1. Introduction

Passion for a classic research area of computer science, artificial intelligence (AI), has experienced new momentum in recent years. This is largely inspired by the astonishing developments of deep learning research, whose success has been shown in computer vision [1] and natural language processing [2]. Developed models and techniques for intelligent computing have also been adopted in numerous real-world applications for data processing, for example, social media [3], natural language texts [4] and Internet of Things [5], to name just a few. Research on big data processing and analytics has achieved considerable success in recent decades. Nevertheless, the promise of allowing the extraction of valuable information and trustworthy knowledge from a tremendous amount of data of various forms and modalities has yet to come true.

2. Applications for Intelligent Computing for Big Data

Recent advances in AI research have the potential to move current big data research one step further. In light of this, this Special Issue, ‘Intelligent Computing for Big Data’, was proposed to collect the latest research and applications related to the use of relevant intelligent computing techniques to process big data. The Special Issue has accepted five papers for publication.

The paper by Jinah Kim and Nammee Moon [6] proposes a deep neural network for fusing multimodal data, e.g., video and sensor data, for dog behaviour recognition. The objective of the work is to minimise and compensate for noise presented in collected real-time data. Evaluation studies show that the best performance of the model was achieved when multimodal data were used. The paper by Hsien-Ming Chou [7] aims to address the important and timely problem of long-term elderly care using a decentralised architecture with blockchain technologies. Based on the identified challenges of the current systems, the author proposes the mapping mutual clustering algorithm, which has the potential to alleviate the issues of mental alienation, insufficient manpower, and privacy. A post-study questionnaire shows that a high level of forecasting accuracy and positive user perception can be achieved. The paper by Maraheb Alsuliman and Heyam H. Al-Baity [8] presents a comprehensive experimental study on use of traditional supervised learning and feature selection algorithms in the early diagnosis of autism. With bio-inspired feature selection algorithms, impressive classification accuracy can be obtained on gene expression as well as personal and behavioural data. The study has valuable practical implications for researchers and practitioners working on early the detection of autism disorder. The work presented by Byoungwook Kim et al. [9] attempts to extract spatiotemporal information from online big text data for event analysis. A new character-level convolutional neural network-based model that is specifically designed to extract spatio-temporal information describing the core subjects of documents is proposed to classify representative spatio-temporal documents. The work by Jia Kan et al. [10] addresses an important problem of big data storage and cryptographic access control in decentralised storage networks, i.e., permission-less blockchains. They propose a new and efficient chosen ciphertext attack-secure and collusion-resilient proxy re-encryption scheme for decentralised storage. The
scheme has the potential to be used in many blockchain applications, e.g., online stores for digital products.

3. Future Research

The papers in this Special Issue only cover a very limited number of topics and applications of intelligent computing for big data. More in-depth theoretical and practical research in this converged area of artificial intelligence and big data is anticipated. It is expected that more techniques and algorithms will be designed along with some interesting and exciting future directions such as zero shot learning, neurosymbolic learning, the fusion of large-scale knowledge graphs, and knowledge reusability and transferability.

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