Guest Editorial Preface

Special Issue on Big Data Analysis in Intelligent Decision Support Systems

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In the era of big data, intelligent decision support systems (IDSSs) are widely used in various computer science applications especially in information management for intelligent decision-making based on the techniques of data mining and big data analysis. Under this circumstance, practitioners and decision-makers require intelligent scientific methodologies to optimize information management by the use of big data technologies. Researchers are more concerned with the design and development of IDSSs, and seek to demonstrate innovative scientific techniques, tools, and models that improve the quality and accuracy of the intended decisions. Some typical techniques and tools include multiple criteria decision making (MCDM), aggregation operators, linguistic decision making, sensitivity analysis, fuzzy sets, rough sets, soft sets and adaptive reasoning methods.

The accepted four papers in this special issue solicit recent results mainly concerned with recent advances and challenges in the theory and applications of intelligent decision support systems, database systems, e-learning and education and security with emphases on the tools and techniques including data mining, data and knowledge engineering, cloud computing and security, internet of things (IoT) and web of things (WoT).

In this regard, the first article designs a programmable and blockchain security scheme based on the edge computing firework model, realizes the programming of IoT gateway firework node under the edge computing, and appreciates the safe transmission and storage of programmable data through the blockchain system. The experimental results show that this scheme not only facilitates the user's programming, enhances the real-time performance and saves the data transmission cost, but also ensures the security and reliability of the system.

The second article has proposed the Neighborhood Descriptor of Oriented Gradients (NDOG) method for pedestrian detection based on Histogram of Oriented Gradients (HOG) in order to have a lower miss rate for pedestrian detection. The proposed pedestrian detection framework is validated through experimental evaluations that detect pedestrians on the INRIA, Caltech-USA and ETH datasets. The experimental results provide a way to solve the problem of how to maintain pedestrian detection performance under different numbers of samples.

The third article proposes a novel spectral-spatial classification method inspired by the support vector machine (SVM). The model consists of spectral-spatial feature extraction channel (SSC) and SVM classifier. SSC is mainly used to extract spatial-spectral features of hyperspectral image (HSI). SVM is mainly used to classify the extracted features. The model can automatically extract the features of HSI and classify them. Experimental results on the Indian Pine show that the SSC-SVM model proposed in this paper is superior to Spectral-SVM and Spatial-SVM in terms of overall accuracy and Kappa coefficient.

The last article is mainly focused on a fusion HMApriori algorithm for multidimensional data and On Line Analytical Processing (OLAP) multidimensional association rule mining method in

the field of higher education. An experimental environment is established on the university campus, and the relationship between student behavior and performance is analyzed using multi-dimensional association rule mining methods. A verification system is developed to visualize the analysis results, to provide policy suggestions for school management based on experimental results, advocate schools to build big data management and analysis systems, timely analyze factors that affect and improve student performance, improve teaching methods and teaching management.

Considering the significant disruption that is being caused by the COVID-19 pandemic at the very start of the decade in the 2020s, the guest editor can understand that many authors and peer reviewers have made adjustments to their professional and personal lives. Under this circumstance, firstly he would like to thank all reviewers for their detailed constructive comments to improve the quality of the papers. Without the patient guidance, follow-ups and strong support from Prof. Ghazi Alkhatib, the Editor-in-Chief of IJITWE, the guest editor can't witness the success of the special issue under the shadow of COVID-19. Special thanks also should be to Dr. Alexis Miller from IGI-Global for his continuously effective communication regarding all issues related to the production of the special issue. Last but not the least sincere thanks are to all the authors for their kind cooperation and contribution to this special issue.

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