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Guest Editorial:
Special Section on Big Data & Analytics Architecture

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1   INTRODUCTION

DATA is often considered to be the crown jewels of an organization. It can be used in myriad ways to run the business, market to customers, forecast sales, measure performance, gain competitive advantage, and discover new business opportunities. And lately, a convergence of new technologies and market dynamics has opened a new frontier for information management and analysis. This new wave of computing involves data with far greater volume, velocity, and variety than ever before. Big Data is being used in ingenious ways to predict customer buying habits, detect fraud and waste, analyze product sentiment, and react quickly to events and changes in business conditions. It is also a driving force behind new business opportunities.

Traditional data analysis technologies are based on the well-structured data from operational systems that conform to pre-determined relationships. Big Data, however, doesn't follow this structured model. The streams are all different and it is difficult to establish common relationships. But with its diversity and abundance come opportunities to learn and to develop new ideas which that can help researcher to learn some new knowledge. The architectural challenge is to bring the two paradigms together. So, rather than approach Big Data as a new technology silo, which enables to leverage all types of data, as situations demand, to promptly satisfy kinds of new needs.

This special issue aims to bring, for academics as well as industrial practitioners, a set of articles discussing the recent patents on core topics of big data processing system, including big data processing algorithm, big data processing system architecture and so on. There are 12 paper accepted from more than 50 submission for this special issue.

2   RELATED WORKS

THE first paper "Design of Intelligent English Translation Algorithms Based on Fuzzy Semantic Network" by Dr. Cai proposed a new translation algorithm based on fuzzy semantic network and applied the proposed algorithm in some intelligent applications. The evaluation shows the proposed algorithm can archive the over-all system performance. While, in the second paper "Classifications of Stations in Urban Rail Transit based on two-step cluster", Dr. Dong established a station classification model based on two-step cluster method, passenger flow and network structure characteristics, which was verified in the Beijing subway. The results show that the proposed model can effectively identify the types of urban rail transit stations, clarify the function and orientation of each station.

The third paper "Improvement of Economic Management System Based on Publicity of Railway Transportation Products" by Dr. Yan proposes the improvement of the economic management system based on the publicity of railway transportation products. Overall, the development of the country is inseparable from road transportation. Railway transportation is the lifeblood of the country's economic development, closely related to the country's economic development, along with science and technology. Progress, road transport has gradually covered all areas, and the coverage is very wide. In other words, only when railway transportation has achieved good development, the country's economy can develop better and develop smoothly. The forth paper "Design and Analysis of Rural Accurate Poverty Alleviation Platform Based on Big Data" by Dr. Fan proved a literature survey about various existing missing data filling algorithms, and analyze their advantages and disadvantages. An effective Map-Reduce missing data filling algorithm is proposed. The main functions of the rural poverty alleviation platform were analyzed and designed. The occurrence of errors is effectively avoided by this algorithm and platform. The accuracy of poverty alleviation is greatly improved. Great contributions to precision poverty alleviation is made.

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The fifth paper "Research on Product Logistics Cost Control Strategy Based on Multi-source Supply Chain Theory" by Dr. Di takes the logistics cost of electrical appliance as the research object, and systematically studies the logistics cost control problem of electrical enterprise based on multi-source supply chain theory. As far as electrical companies are concerned, they quickly find out the problems of logistics cost control, and adopt corresponding cost control optimization methods to bring about good logistics cost reduction effects. At the same time, it can also obtain corresponding guidance in improving distribution efficiency and logistics service level, and hopes to improve the attention of electrical appliance enterprises on logistics cost control, and guide enterprises to establish correct logistics cost management concepts.

The sixth paper "Application of the Fuzzy Neural Network Algorithm in the Exploration of the Agricultural Products E-Commerce Path" by Dr. Huang proposed a fuzzy neural network algorithm, and applied the proposed algorithm to study the e-commerce path of agricultural products. A good calculation result is obtained. The experimental results of fuzzy neural network algorithm show the proposed algorithm can improve the overall system performance. The computational efficiency and feasibility of the algorithm are also proved.

The 7th paper "The Optimization Analysis of the Communication Model of Negative Influence of the Entrepreneur's Social Relationship Change" by Dr. Zhang provide a literature survey of various existing algorithms based on the negative impact of entrepreneurial social relationship changes, and analyse their advantages and disadvantages. In this work, the authors propose a communication model of entrepreneurial social relationship change based on intimacy decision-making and Negative impact model of enterprise performance; better performance analysis than other existing algorithm models and algorithms; the impact model for enterprise management can reduce the negative impact of entrepreneurial social relationship changes, improve corporate performance and profitability, Optimize the efficiency of business management.

