

Design and Application of Legal Information Systems Based on Big Data Technology

Ying Wang, Zhengzhou Technology and Business University, China*

ABSTRACT

China's exploration of the legal application of big data is still far from thorough enough. This article proposes a universal suitable for hierarchical big data storage systems, which can quickly add new cache policies when needed and provide cache scheduling strategies. The neural training algorithm used in legal information systems implements a complete parallel computing framework for large-scale neural network training, supporting distributed storage and management of large-scale sample data. The experimental results show that the framework has good scalability and fault tolerance, and can quickly train legal information systems, improving their efficiency and response speed. This provides new ideas and methods for the design and development of legal information systems.

KEYWORDS

Big Data Storage, Big Data Technology, Legal Information System, Neural Training Algorithm

1. INTRODUCTION

In recent years, with the rapid development of information technology and the digital transformation of the legal field, big data has received increasing attention in legal applications (Joubert et al., 2023). However, the exploration of big data in legal applications in China is still far from being in-depth enough (Cui et al., 2023). This article proposes a universal and scalable cache scheduling framework for layered big data storage systems, which can quickly add new cache policies when needed and provide cache scheduling strategies for different data access modes; thereby, accelerating data read and write access performance in upper layer big data applications. In addition, the neural training algorithm used in the legal information system not only considers the parallelization algorithm of neural network training, but also implements a complete parallel computing framework for large-scale neural network training, supporting distributed storage and management of large-scale sample data. The experimental results show that the framework has good scalability and fault tolerance, which can quickly train legal information systems and improve their efficiency and response speed. This provides new ideas and methods for the design and development of legal information systems. In the future, we will continue to explore the potential of big data in legal applications, while improving and perfecting the proposed frameworks and algorithms to adapt to the constantly evolving environment and needs.

DOI: 10.4018/IJISCM.338380

*Corresponding Author

This article published as an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and production in any medium, provided the author of the original work and original publication source are properly credited.

2. LITERATURE REVIEW

The current big data processing technology system is not yet mature and perfect. Due to the complexity, diversity, and huge data scale of big data, there are still many technical problems that need to be continuously researched and improved in the existing big data processing technologies and system platforms, including: distributed storage management technologies and systems for Platform, other platforms, efficient algorithm design, and easy-to-use tools (Ngo et al., 2023). For such informatization today, importance of informatization for the legal domain has become more and more prominent (Duggineni, 2023). Many countries believe that legal informatization is another major driving force for legal reform and can be vigorously undergone (Lyu et al., 2023). The United States has been the first to start the process of “law informatization,” which clearly expresses the irreplaceable role of information technology in the future legal industry (Himeur et al., 2023). In the country of study, the construction of informatization laws and regulations is synchronized, especially within the country’s rule of law (Pathak et al., 2023). Before the reform and opening up, due to the repeated impact of the national rule of law construction, the construction of informatization laws and regulations was relatively backward, lacking basic legal norms, and no systematic concept was proposed (Vasa & Thakkar, 2023). After the reform and opening up, the Chinese government began to realize the importance of information technology and informatization (Bi et al., 2023). The government work report in 1978 proposed to “accelerate the development of research on integrated circuits and electronic computers, and make them widely used in various fields” (Khan et al., 2023). When the “863” plan was formulated in 1986, the country had listed information technology as an important topic and started Research on the country’s informatization issues (Teubner et al., 2023). In 1987, the country established the National Information Center and set up a policy research institute within the center, focusing on research on information regulations and policy issues. Additionally, the country organized the “Information and Information Technology Legislative Collections,” “China Information Legislation Environment Analysis and Legislative Discussion,” “Legislative Framework Suggestions in the Process of Informatization,” and other internal materials (Rosati et al., 2023).

At present, the domestic discussion and research on legal issues in the context of big data is still in its infancy, and there is no article that systematically expounds how big data should be applied in legal research (Huang et al., 2023). As for the scientific legislative proposition related to the title of this article, there is currently only the article “Internet, Big Data, Artificial Intelligence and Scientific Legislation” by Jiang Bixin and Zheng Lihua. Proposing future legislative work needs to respect the objective results of statistics (Filgueiras & Lui, 2023). This article takes the current background of China’s legislative development as the breakthrough point and discusses several key issues that need to be paid attention to in the application of big data technology in the practice of scientific legislation propositions, but the article does not discuss the combination of scientific legislation and big data (Kumar, 2023). Some basic issues are discussed in detail, such as the analysis of the motivation for the application of big data in scientific legislation. The impact of big data on the development of scientific legislative propositions, of course, is related to the discussion direction selected by the article, but these issues require future research and more attention (Davidson et al., 2023).

Regarding the specific application of big data in various aspects of legislation, Cao Hanyu’s “Analysis on the Application of Big Data in Post-legislative Evaluation” starts from the problems existing in the traditional post-legislative evaluation system and evaluates the concept of big data and big data technology (Al-Dmour et al., 2023). It explores the feasibility of applying it to post-legislative evaluation work, and then the article puts forward the necessity of big data technology as the necessary support for post-legislative evaluation technology through necessity analysis (Al-Okaily et al., 2023). When it comes to the impact of the development of big data technology on legal research methods and legal thinking patterns, Fu Yong’s “The Reference of Big Data Methods to Legal Research” summarizes the characteristics, functions, and research methods of current big data in detail. Examples of big data application in practice include big data to promote the transformation

16 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/article/design-and-application-of-legal-information-systems-based-on-big-data-technology/338380

Related Content

Supply Chain Management Practices, Competitive Advantage and Organizational Performance: A Confirmatory Factor Model

Rajwinder Singh, H.S. Sandhu, B.A. Metriand Rajinder Kaur (2014). *International Journal of Information Systems and Supply Chain Management* (pp. 22-46).

www.irma-international.org/article/supply-chain-management-practices-competitive-advantage-and-organizational-performance/117466

Internet of Things-Enabled Logistic Warehouse Scheduling Management With Human Machine Assistance

Ziwen Zhang (2022). *International Journal of Information Systems and Supply Chain Management* (pp. 1-17).

www.irma-international.org/article/internet-of-things-enabled-logistic-warehouse-scheduling-management-with-human-machine-assistance/305852

Containers in Ports can be Tracked Smartly: Lessons Learned From a Case Study

Dimitris Folinas (2019). *International Journal of Applied Logistics* (pp. 39-52).

www.irma-international.org/article/containers-in-ports-can-be-tracked-smartly/218814

An Application for Routing Ambulance via ACO in Home Healthcare

ahin Inançand Arzu Eren enaras (2020). *Transportation, Logistics, and Supply Chain Management in Home Healthcare: Emerging Research and Opportunities* (pp. 102-110).

www.irma-international.org/chapter/an-application-for-routing-ambulance-via-aco-in-home-healthcare/238486

Investment in Transaction-Specific Assets and Opportunistic Behavior in a Chinese Supply Chain

Xiande Zhao, Yi Liu, Liping Qianand Barbara Flynn (2011). *Managing Global Supply Chain Relationships: Operations, Strategies and Practices* (pp. 71-97).

www.irma-international.org/chapter/investment-transaction-specific-assets-opportunistic/48466