁹ Guoyang Ma, 'On the Examination of AI-driven Evidence in Criminal Procedure' (2021) CS 175

⁶⁰ Linlin Zhao, 'Analysis of Cross-border Evidence Collection in China's Interregional Criminal Justice -- Focusing on the Analysis of Evidence Validity' (2019) 5 JLA 120,127

for fact-finding. When judging cross-border evidence, the court should consider the requirements of hearsay rules and “illegal evidence exclusion rules”, reach a consensus through consultation, and establish corresponding supporting mechanisms to solve the existing problems. On the premise of ensuring litigation justice, the court should simplify the procedures of cross-border evidence collection, ensure the admissibility of relevant evidence, and further improve the efficiency of punishing cross-border crimes.

4 Protection of Fundamental Rights in the Application of Artificial Intelligence

4.1 Fundamental rights infringed in the application of artificial intelligence

The application of AI in the judicial field has improved judicial efficiency and judicial accuracy to a certain extent, but at the same time, the application of some technologies has also resulted in violations of citizens’ fundamental rights, mainly reflected in the violations of citizens’ rights to equality, privacy, communications freedom and confidentiality, specifically as follows:

4.1.1 The right to equality

The Constitution of China (宪法) stipulates that “all are equal before the law”. Citizens should not be treated unfairly because of their nationality, gender, identity and social status. The combination of AI technology and justice not only brings convenience to judicial work, but also brings unequal treatment caused by algorithm bias, which infringes on citizens’ right to equality.

The application of AI technology in intelligent criminal justice infringes on the right to equality mainly in the trial stage. The algorithm deviation and algorithm black box of intelligent trial aided systems such as sentencing assistance and similar cases pushing may lead to discrimination to varying degree; specifically, the defendants who commit the same crime may be subject to different treatment (guilty bias) or unfair trial results; judicial informatization will make the court fully open to the public, and therefore external factors may affect the litigation justice.

Some scholars have pointed out that there will be deviations in the operation of the algorithm due to the algorithm’s own factors or sudden errors, that is, algorithm bias, also known as algorithm discrimination, which refers to systematic and repeatable errors that can cause unfair and unreasonable results. The most common example is that the algorithm may produce different results for different people, or produce different results for two people with the same or similar conditions. If algorithm designers deliberately write programs with subjective judgment, algorithm manipulation will occur. The algorithm bias that damages the fundamental rights of the public mainly refers to the algorithm bias that damages the fundamental rights of unspecified subjects. The holders of these rights are uncertain, the intensity of right infringement is unknown, and it is difficult to contain the harmful consequences and for the injured individuals to obtain

remedy, which is mainly manifested in gender discrimination and racial discrimination.⁶¹ Some scholars have pointed out that the court informatization has changed the original litigation relationship, which has a certain impact on the rights of citizens involved in litigation, particularly in criminal justice. The defendant's defense rights based on the principles of presumption of innocence and equality between prosecution and defense may encounter difficulties due to the court informatization.⁶² Some scholars have pointed out that judicial informatization will inevitably turn the court from semi-closed to fully open to the public, so that the court has to consider the extrajudicial and extra-procedural factors emphasized by laymen, which will inevitably erode or reduce the fair trial right of the defendant and the parties. Since limitation shall be imposed on the media coverage of court, it is even more necessary to limit the openness under judicial informatization. Therefore, the court should seek the opinions of the parties before making the court trial go online.⁶³

4.1.2 *The right to privacy*

The right to privacy is a specific personality right, which refers to a personality right that a natural person may enjoy the peace of a personal life, as well as his personal information are protected according to law, and shall not be illegally disturbed, known, collected, utilized and disclosed by others. In China, although the right to privacy is mainly protected by civil laws such as The Tort Liability Law (侵权责任法), the right to privacy also has its constitutional basis, that is, the concretization of constitutional protection of citizens' personal dignity.⁶⁴ In China, AI technology's infringement on citizens' right to privacy is mainly caused by technical investigation and information collection and disclosure by the court.

In the process of litigation, the informatization of the court must involve the storage and use of the information of citizens involved in litigation, which inevitably concerns the personal information rights of relevant citizens. Therefore, the disclosure of case information based on the Internet will inevitably divulge the personal information of citizens; at the same time, relying on the case handling and management platform driven by modern technology and the trial aided system based on big data and AI technology, most of the information collection and use adopt the way of "black-box operation", and there may also be the problem of illegal collection of personal information.⁶⁵ Some

⁶¹ Youhua Liu, 'Research on Algorithm Bias and Its Regulation Path' (2019) 40 LM 56

⁶² Xi Zheng, 'Conflict and Coordination Between Court Informatization and Citizens' Criminal Procedure Rights' (2020) 42 JJU (PSS) 95,97

⁶³Xiaoxia Sun, 'On the Humanistic "End" of Judicial Informatization' (2021) 39 LR 34

⁶⁴ Bo Zong, 'Legal Regulation of Large-scale Monitoring in Investigation' (2018) 159 JCL 24

