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The Dilemmas in Exercising the Right to Explanation of Automated Decision-Making Algorithms and Their Resolution Paths

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Abstract: With the widespread application of artificial intelligence technology, automated decision-making algorithms play a crucial role in fields such as justice, administration, and commerce. However, the "black box" nature of algorithms has given rise to numerous issues, leading to the emergence of the right to algorithm explanation. Nevertheless, this right encounters dilemmas during its exercise, including the complexity of algorithm technology, insufficient expertise among explaining entities, and difficulties in understanding for the counterparties. This paper delves into these dilemmas and proposes resolution paths from multiple dimensions such as technology, law, and institutions, including optimizing algorithm technology, clarifying the responsibilities of explaining entities, improving legal systems, and constructing a multi-stakeholder governance mechanism. The aim is to ensure the effective exercise of the right to algorithm explanation and safeguard fairness, justice, and social order.

Keywords: Automated Decision-Making; Right to Algorithm Explanation; Dilemmas in Exercising Rights; Resolution Paths
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1.Introduction

In the digital age, automated decision-making algorithms, with their advantages of efficiency and precision, are widely applied across various fields such as justice, administration, and commerce. In the judicial realm, algorithms assist in sentencing and risk assessment, enhancing judicial efficiency. In the administrative sphere, automated administrative approvals and public credit evaluations improve administrative effectiveness. In the commercial sector, personalized recommendations and dynamic pricing bolster market competitiveness. However, the "black box" characteristic of algorithms makes it difficult to directly observe their decision-making processes and reasoning bases. Once problems arise, tracing the causes becomes challenging, sparking public doubts about the rationality of decision outcomes and undermining the authority and credibility of relevant systems. To address this issue, the right to algorithm explanation has emerged. Yet, in practice, its exercise faces numerous dilemmas, necessitating the exploration of effective resolution paths.[1]

2.Overview of the Right to Explanation of Automated Decision-Making Algorithms

2.1 Definition of the Right to Algorithm Explanation

The right to algorithm explanation refers to the right of a data subject to raise objections to an algorithm user and request an explanation of a specific automated decision made by an artificial intelligence algorithm when that decision has a significant

legal or economic impact on the data subject. It also includes the right to request data updates or error corrections. This right empowers data subjects to understand the basis, process, and results of algorithm-based decisions, serving as a vital means to safeguard their legitimate rights and interests.

2.2 Importance of the Right to Algorithm Explanation

2.2.1 Safeguarding Fairness and Justice

Algorithm-based decisions may be biased and discriminatory. For instance, algorithms based on historical data may perpetuate past prejudices, leading to unfair treatment of specific groups.[2] The right to algorithm explanation enables data subjects to understand the reasons behind decisions and determine whether unfair factors exist, thereby protecting their legitimate rights and interests and promoting social fairness and justice.

2.2.2 Enhancing Trust

In an era of widespread algorithm application, public trust in algorithms is of utmost importance. If the decision-making processes of algorithms remain opaque, the public will find it difficult to understand their decision bases, leading to suspicion and mistrust. By exercising the right to algorithm explanation, data subjects can gain insights into how algorithms operate, thereby enhancing their trust in algorithms and increasing their acceptance of relevant systems and services.

2.2.3 Promoting Algorithm Optimization

The right to algorithm explanation requires algorithm users to provide decision explanations to data subjects, which helps identify problems and deficiencies in algorithms. Algorithm developers can then optimize and improve algorithms based on feedback from these explanations, enhancing their accuracy and reliability and driving the continuous development of algorithm technology.[3]

3.Dilemmas in Exercising the Right to Explanation of Automated Decision-Making Algorithms

3.1 Explanation Dilemmas Due to the Complexity of Algorithm Technology

3.1.1 Complexity of Algorithm Structures

Algorithms are methods or processes for solving problems, possessing important attributes such as input, output, finiteness, determinacy, and feasibility. In automated decision-making, algorithms typically adopt complex structures, breaking down complex problems into multiple smaller parts and then integrating the results. With the continuous evolution of digital technology, algorithms are becoming increasingly sophisticated, with higher degrees of modularity.[4] The interactions among various parts are becoming difficult to predict, increasing the difficulty and uncertainty of explanations. For example, deep learning algorithms perform feature extraction and decision-making through multi-layer neural networks, making their decision-making processes difficult to explain in a straightforward manner.

