# EDITORIAL
# Special Section on Big Data and Service Computing

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WITH the explosion of mobile applications and smart devices, big data and service computing have been research focuses in recent years. Online services are massive and disordered now, which makes it challenging to find appropriate services quickly and build a more powerful composed service according to user interests. During path planning, the shortest path is not always optimal, especially in emergency rescue scenarios, and thus how to take complex and changeable factors into consideration becomes challenging. To study rockburst, GeoLab collects rockburst experiment data to analyze its features. However, challenges are imposed by the dramatically increasing experiment data size. Since there is not enough hard disk space to save all these data, GeoLab had to slow down the speed of rockburst experiments and only analyzed about 4 percent of the data. With the current explosion of mobile applications and smart devices, more organizations are beginning to expose Web APIs, which makes APIs more widely used. Thus, how can these APIs be managed and utilized safely and effectively for businesses should be studied. More and more smart energy disaggregation schemes have been proposed recently, which imposes the problem to improve the accuracy and efficiency of those schemes. Among existing recommendation methods, few of them consider the characteristics of product reviews, thus new recommendation models are necessary to be studied. Serious challenges exist during processing large amounts of materials scientific data at different scales, for instance diversity of format of scientific data, and missing unified platform for sharing.

A novel service recommendation approach named UISCS (User-Interest-initial Services-Correlation-successor Services) is proposed by Zhang et al. (*A Novel Service Recommendation Approach in Mashup Creation*). A series of tests over real-world dataset crawled from the ProgrammableWeb verify that, as a step-by-step service recommendation approach, the UISCS approach has obviously improved the performance of some mainstream recommendation algorithms, such as LDA, ICF, SVD and graph-based TSR. A numerical optimization algorithm for unsteady flows of rotor based on web service is proposed by Zhang et al. (*Numerical Optimization Algorithm for Unsteady Flows of Rotor based on Web Service*). By simulating the forward flight state of the Robin fuselage/rotor model, those optimization algorithms coincide with the serial program. To handle complex and changeable factors in path planning, Gao et al. (*Applying Probabilistic Model Checking to Path Planning in an Intelligent Transportation System Using Mobility Trajectories and Their Statistical Data*) propose to use a probabilistic model of the traffic network in the form of a discrete-time Markov chain (DTMC), and then obtain a point probability pass formula and a multiple-target probability pass formula. After that, probabilistic computation tree logic (PCTL) is used to describe the verification property, and finally, the maximum probability path is selected and confirmed from the set of K-shortest paths. A case study of an emergency system under real-time traffic conditions illustrates that the proposed method can effectively improve the efficiency and quality of emergency rescue services. A new rockburst experiment data compression storage algorithm (NDCS) based on big data technology and cloud platform is proposed by Zhang et al. (*A New Rockburst Experiment Data Compression Storage Algorithm based on Big Data Technology*). Theoretical analysis and experiments show that NDCS has better performance than WinRAR and BDSS. NDCS is the most suitable data compression storage algorithm for rockburst. An API management system that can realize API service composition is designed by Hui et al. (*The Design and Implementation of a Service Composition System Based on a RESTful API*). This system brings together the open-source project WSO2 API Manager and the RESTful API service composition model. With the proposed platform, developers can perform service management

and service combination more efficiently and conveniently. A supervised energy disaggregation method which initially learns the power consumption of each appliance and then disaggregates meter readings using the previous learning result is proposed by Liu et al. (*An Efficient Supervised Energy Disaggregation Scheme for Power Service in Smart Grid*). The results depict that the proposed method improves the fast search and find of density peaks. A novel recommendation approach based on product attributes and a hybrid collaborative filtering are proposed by Cao et al. (*A Recommendation Approach Based on Product Attribute Reviews: Improved Collaborative Filtering Considering the Sentiment Polarity*) to improve the efficiency of recommendation. The results verify that the proposed method outperforms baselines in terms of sparse data. A model built by Generalized Stochastic Petri Nets (GSPN) is introduced by Ma et al. (*Virtual Machine Based on Genetic Algorithm Used in Time and Power Oriented Cloud Computing Task Scheduling*) to describe the process of scheduling in cloud datacenter. The effectiveness of the algorithms is found to be valid by the simulations on CloudSim. To process large amounts of materials scientific data at different scales, a Virtual DataSpace model and the evolution model is introduced by Li et al. (*Building an Open Cloud Virtual Dataspace Model for Materials Scientific Data*) to organize heterogeneous data according to the user requirements and track the variations of data. To detect phrases and map the composite semantic resource, a longest matching resource mapping scheme Zhang et al. (*A Longest Matching Resource Mapping Algorithm with State Compression Dynamic Programming Optimization*) to find the longest substring in a sentence that can match the knowledge base resource. In order to prevent the spread of Android malware and protect privacy information from being compromised, a novel multi-dimensional hybrid feature extraction and analysis method for Android malware detection is studied by Xu et al. (*Novel Android Malware Detection Method Based on Multi-dimensional Hybrid Features Extraction and Analysis*). The results indicate that the proposed method achieves good accuracy rate of Android malware detection.

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**Dr. Ying Li** is an associate professor in College of Computer Science and Technology, Zhejiang University, director of the Center for Pension Health Innovation Service Research, Binhai Industry Technology Research Institute of Zhejiang University. In 2000, he received his Ph.D. degree in computer software from Zhejiang University. He worked as a visiting scholar at the University of California, Santa Barbara (UCSB) in 2013. He was selected into the talent project in Zhejiang New Century 151. He has been engaged in research in the fields of service computing, platform software, business process management and other industrial applications. More than 50 research papers have been published, of which more than 30 papers have been indexed by SCI/EI. More than 60 national invention patents were proposed. He focused on the research on common support technologies in the field of modern service industry and had invented a series of core technologies around complex service systems.

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