⁶⁵ Xi Zheng, 'Conflict and Coordination Between Court Informatization and Citizens' Criminal Procedure Rights' (2020) 42 JJU(PSS) 98

scholars, from the perspective of technical investigation measures, have pointed out that technical investigation is carried out with the help of modern technology without the knowledge of the target under investigation, which makes it possible to use technical investigation measures arbitrarily. At the same time, given the nature of the events or activities it actively intervenes into has not yet been determined as a criminal case, this may directly infringe on citizens' right to privacy. Therefore, its infringement on civil rights is even more serious than the traditional investigation means.⁶⁶ From the perspective of large-scale monitoring, some scholars have pointed out that China's public security organs are currently equipped with a strong network monitoring capacity, which can realize the effective monitoring of network information such as online chat, web page content and even e-mail. Of course, the citizen privacy will inevitably be involved in this process, making the investigation constitute a compulsory investigation measure.⁶⁷ Some scholars have pointed out that if it is used only for the purpose of ensuring judicial justice, can intelligent justice avoid trials that infringe on the parties' personality rights; however, intelligent justice may also infringe the parties' right to privacy and the right to be forgotten in data collection and calculation. The infringement upon privacy in the era of big data has been discussed many times by the academic community, because the calculation of algorithm technology has exceeded human cognition of their own information, which is an infringement upon human privacy. When collecting and processing evidence, intelligent justice should consider the protection of personal information right. Outdated information such as information that is no longer relevant to the identity of the parties, no longer effective and insufficient shall not be used as the basis of judicial trial, and the right to be forgotten of the parties should be respected. This protection of the right to personal information should be designed into the technology of algorithm to avoid the infringement upon the party's right to personal information. Whether it is out of the requirements of judicial fairness, or the protection of the parties' right to privacy and the right to be forgotten when collecting evidence, it is the protection of the parties' right to personality.⁶⁸

4.1.3 *The right to communications freedom and confidentiality*

Article 40 of The Constitution of China stipulates citizens' right to communications freedom and confidentiality. When classifying the fundamental rights of citizens involved in the application of large-scale monitoring in investigation, some scholars have pointed out that the nature of communications freedom is different from that of communications confidentiality. The right to communications freedom is a right to

⁶⁶ Dengke Xie, 'On the Protection of Privacy in Technical Investigation' (2016) LF 33,40; Shulin Yang, 'On Procuratorial Supervision of Technical Investigation', JSMU 34 (HSSC)105,108

⁶⁷ Bo Zong, 'Legal Regulation of Large-scale Monitoring in Investigation' (2018) 159 JCL 88

⁶⁸ Hongyang Luo and Xianglong Li, 'Ethical Issues in Intelligent Justice and Their Countermeasures' (2021) 1 PL 148,159

freedom, which refers to the freedom of citizens to express their wishes through communication tools; the right to communications confidentiality is a right to privacy, which means that citizens express their wishes through letters, telephones, telegrams, faxes, mails, e-mails and the like, which shall not be illegally detained, hidden, opened, recorded, eavesdropped or otherwise obtained by anyone. Therefore, the right to communications confidentiality can be covered by the right to privacy.⁶⁹

Some scholars, based on the legal regulation of German Telecom monitoring, have pointed out that the investigation organ may infringe on citizens' right to communications confidentiality and personal information security when conducting Telecom monitoring.⁷⁰ Other scholars have studied China's procedural regulation of electronic evidence collection from the perspective of personal information protection, and put forward that the framework of citizens' "personal information right" is the right to human dignity, communications confidentiality and freedom and protection against illegal search.⁷¹

It can be seen that the infringement upon citizens' rights to communications freedom and confidentiality mainly occurs in the application of AI technology in the investigation, such as telecommunication monitoring, network monitoring and e-mail detain against the criminal suspects. In this sense, the application of AI technology in the investigation should comply with due process and the principle of Legality and Proportionality, guarantee the subject's right to be informed and establish comprehensive supervision system.

4.1.4 *The right to freedom of expression*

The right to freedom of expression refers to the right enjoyed by citizens to use various media and ways to publicly publish and transmit their opinions, points, views and emotions, which are regulated, recognized and protected by law, without interference, restriction or infringement by any other person or organization. The right to freedom of expression mainly includes: freedom of speech, freedom of press and publication, freedom of artistic expression and freedom of assembly. Some scholars have pointed out that the use of large-scale monitoring in investigation has a direct and indirect impact on freedom of expression. The direct impact includes: the filtering and interception of specific information by investigation organs through large-scale monitoring will directly infringe on people's right to freedom of expression; indirect impact includes: if citizens know that the investigation organ can use large-scale monitoring without restriction, and

⁶⁹ Bo Zong, 'Legal Regulation of Large-scale Monitoring in Investigation' (2018) 159 JCL 88

⁷⁰ He Huang, 'On the Legal Regulation of German Telecom Monitoring - Analysis Based on Fundamental Rights' 131 (2017) JCL 88,101

⁷¹ Yong Jiang, 'Procedural Law Turn of China's Electronic Evidence Collection Regulation from the Perspective of Personal Information Protection' 39 (2019) JJU (SS) 141,142

can use the information so obtained as criminal evidence against them, or use such information improperly, it will inhibit citizens' motivation to express their opinions, demands and suggestions through various channels.⁷²

To sum up, focusing on the research and analysis of infringement on specific rights, the application of AI to the field of criminal procedure may infringe on citizens' fundamental rights, mainly the right to equality and personality; specifically, the right to personality involves the right to privacy, personal information protection, communications freedom and confidentiality, personal freedom, and the right to protection against illegal search.