3.1.2 Autonomous Learning Capability of Algorithms

Modern algorithms possess powerful autonomous learning abilities, enabling them to mine information and learn patterns from large volumes of data and continuously optimize decision-making. However, this autonomous learning process makes algorithm-based decisions even more elusive. Algorithms transform data into a latent space and calculate how to infinitely approach a set goal, but it is difficult to provide direct reasons. Take AlphaGo as an example; it defeated world-class Go players through autonomous learning, but even its computer engineers found it challenging to provide a detailed explanation of its decision-making processes, as it exceeded their understanding and control.

3.2 Dilemmas Due to Insufficient Expertise Among Explaining Entities

3.2.1 Dilemmas Faced by Administrative Agencies

In automated administration, algorithms are often developed by professional technology companies and purchased and used by administrative agencies. Administrative agency staff mainly apply algorithms for decision-making and are not familiar with the principles and technical details of algorithms. Moreover, complex algorithms are usually completed by multiple programmers, with each programmer responsible for only a part of the algorithm. Few can fully explain all the details of an algorithm. Therefore, administrative agencies find it difficult to provide professional explanations of algorithms and cannot accurately explain the specific operation processes of algorithms when relying on them for administrative actions.

3.2.2 Dilemmas Faced by Commercial Platforms

Commercial platforms play a significant role in automated decision-making but also face the issue of insufficient expertise. Some small commercial platforms may lack professional algorithm teams and have limited understanding and mastery of algorithms. Even large commercial platforms with professional algorithm personnel may be unwilling or unable to provide detailed algorithm explanations to users due to the complexity of algorithms and commercial confidentiality considerations. [5] Additionally, in the pursuit of commercial interests, commercial platforms may overlook the importance of algorithm explanations and respond perfunctorily to user requests for explanations.

3.3 Dilemmas Due to Difficulties in Understanding for the Counterparties

3.3.1 Lack of Professional Knowledge

Algorithms involve knowledge from multiple fields such as computer science, mathematics, and statistics, exhibiting a high degree of professionalism and complexity. Most counterparties lack relevant professional knowledge backgrounds and find it difficult to understand the technical details and decision-making processes of algorithms. Even if algorithm users provide detailed explanations, counterparties may not be able to grasp their meanings, significantly reducing the effectiveness of explanations. For example, concepts such as neural networks and machine learning in algorithms are often unknown to ordinary counterparties, preventing them from obtaining useful information from explanations.

3.3.2 Lack of Interest and Motivation to Understand

In some cases, counterparties are not interested in algorithm explanations, especially when the explanation content does not involve their core interests. Even if algorithm explanations are provided, counterparties may find them dull and difficult to understand, thus giving up further exploration. Moreover, disruptive disclosures by algorithms, such as providing excessive irrelevant information or using complex technical terms, increase the difficulty of understanding for counterparties, making them even less willing to comprehend and accept algorithm explanations.

3.4 Dilemmas Due to Inadequate Legal Systems

3.4.1 Unclear Definitions of Right and Obligation Subjects

Currently, Chinese laws do not clearly define the right and obligation subjects of the right to algorithm explanation. Although Article 24, Paragraph 3 of the Personal Information Protection Law stipulates that when an automated decision-making method is used to make a decision that has a significant impact on an individual's rights and interests, the individual has the right to request an explanation from the personal information processor, detailed regulations on the specific scope of right subjects and the specific responsibilities of obligation subjects are lacking. This leads to problems such as unclear definitions of right and obligation subjects and mutual shirking of responsibilities during the actual exercise of the right to algorithm explanation.

