
Introduction

Zhijun Ding*

Department of Computer Science and Technology,
Tongji University,
4800 Cao'an Highway, Jiading District,
Shanghai, 201804, China
Email: zhijun_ding@outlook.com
*Corresponding author

Weiping Li

School of Software and Microelectronics,
Peking University,
No. 24, Jinyuan Road, Daxing District,
Beijing, 102600, China
Email: wpli@ss.pku.edu.cn

Biographical notes: Zhijun Ding received his PhD in Computer Science from Tongji University, Shanghai, China in 2007. He is currently a Professor with the Department of Computer Science and Technology, Tongji University. He is currently an IEEE senior member, Secretary-General of CCF Special Committee of Network Information Service, Director of Shanghai Computer Society, Director of Coordination and Information Service Committee of Shanghai Computer Society, Director of Shanghai Artificial Intelligence Society, and committee member of China Computer Federation Special Committee of Service Computing. He has published more than 100 papers in domestic and international academic publications. His research interests are in service computing, formal methods, and intelligent financial technology.

Weiping Li received his PhD from the Shenyang Institute of Automation, Chinese Academy of Sciences in 2002. From 2002 to 2004, he worked at the National CIMS Research Center in Tsinghua University. He joined Peking University in 2004, and currently leads the service computing research team. His research interests include software engineering, service computing, context-aware services, and knowledge graph. He has conducted some research projects funded by the Chinese Government, the Danish Government as well as the industry.

This special issue consists of eight research works selected from the accepted papers of the 11th International Conference on Service Science (ICSS 2018).

ICSS 2018 was held at Shanghai University, Shanghai, China from May 11 to 13, 2018. Service computing has become a cross-discipline that covers the science and technology of bridging the gap between business services and IT services. The whole life-cycle of services innovation research mainly includes services modeling and creation, services annotation, services discovery and selection, services composition, services delivery, service-to-service collaboration, services monitoring, services optimisation,

services recommendation, as well as services management. ICSS 2018 aims to bring together scholars and students, researchers and managers of serviceology-related areas and industries for intellectual exchanges, research cooperation, education and professional development. ICSS 2018 attracted a lot of submissions and each one was peer-reviewed by three reviewers. Among the accepted papers, eight high quality research works were recommended to the special issue of *IJIMS*.

The eight papers cover diverse research issues, including traffic-oriented data analysis and service system (two papers), manufacturing service (two papers), grain storage monitoring service, edge sensor service, fog-cloud task scheduling service, and sentiment analysis service.

In 'A case study of MapReduce-based expressway traffic data analysis and service system', the authors proposed the expressway traffic data analysis system (ETDAS) to meet the needs of the collection, analysis and visualisation of increasing expressway traffic data by means of the distributed frameworks. The new service system is expected to help regulate the road network traffic flow, reduce traffic congestion, and provide analytical support for the optimisation strategy of road network. In 'A multidimensional service template for data analysis in highway domain', the authors proposed a domain specific service template on massive toll data in highway domain. Based on the service template, abundant multidimensional analysis jobs as services can be built and managed flexibly.

In 'Research on symbiosis state between manufacturing and producer services industry', the authors proposed a variable analysis model based on theoretical analysis that can accurately determine the relationship among the producer services industry and the manufacturing industry, and to guide government to correctly make industrial planning. In 'State prediction and servitisation of manufacturing processing equipment resources in smart cloud manufacturing', the authors proposed an integrated prediction method based on combined BP neural network to realise the accurate prediction of the operating state of manufacturing processing equipment resources. Those associated algorithms and models are encapsulated as a set of cloud services and published to the smart cloud manufacturing service platform for further service composition.

In 'A CNN-based temperature prediction approach for grain storage', the authors proposed convolutional neural network (CNN) based approach to predict the point temperature of grain piles. The CNN-based approach takes full advantage of multiple convolution kernels that share weights to capture the characteristics of grain temperature at different locations. In 'An approach to discovering event correlations among edge sensor services', the authors proposed a service-oriented framework, called as INFOG, to support the dynamic cooperation among sensors with the fog computing paradigm. The services are software-defined abstraction of physical sensors and they are deployed in edge nodes in INFOG.

In 'Fog-cloud task scheduling of energy consumption optimisation with deadline consideration', the authors modeled an energy consumption problem of the fog and cloud and formulated a task scheduling problem into a constrained optimisation problem in fog-cloud computing system. An efficient deadline-energy scheduling algorithm was proposed based on ant colony optimisation to reduce energy consumption on the condition of satisfying the task deadline. In 'A topic-enhanced recurrent autoencoder model for sentiment analysis of short texts', the authors proposed an enhanced topic-enhanced recurrent autoencoder model with the topic and sentiment information

generated by joint sentiment-topic (JST), which can improve the accuracy of sentiment classification of short texts.

In summary, the goal of this special section is to explore and crystallise the emerging challenges, technologies and trends into positive efforts in AI services and big data services. We hope that the novel research contributions of the papers in this special issue will provide interesting insights for further advancements in the fusion of service science, artificial intelligence and big data.