4.2 Protection of fundamental rights in the application of artificial intelligence

The application of AI in the field of criminal procedure has its positive significance. Therefore, some measures should be taken to regulate the application of AI technology in order to protect the fundamental rights of citizens.

In view of the infringement on the right to equality caused by algorithm black box and algorithm bias, a scholar proposed the introduction of "class action system". The scholar believed that racial discrimination and gender discrimination caused by the use of algorithms may result in differential treatment for groups of specific races and different genders. Although The Constitution of China clearly stipulates that gender discrimination and racial discrimination are prohibited, it fails to specify the specific behavior mode and legal consequences; other laws and regulations only provide for principled provisions, without much actionability and operability. Such differential treatment is mostly reflected in resume screening and judicial prediction. Algorithm bias can be secretive, and algorithm-driven decisions are difficult to be understood by algorithm service recipients, resulting in the inability of algorithm service recipients to safeguard their legitimate rights and interests through private remedy. Given the use of algorithm is repetitive and universal, it is prone to repeated use by the public, and therefore the foregoing problem can be solved by introducing the class action system. Before filing a class action, you can first submit a written request to the algorithm user to explain the decision made. If the algorithm user revokes the decision and corrects it, the parties may settle the dispute. If the algorithm user refuses to explain the decision made, the group subject to discrimination can file a class action.⁷³

In view of the inequality of litigation rights brought by court informatization, some scholars have proposed to ensure the equality of prosecution and defense through information isolation and information disclosure. The term "information isolation" refers to shielding the information with obvious tendency and not suitable for the judge

⁷² Bo Zong, 'Legal Regulation of Large-scale Monitoring in Investigation' (2018) 159 JCL 89

⁷³ Youhua Liu, 'Research on Algorithm Bias and Its Regulation Path' (2019) 40 LM 65,66

to know. The term “information disclosure” refers to the fact that the information unfavorable to the defense is fully disclosed to the defense.⁷⁴

In view of the infringement upon fundamental rights and interests such as reasonable expectations to privacy in electronic data collection (online remote inspection, online extraction and electronic data freezing), some scholars have put forward three countermeasures: the categorization of electronic data collection based on fundamental rights, the constitutional adjustment of mandatory investigation measures in electronic data collection, and the establishment of illegal electronic data exclusion rules.⁷⁵

In view of the infringement upon citizens’ “personal information right” in the process of electronic evidence collection, some scholars have pointed out that in the procedural structure focusing on the protection of rights, all mandatory measures shall be subject to the due process requirement. Although there are special evidence collection technique and carrier for electronic evidence collection, its procedural legal basis is still under the scope of due process. They also put forward three procedural improvement paths: the systematization of electronic evidence collection measures, the proportionality of electronic evidence collection procedures and the appropriate role of judicial review.⁷⁶

In view of the protection of the right to privacy in technical investigation, some scholars have put forward three countermeasures: first, we should establish a judicial review system for the initiation of technical investigation and properly control the power against the right to privacy; second, we should refine the application standards of technical investigation and strengthen the reasonable expectation to privacy protection; third, we should clarify the procedural sanctions against illegal technical investigation and improve the institutional rigidity of privacy protection.⁷⁷

In view of the infringement upon citizens’ fundamental rights by using large-scale monitoring in investigation, some scholars have proposed that the existing investigation theories and norms must be revised, the case filing system should be reformed, and the target scope of technical investigation should be expanded; different regulations should be made according to the purpose and content of large-scale monitoring; the regulation of the use of large-scale monitoring in investigation should be carried out from two aspects: procedural norms and evidence rules; the former includes the scope of application, conditions of application, applicable subjects, approval procedures and implementation procedures, while the latter includes the exclusion rules of illegal

⁷⁴ Zheng Xi, ‘Conflict and Coordination Between Court Informatization and Citizens’ Criminal Procedure Rights’ (2020) 42 JJU(PSS) 98

⁷⁵ Dengke Xie, ‘On the Protection of Rights in Electronic Data Collection’ (2020) 12 LAJ 14

⁷⁶ Yong Jiang, ‘Procedural Law Turn of China’s Electronic Evidence Collection Regulation from the Perspective of Personal Information Protection’ 39 (2019) JJU (SS) 62,63

⁷⁷ Dengke Xie, ‘On the Protection of Privacy in Technical Investigation’ (2016) LF 39

evidence obtained by large-scale monitoring and the exclusion rules of unreliable evidence set according to the technological features of large-scale monitoring.⁷⁸

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