3.4.2 Lack of Explanation Standards and Procedures

Laws do not clearly stipulate the standards and procedures for algorithm explanations, leaving the exercise of the right to algorithm explanation without norms and constraints. Questions such as to what extent explanations should be provided, in what ways, and within what time frames remain unanswered. This may result innon-standardized and incomplete explanations provided by algorithm users, or even perfunctory responses, failing to meet the needs of counterparties. At the same time, there is also a lack of supervision and review mechanisms for algorithm explanations, making it difficult to ensure the authenticity and rationality of explanations.

4.Resolution Paths for the Dilemmas in Exercising the Right to Explanation of Automated Decision-Making Algorithms

4.1 Optimizing Algorithm Technology to Enhance Explainability

4.1.1 Developing Explainable Algorithms

Algorithm developers should increase their investment in the research and development of explainable algorithms and make explainability one of the important goals of algorithm design. For example, developing rule-based algorithms, whose decision-making processes are based on clear rules and logic and are easy to understand and explain; or adopting model explainability techniques to explain complex machine learning models, such as through feature importance analysis and

decision tree visualization, to help users understand the decision-making bases of models.

4.1.2 Establishing Algorithm Transparency Standards

Formulating unified algorithm transparency standards to clarify the content and extent of information that algorithms should disclose. For example, requiring algorithms to provide key information such as the sources of input data, processing procedures, and decision rules, enabling counterparties to understand the basic operation modes of algorithms. At the same time, establishing an algorithm transparency assessment mechanism to regularly assess and supervise the transparency of algorithms, ensuring that they meet transparency standards.

4.2 Clarifying the Responsibilities of Explaining Entities and Enhancing Their Explanation Capabilities

4.2.1 Strengthening the Responsibilities of Administrative Agencies

Administrative agencies should strengthen their learning and understanding of algorithms and improve their algorithm literacy. This can be achieved by conducting training sessions and introducing professional talents to enhance the cognitive and explanatory capabilities of administrative agency staff regarding algorithms. At the same time, establishing a communication and coordination mechanism between administrative agencies and algorithm developers, requiring algorithm developers to provide detailed algorithm documentation and technical descriptions, so that administrative agencies can better understand and explain algorithms. Additionally, administrative agencies should establish and improve algorithm explanation systems, clarifying explanation procedures and responsibilities to ensure timely and accurate explanations when receiving explanation requests from counterparties.

4.2.2 Regulating the Behavior of Commercial Platforms

Commercial platforms should establish correct values, prioritize user rights and interests, and attach importance to algorithm explanation work. Establishing a sound algorithm explanation mechanism, clarifying the responsible departments and personnel for explanations, and ensuring timely responses and detailed explanations when users request explanations. At the same time, strengthening the management and supervision of algorithm development teams, requiring algorithm developers to focus on the explainability of algorithms during the development process and provide necessary technical support. Moreover, commercial platforms should actively communicate with users, understand their needs and feedback, and continuously improve algorithm explanation work.

4.3 Improving Explanation Methods to Enhance Counterparty Understanding

4.3.1 Using Easy-to-Understand Explanation Languages

When providing explanations, algorithm users should avoid using professional terms and complex technical languages and instead use easy-to-understand, concise, and clear languages for explanations. They can use examples and metaphors to transform abstract algorithm concepts into concrete and easily understandable content. For example, comparing the decision-making process of an algorithm to a chef cooking a dish, where input data is the ingredients, the algorithm is the recipe, and the decision result is the finished dish, making it easier for counterparties to understand the basic operation modes of algorithms.

4.3.2 Providing Personalized Explanation Services

Based on the knowledge levels and needs of counterparties, personalized explanation services should be provided. For counterparties with different backgrounds, different explanation methods and depths can be adopted. For example, for counterparties with a certain level of professional knowledge, more detailed and in-depth technical explanations can be provided; for ordinary counterparties, simple and clear summary explanations can be offered. At the same time, through interactive methods, counterparties can be allowed to participate in the explanation process, and their questions can be answered promptly to improve the effectiveness of explanations.

