
Editorial

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1 Introduction

With the continuous maturity of big data technology and open source community in the Internet of Things (IoT) environment, the big data software ecosystem is booming and developing, and the commercial supporting tools are increasingly rich. The maturity of these technologies provides the necessary conditions for data technology to penetrate the industry, and provides a huge market opportunity for high-end manufacturing enterprises. There has also been some progress in the construction of domestic industrial big data platform, mainly relying on the

foundation of domestic internet application, building a general platform for light asset equipment data access in industrial IoT. These big data platforms in the industrial field have many bottleneck problems, such as big difference in technical structure, security problems in uneven construction level, and not obvious application effect.

On the other hand, blockchain was primarily designed to facilitate distributed transactions by removing central management in a secured and safe environment. Blockchain technology can share and distribute big data structures that can securely store digital transactions without using a central point of authority. More importantly, blockchain

allows for the automated execution of industrial contracts in IoT. Therefore, the sensible management of blockchain-based industrial big data techniques is necessary to increase the IoT network efficiency.

However, there are still many research topics or practical issues to be investigated and advanced. This special issue invites researchers to publish selected original articles presenting new solutions to solve hot challenges of this topic. We are also interested in review articles as the state-of-the-art of this topic, showing recent major advances and discoveries, significant gaps in the research and new future issues.

2 Papers in the issue

The first theme of this special issue focuses on “Theories, models, and algorithms for Blockchain-based Industrial IoT”. Xiao adopted the Bi-LSTM-CRF deep learning model for keyword extraction and achieve the high accuracy of keyword extraction. Ji et al. designed a lightweight, low latency and high-precision mobile visual search algorithm based on the deep hash method and blockchain technology in IoT applications. Kang et al. presented a many-objective particle swarm optimisation algorithm based on opposition-based mutation for elite mechanism in IoT applications. The simulation results showed the proposed algorithm can outperform 11 other algorithms. Zhou applied the Gossip consensus algorithm to the data transmission process for the security issue around the IoT environment. Wen developed a blockchain scheme for confirmation of digital music copyright management. In advance, the Delegated Practical Byzantine Fault Tolerance (DPBFT) algorithm was proposed to deal with the nodes in the blockchain network into ordinary nodes, consensus nodes, and verification nodes. Shen used the blockchain technology and deep learning approach to construct a new college textbooks-oriented complexity analysis model. The results showed the proposed model obtained higher accuracy and precision rate than the other two comparison models. Yi implemented a real-time data transmission scheduling model based on IoT, and deep reinforcement learning approach. The empirical results showed the Long Short-Term Memory (LSTM) model can obtain the highest prediction accuracy. Kang et al. used the entropy adaptive strategy and Levy mutation operator to improve the exploration ability of the particle swarm optimisation algorithm.

The second theme of this issue focuses on “New IoT framework for Blockchain-based services and Apps”. Shen proposed an intelligent warehousing management system (WMS) with blockchain technology for the small and medium-sized enterprises (SME). The advantages of the proposed system can provide the cooperation and information sharing between different IoT devices and operation platforms. Li et al. designed the blockchain-based IoT framework to solve and improve the network security problems of the high complex information. Liu developed the blockchain-based application integrating with the multi-objective model (MOM), deep learning, and fuzzy differential equations (FDEs) for the logistics operation of an e-commerce platform. Wang integrated the convolutional neural network (CNN) and deep Boltzmann machines under deep learning approach to build a supply chain logistics management system with high image recognition capability and blockchain technology. Tang developed the sports marketing strategy based on the IoT platform + blockchain (Blockchain of Things, BoT) to meet the diverse communication needs of the sports market. He integrated the IoT and blockchain technologies to deal with the modern memorial architecture of a smart city. The results and experiences can be a reference for the theoretical and practical development. Jiang et al. adopted the blockchain and deep learning approach to build the supply chain risk management (SCRM). The empirical results can promote the global supply chain cooperation and refer as the best practice. Xiong developed the e-commerce platform with blockchain technology to manage the real reviews of buyers and sellers, and achieve the sustainable development of e-commerce. Yu and Zou applied the artificial intelligence and blockchain technology into the digital education resource management and the learning environment.

3 Conclusion

We would like to thank all the contributors of this special issue for their outstanding participation and precious scientific contributions. Most important of all, we deeply appreciate the Editor in Chief, Professor Fatos Xhafa, with his kind support for this special issue. We are confident that readers of *IJGUC* and scholars researching in the blockchain technology, artificial intelligence, and the IoT will find this special issue of great interests and benefits.