The 8th paper "The Factor Analysis of University English Examination Results Based on the Multilevel Model" by Dr. Long established a multi-level analysis model to analysis the influence factors of university English. In this work, the authors take determination of data, estimation methods and latent variables into consideration of the proposed model. By enumerating examples, the effectiveness of the multi-level model in the analysis of the influence factors of university English performance is verified. It is hoped that this article can provide help for the related research.

The 9th paper "Research on Advanced Prediction Model of Tunnel Geological Radar Based on Cluster Computing" by Dr. Wei introduced the analysis flow of clustering algorithm and its advantages, and then discussed the parameter setting and prediction criteria for geological radar prediction, at last the authors proposed a new prediction algorithm in geological prediction. The 10th paper "Research on Automatic Extraction Method of Web Data Objects Based on Deep Learning" by Dr. Peng presents a neural network model for Web page information extraction based on depth learning technology, and implements the model algorithm using TensorFlow system. Then the authors designed a detailed experimental analysis of the information extraction effect of Web pages on the same website, statistics the accuracy index of page information extraction, and optimize some parameters in the model according to the experimental results.

The 11th paper "Application of DRGs and Fuzzy Demand in Medical Service Resource Allocation Based on Data Mining Algorithm" by Dr. Dong analyzed the application of DRGs and data mining algorithm, and then applied the uncertain demand estimation to fuzzy demand processing based on the fuzzy demand theory, and the medical service resources are configured under the established demand satisfaction rate. Through the example analysis, it is proved that the proposed algorithm has higher reliability, and the optimal allocation of resources can greatly reduce the total medical cost and confirm the feasibility of resource optimization.

The last paper "Wind speed prediction modeling based on wavelet neural network" by Dr. Zhang proposed a short-term wind speed prediction strategy based on wavelet analysis and multi-layer perceptual neural network for the Dabancheng area, China. Four wavelet neural network models using the Morlet function as the wavelet basis function were developed to forecast short-term wind speed in January, April, July, and October. Predicted wind speed was compared across the four models using mean square error and regression. Prediction accuracy of model 4 was high, satisfying forecasting wind power industry requirements. Therefore, the proposed algorithm could be applied for practical short-term wind speed prediction.

3   CONCLUSIONS

WE would like also to take this opportunity to thank Prof. Mo Jamshidi, Editor-in-Chief of AutoSoft Journal for giving us the privilege to edit this special section.

4   NOTES ON CONTRIBUTORS

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Dr. Ford Lumban Gaol received the B.Sc. in Mathematics, Master of Computer Science. and the Doctor in Computer Science from the University of Indonesia, Indonesia in 1997, 2001 and 2009, respectively.

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Dr Ford is the Vice Chair of IEEE Indonesia section for International and Professional Activities http://ieee.web.id/indonesia/officers/. He is the Chair SERSC: Science & Engineering Research Support Society Indonesia Section. http://www.sersc.org/organization.php Dr Ford was the ACM Indonesia Chapter Chair http://campus.acm.org/public/chapters/geo_listing/index.cfm?rabbr=Indonesia&inus=0&ct=Professional Dr Ford involved with some project relate with Technology Alignment in some of multinational company like Astra, United Tractors, Telkom, Sony Erickson.

For International highlight, Dr Ford is the recipient of Visiting Professor in Kazan Federal University, Russia, Invited Scholar in Aligarh Muslim University, keynote speaker in ICCNT 2014 and Invited Scholar in ICTP Trieste Italy.

Dr. K. K. Mishra is presently working as Visiting Assistant Professor in Department of Mathematics and Computer Science, UMSL, MO, USA. K. K. Mishra has successfully organized around 6 IEEE conferences in India (ICCCT Series) either as a conference secretary or as a program chair. He has worked as PC members for many conferences in India and abroad and has successfully organized some special issues in highly index journals. He is a regular reviewer of Journal of Supercomputing (Springer), IEEE Transaction on Cybernetics, IEEE System Journal, Neural computing and application and IETE journals. In addition to it, he has reviewed many publications for SCI and Scopus indexed journal. Presently he is involved as program chair for following conference International Conference on Computer, Communication and Computational Sciences (ICCCCS-2016) [URL: www.ic4s.in] & International Conference on Recent Advancement in Computer, Communication and Computational Sciences (ICRACCCS-2016) [URL: www.racccs.com]. Moreover, he is editing a special issue in journal of intelligent and fuzzy system, IOS press (SCI).