

Identification of Algorithmic Evidence in Administrative Punishment Cases

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Abstract: In the field of administrative punishment, algorithmic evidence is the immediate result obtained through the established algorithm in the operation steps of automated decision-making by the government. The intelligibility of this kind of evidence will continue to disappear with the development of artificial intelligence technology. Compared with traditional evidence, algorithmic evidence is highly technical and complicated, and it has the endorsement of public authorities. In judicial practice, only such evidence is reviewed legally. Judges often evade reasoning on technical issues as laymen, resulting in administrative disputes that cannot be substantially resolved. In the face of off-site law enforcement, judicial decisions should jump out of the original evidence review framework, ensure that evidence is not misidentified in the evidence collection stage, implement the burden of proof of administrative subjects and technical subjects in the evidence collection stage, and adopt different identification standards according to the nature of administrative acts in the cross-examination stage, to balance the efficiency of judicial review and the effective rights and interests of administrative counterparts.

Keywords: Automated administration; Algorithm evidence; Identification of evidence; Judicial review

Online publication: July 9, 2024

I. Introduction

With the advent of the era of big data, digital technology has been widely used in the administrative activities of administrative organizations. In the field of road traffic management, the introduction of automatic law enforcement equipment makes traffic law enforcement change from traditional on-site law enforcement to an “electronic police” monitoring model^[1]. The evidence of fact-finding in human law enforcement depends on finding and correcting illegal acts on the spot, and then forming tangible evidence such as law enforcement transcripts. In the era of automated administration, the facts of traffic violations depend on electronic evidence such as pictures or images taken by electronic monitoring equipment. The formation of this kind of evidence depends on the algorithm, and the output process is difficult to be accepted by non-technical subjects. In the trial practice, there are more and more litigation cases in which the administrative counterpart questions the credibility of evidence and the rationality of equipment. With the continuous development of algorithm

technology, the evidence generated by automated law enforcement equipment will become more and more complex and technical, so the interpretability of evidence is disappearing. According to the traditional rules of evidence, the court should conduct a comprehensive review of the evidence involved in the law administrative act. However, due to the complexity and technicality of algorithmic evidence, in judicial practice, the judge only conducts a legal review of this kind of evidence, that is, from the aspects of whether the equipment installed by the administrative subject is legal, whether the algorithmic technology on which the equipment operates is reasonable or scientific, and whether there is any equipment error in the actual application process. However, there are technical barriers in the review of the authenticity of the evidence, so the court will need to review and respond accordingly. Therefore, it is necessary to analyze the generation principle and process of algorithmic evidence through the actual evidence review problems in judicial practice.

2. Electronic evidence faces the dilemma of identification under the background of automated administration

2.1. The credibility of the evidence is insufficient

On-the-spot law enforcement is based on evidence that is directly observed by the naked eye and forms corresponding written words ^[2]. This kind of evidence is intuitive and easy to understand. Off-site law enforcement depends on automation equipment, and the operation of automation equipment depends on algorithmic technology, so the data information generated by it belongs to algorithmic evidence. The transformation of this process makes the traditional evidence system with material evidence, documentary evidence, and witness as the core gradually develop into a new evidence era with electronic evidence as the core, forming a new type of evidence known as algorithmic evidence. For this kind of evidence, the administrative counterpart has doubts about its authenticity ^[3].

2.2. The technical nature of algorithmic evidence makes the traditional evidence authentication rules inapplicable.

According to the traditional rules of evidence, the court should conduct a comprehensive review of the evidence involved in the law administrative act ^[4]. However, due to the complexity and technicality of algorithmic evidence, in judicial practice, the judge only conducts a legal review of this kind of evidence, that is, from the aspects of whether the equipment installed by the administrative subject is legal, whether the algorithmic technology on which the equipment operates is reasonable or scientific, and whether there is any equipment error in the actual application process ^[5]. However, there are technical barriers in the review of the authenticity of evidence, and the court responds by formal review. The standard of algorithmic evidence identification is unknown, which expands the judge's discretion space.

The technical monitoring systems monitor aspects such as speed measurement and horn honking to output specific results, but non-technical personnel cannot find out how to calculate the results. In addition to the mistakes in algorithm design, there may be some hidden discrimination and prejudice in the algorithm. How to effectively supervise the algorithm and the power seized by the algorithm and prevent the algorithm from secretly infringing on our rights through various "invisible" calculations is a serious problem faced by administrative law in the era of artificial intelligence ^[6]. Algorithm evidence is a new type of evidence with the development of information technology. To help the problem of correctly identifying algorithm evidence in judicial practice, it needs to be observed and analyzed from the perspective of law. In the era of weak artificial intelligence, the examination of algorithmic evidence has been in a dilemma. With the emergence of the era of strong artificial intelligence, more and more algorithmic evidence will face the problem of being unable to be comprehensively examined.