4.4 Improving Legal Systems to Provide Institutional Guarantees

4.4.1 Clarifying Definitions of Right and Obligation Subjects

Laws should clearly define the right and obligation subjects of the right to algorithm explanation. Right subjects should include all counterparties adversely affected by automated decision-making, whether in the judicial, administrative, or

commercial fields. Obligation subjects should include algorithm users, such as administrative agencies and commercial platforms. At the same time, clarifying the specific responsibilities and obligations of obligation subjects, such as the time, method, and content of providing explanations, to ensure clear definitions of right and obligation subjects.

4.4.2 Formulating Explanation Standards and Procedures

Formulating detailed algorithm explanation standards and procedures to regulate the exercise of the right to algorithm explanation. Explanation standards should include requirements for the completeness, accuracy, and clarity of explanations to ensure that explanations meet the needs of counterparties. Explanation procedures should clarify the ways in which counterparties can request explanations, the response time of algorithm users, and the methods of providing explanations to ensure the orderly exercise of the right to explanation. At the same time, establishing a supervision and review mechanism for algorithm explanations to evaluate and assess the explanations provided by algorithm users, ensuring their authenticity and rationality.

4.4.3 Establishing a Legal Liability System

Establishing a sound legal liability system for the right to algorithm explanation to punish violations of algorithm explanation obligations. When algorithm users refuse to provide explanations, provide false explanations, or explanations that do not meet standards, they should bear corresponding legal responsibilities, such as administrative penalties and civil compensation. Through legal constraints, algorithm users are prompted to conscientiously fulfill their algorithm explanation obligations and protect the legitimate rights and interests of counterparties.

4.5 Constructing a Multi-Stakeholder Governance Mechanism to Form Regulatory Synergy

4.5.1 Strengthening Government Supervision

The government should strengthen its supervision of automated decision-making algorithms and establish a sound algorithm supervision system. Setting up specialized algorithm regulatory agencies responsible for the comprehensive supervision of the development, use, and explanation of algorithms. Strengthening the review and assessment of algorithms to ensure that they comply with laws, regulations, and ethical and moral requirements. At the same time, providing training and guidance to algorithm users to enhance their legal awareness and sense of responsibility.

4.5.2 Encouraging Social Supervision

Encouraging the public, media, industry associations, and other stakeholders to supervise automated decision-making algorithms. Establishing a public reporting mechanism to encourage the public to report and complain about problems with algorithms. The media should play a role in public opinion supervision, promptly exposing unreasonable and unfair phenomena related to algorithms. Industry associations should formulate industry norms and standards to guide algorithm users in complying with laws, regulations, and industry ethics, promoting the healthy development of the algorithm industry.

4.5.3 Promoting International Cooperation

Automated decision-making algorithms are global technologies and applications, requiring strengthened international cooperation and exchanges. Countries should jointly formulate international rules and standards for algorithm governance and enhance cooperation in algorithm supervision, technology research and development, and talent cultivation. Through international cooperation, jointly addressing the challenges and problems brought about by algorithms and promoting the improvement of the global algorithm governance system.

5.Conclusion

The right to explanation of automated decision-making algorithms is an important means to safeguard the legitimate rights and interests of data subjects and maintain social fairness and justice. However, in practice, its exercise faces numerous dilemmas, including the complexity of algorithm technology, insufficient expertise among explaining entities, difficulties in understanding for counterparties, and inadequate legal systems. To resolve these dilemmas, measures need to be taken from multiple dimensions such as technology, law, and institutions, including optimizing algorithm technology, clarifying the responsibilities of explaining entities, improving explanation methods, improving legal systems, and constructing a multi-stakeholder governance mechanism. Through the implementation of these paths, the effective exercise of the right to algorithm explanation can be ensured, promoting the healthy development of automated decision-making algorithms and

driving social progress and prosperity. In future development, we also need to continuously monitor the development and changes of algorithm technology and timely adjust and improve relevant policies and measures to adapt to new challenges and demands.

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