Guest Editorial Preface

Special Issue on Cloud Computing, Deep Learning, and Social Media:
A Hybrid Research Paradigm

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This special issue is based on a hybrid research paradigm that includes papers on could computing based-research, deep learning, and social media analytics.

This special issue highlights state-of-the-art research on analytics in web engineering and practices of cloud computing to ensure efficient environment of web Engineering. Web Engineering allows people to upload, retrieve, store and collect information, which has grown tremendously over the years and poses a serious concern in extracting, analyzing and managing the information over the Web. At the same time, cloud computing has become a delivery platform in the field of services computing. Social media is the tool and platform, where people share their thoughts, experience and opinions between each other. It is a kind of new medium for information exchange and sharing. In recent years, social media is thriving in the fertile soil on the Internet, which changes people's way of life. Compared with conventional medium, social media has some characteristics, such as interactive, multimodal, and collective relational, which makes it challenging to analyze, manage and index these social media data and analysis behind all the interactions. How to automatically discover and mine useful information from large scale social media content and relational data for effective information search, access, and recommendation has become the key for the development of the Internet and next-generation of services. Meanwhile, deep learning, which handles the representation learning problems by multiple non-linear mapping and artificial intelligent algorithms, has powerful abilities of enabling feature learning and feature fusion. Related research shows that deep network based models have a unique advantage in solving the complex problems from massive data, and they demonstrate steps and empirical evidence for solving the problems in social media, understanding activities behind the scene and help organizations and government better about customers and citizens' thoughts,

behaviors and comments on their services. Feature learning based on deep network in social media aims to find representative feature for social media items. It is not only the important precondition and foundation for social media information mining, but also a hot section in multimedia and machine learning communities.

These articles focus on social media fusion with deep learning and its application on the clouds. Recently, many issues are still waiting for solution in this area. This special section aims at collecting on fusion methods and algorithms for merging multiple sources of information by using deep learning, machine learning and AI methods for social media mining, social recommendation systems and social network analysis.

The first article "Skipnet-Octree based indexing technique for Cloud Database Management System" discusses various indexing techniques for processing and accessing queries efficiently suitable for cloud database. With indexing of the cloud databases, scheduling of multiple workflows on the existing computing resources is also an important concern. This issue throws light on energy efficient clustering scheduling algorithms to advance the virtual available computing resource placement in cloud computing environments.

In the second article, "Energy Efficient Scheduling for Multiple Workflows in Cloud Environment", authors discuss various indexing techniques for processing and accessing queries efficiently suitable for cloud database. With indexing of the cloud databases, scheduling of multiple workflows on the existing computing resources is also an important concern. This issue throws light on energy efficient clustering scheduling algorithms to advance the virtual available computing resource placement in cloud computing environments.

The following two articles (3 and 4) tackle load balancing for efficient utilization of cloud computing resources. The first article "Analysis and Development of Load Balancing Algorithms in Cloud Computing" addresses the goal of Cloud Computing as an enabler to share pool of resources among the cloud consumers with an insignificant management effort over the web. This article as such addresses the problem of distribution of load amongst the available virtual machines to achieve coherence and economy of scale, thus providing reliable and efficient mechanisms to store, process and access the data.

The second of the two articles, "Resource scheduling and load balancing fusion algorithm with deep learning based on cloud computing" solves energy consumption problem in cloud. In this paper, the author proposes resource scheduling and load balancing fusion algorithm with deep learning strategy. Compared with the corresponding evolutionary algorithms, the proposed algorithm can enhance the diversity of the population, avoid the prematurity to some extent, and have a faster convergence speed. The experimental results show that the proposed algorithm has the most optimal ability of reducing energy consumption of data centers.

The fifth article "Research on O2O Platform and Promotion Algorithm of Sports Venues Based on Deep Learning Technique" proposes a new parallel big data promotion algorithm based on the latest achievements of big data analysis. The proposed algorithm calculates the optimal value by using the observed variables Y, the hidden variable data Z, the joint distribution and distribution condition. The experimental results show that the proposed algorithm has higher accuracy of big data analysis, and can serve the intelligent sports venues better.

The sixth article, "A Deep Learning Solution for Multimedia Conference System Assisted by Cloud Computing" presents an ultra-reliable and low-latency solution based on Deep Learning and assisted by cloud computing for multimedia conference system. According to the requirements of ultra-reliability and low-latency, a bandwidth optimization model is proposed to improve the transmission efficiency of multimedia data so as to reduce the delay of the system. In order to improve the reliability of data distribution, the help of cloud computing node is used to carry out the retransmission of lost data. The experimental results show that the proposed method could improve the reliability and reduce the latency of the multimedia data distribution in multimedia conference system.

The last article, "Real-Time Streaming Data Analysis Using a Three-Way Classification Method for Sentimental Analysis" addresses social Computing as a process of creating, processing and analyzing social behavior using computational systems on the web. Sentimental analysis in social computing is an optimized learning that concerns with the opinions of human behavior on the road to a real-world entity using text analysis and computational linguistics. This article deliberates a novel methodology to determine the attitude of real world entity to provide better and accurate results. There are various platforms available for interaction among people to enhance their social relations. There is a need of a mechanism to extract useful information available from these multiple social networks.

We hope that these researches and applications in this exciting field are interesting and helpful for the emergence of a new research paradigm that integrates cloud computing, deep learning, and social media analytics.

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