Therefore, it is necessary to analyze the generation principle and process of algorithmic evidence through the actual evidence examination problems in judicial practice. This paper takes algorithmic evidence in the field of administrative punishment as an example, especially in the transportation field, analyzes the reasons why it cannot adapt to the traditional evidence rules, and explores the complexity and scientificity of examining this kind of evidence. What identification rules should judicial organizations apply to algorithmic evidence in the trial process and what standard is adopted for identification should be investigated^[7-9]. The scientific identification of facts has had and will continue to have an impact on the free evaluation of evidence. This trend means that the problem of evidence identification has evolved into a scientific problem to a certain extent, thus limiting the judge's discretion in reviewing algorithmic evidence. The admissibility of evidence depends on the judge's free evaluation of evidence in a judicial trial. However, under the impact of science and technology, due to the complexity and high professionalism of big data technology, it will not be able to adapt to the rules of evidence identification if the judges still review and identify the evidence through discretion^[10-12].

3. The analysis of the causes behind the identification dilemma

3.1. The endorsement of public power reduces the burden of proof of the issuing institution

Even if the algorithm is public, non-technical personnel may not understand the key points because of the limitation of professional knowledge, and they cannot effectively supervise the algorithm running program from the technical level. In reality, the technical generation of administrative automation equipment is provided by technicians, who design, install, operate, and maintain the automation system, and often know more about the system than the administrative staff who directly operate the system^[13]. This makes external enterprises and personnel substantially linked in the specifics of administrative processes, such as the reliability of the sonar electronic system, which is inseparable from the technology provider. At this time, in the judicial evidence, the technical subject replaced the administrative organizations to explain the technical aspects.

3.2. Technical barriers make substantive review unrealistic

Sample collection of data, the accuracy of data collection, the basis of data classification, and standardization of data processing will all affect the accuracy of data output results. Problems in any aspect will deepen the bias of the algorithm, which will lead to doubts about the authenticity of the algorithm evidence. The judge also has no professional ability to examine the authenticity^[14-16].

The algorithm is superior to human beings in information identification, running speed, and ability to deal with complex problems, so it can be used to deeply intervene in public decision-making. However, separating from traditional governance, administrative decision-making, and judicial evidence adjudication to algorithms, would cause many problems. The power of algorithms not only improves the efficiency of public management, but also hides the alienation of power in the application of evidence, and even has the possibility of constantly eroding individual rights. The operation steps of algorithm decision-making and automated administration are to mix information and content into the established algorithm to get corresponding results, and the results are also completed instantly in the system. At this time, it is no longer possible to separate the procedures, steps, and methods of behavior. The essence of algorithm operation is the process of data input, information reading, and data output, but there are unexplained problems between input and output^[17].

3.3. Technical problems make the acceptability lower

The further development of artificial intelligence technology will further challenge people's acceptance.

Some artificial intelligence algorithms can learn and evolve independently. People only know that they have output a specific result, which is statistically correct, but they cannot know how to get this result. In the case of administrative punishment, the assertion that the high probability is the correct result cannot make the relative person get an understandable explanation, which will directly affect the perception of administrative punishment.

Even if the algorithm is open, non-technical personnel may not understand the key points because of the limitation of professional knowledge, and they cannot effectively supervise the algorithm running program from the technical level. After searching and analyzing relevant cases, the court still follows the traditional rules of evidence in judicial practice. Because of the technical problems, it is mainly reviewed from the following three aspects. First, whether the automation equipment system has been effectively tested and demonstrated before operation. Second, whether there is any obvious violation of logic and science in the automation equipment system. Third, whether there is any objection from the involved person after the automation equipment system is put into operation. In the case of traffic violation administrative punishment, the calculation result of the technical monitoring system is the key evidence to identify the violation facts, and the working principle and accuracy of automation equipment are the focus of the case^[18]. Because the algorithm technology is highly professional and scientific, the judicial staff have not mastered the principle enough. In the case of the Shanghai sonar system, the court organized the main research and development experts of the sonar system to explain the working principle of the automation system and other technical issues. If the sonar system still belongs to the acceptable range, the further development of artificial intelligence technology will further challenge people's acceptance. Some artificial intelligence algorithms can learn and evolve independently. People only know that they have output a specific result, which is statistically correct, but they cannot know how to get this result. In the case of administrative punishment, the assertion that the high probability is the correct result cannot make the average person get an understandable explanation, which will directly affect the perception of administrative punishment^[19].

4. The response of algorithmic evidence identification method

4.1. Evidence storage stage: introducing blockchain technology to prevent evidence sources from being tampered

It should be ensured that the source of evidence is not tampered with before it enters the judicial review, so blockchain technology can meet this need^[20]. Blockchain technology can fix evidence in an information chain, that cannot be modified or deleted, and the process of information generation can be traced to prevent data from being modified. Through the guarantee and reinforcement of evidence by this technology, the judicial department can gain credibility.

4.2. The stage of proof: the administrative subject bears the burden of proof

As to whether the reason for the punishment error is attributed to the administrative team or the external technical personnel, and whether the administrative team can pursue the responsibility from the technical personnel if they assume the responsibility, it does not belong to the problem that needs to be solved in the administrative punishment relationship. This problem involves the technical legal service between the technical and administrative personnel, which belongs to an administrative agreement relationship. If the technical personnel is at fault, they can bear the corresponding responsibilities according to the specific agreement in the administrative agreement.

4.3. Evidence cross-examination stage: examining the authenticity of evidence

No matter how the applicable scene and means of administrative law enforcement change, the evidence must be regulated by the values of due process in administrative law ^[21]. Facing the “black box” problem of the traffic technology monitoring system, it is necessary to construct a technical due process and improve the acceptance of the algorithm by improving its transparency, interpretability, and error correction.

5. Summary

This paper focuses on algorithmic evidence, a new type of evidence, and tries to analyze and construct the judicial review rules of this kind of evidence by analyzing the differences between it and traditional evidence. After searching related documents and cases, although there are papers related to the judicial identification of evidence generated by automated administrative system, these papers focus more on the general analysis of many problems in judicial trials, such as review content, review method, and review subject, and this project points out the difference between algorithmic evidence and traditional evidence types by analyzing the production process of this kind of evidence. The paper also analyzes whether the traditional evidence rules can be applied to this kind of evidence, how to construct the evidence identification rules to make the identification of algorithmic evidence become a standard, and how to demonstrate its authenticity and legitimacy. According to these differences, combined with relevant judicial practice cases, this paper points out the difficulties and dilemmas in the identification of algorithmic evidence in administrative punishment cases at the emerging stage, analyzes the causes behind them, and makes corresponding adjustments and improvements to the judicial identification rules of algorithmic evidence, and puts forward corresponding rules for evidence collection, proof, and cross-examination, to enhance the interpretability and acceptability of such evidence.

Funding

This paper is the result of the project “Research on Identification of Algorithmic Evidence in Administrative Punishment” (Project Approval No.2023YCX140) of the Innovation Project of GUET Graduate Education in 2023.

Disclosure statement

The author declares no conflict of interest.

References

- [1] Huang ZX, 2021, *The Legal Logic of Data Governance*. Wuhan University Press, Wuhan, 182.
- [2] Steiner C, 2014, *Algorithm Empire*, Translated by Li Xiaoying. People’s Posts and Telecommunications Publishing House, Beijing, 45–46.
- [3] Wang SB, 2021, Algorithm Regulation from the Perspective of Evidence Law. *Journal of Shandong Judges Training College*, 37(05): 176.
- [4] Ma ML, Wang SB, 2021, On the Probative Force Rules of Big Data Evidence. *Evidence Science*, 29(06): 656–660.
- [5] Liu PX, 2019, On Big Data Evidence. *Global Law Review*, 41(01): 25.
- [6] Yuan Y, 2021, The Procedural Regulation of Big Data Evidence from the Perspective of Circular Evolution of Evidence System-taking the Evidence Revealed by God as the Cut-in Point. *Forum of Political Science and Law*,

39(03): 134–135.

- [7] He JH, Deng CZ, Zhang GY, et al., 2018, Challenges Brought by Big Data Investigation to Evidence Law. *People's Procuratorate*, 7(01): 56.
- [8] Wei CS, 2022, On the Review of Big Data Evidence in Criminal Trial. *Journal of Anhui University (Philosophy and Social Sciences Edition)*, 46(02): 80–83.
- [9] Sun Y, 2014, On the Concept of Types of Legal Evidence that is Worthless. *Contemporary Law*, 28(02): 102–103.
- [10] Li XH, 2010, Rules of Proof in American Evidence Law. *Comparative Law Research*, 2010(04): 95.
- [11] Damace MR, 2006, Free Evaluation of Evidence and its Challenges. China People's Public Security University Press, Beijing, 214–215.
- [12] Liu DL, Yan YR, 2023, Correlation and Causality in Big Data Analysis. *Journal of National Prosecutor College*, 31(02): 32–33.
- [13] Yang JW, 2022, Algorithm Evidence: The Algorithm as Evidence and the Prospect of its Applicable Rules. *Research on Local Legislation*, 7(03): 42.
- [14] Lin XF, 2021, On the Application of Big Data Evidence in Criminal Justice. *Law Forum*, 36(03): 33–36.
- [15] Zhang D, 2023, Algorithm Evidence in Criminal Proceedings: Concept, Mechanism, and Application. *Journal of Henan University (Social Science Edition)*, 63(03): 40–41.
- [16] Wang MY, 2017, The Formation and Authenticity of Electronic Evidence. *Law*, 2017(06): 192.
- [17] Liu PX, 2021, On the Authenticity Standard of Electronic Evidence. *Social Sciences*, 2021(01): 78.
- [18] Chu FM, 2018, Three Levels of Authenticity of Electronic Evidence: An Analysis based on Criminal Proceedings. *Law Research*, 40(04): 126–128.
- [19] Fink K, 2018, Opening the Government's Black Boxes: Freedom of Information and Algorithmic Accountability. *Information, Communication & Society*, 21(10): 1453–1471.
- [20] Binns R, 2018, Algorithmic Accountability and Public Reason. *Philosophy & Technology*, 31(4): 543–556.
- [21] Bigman YE, Wilson D, Arnestad MN, et al., 2022, Algorithmic Discrimination Causes Less Moral Outrage than Human Discrimination. *Journal of Experimental Psychology*, 152(1): 4–27.

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