Guest Editorial Preface

Special Issue on Data Quality in Big Data and Trust

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The problem of data quality in data processing, data management, data analysis, and information systems, in the field of Web Services and Service Sciences, largely and indistinctly affects every web and service based application domain, especially at the era of Big Data. Big Data has the characteristics of huge volume in data and a great variety of structures or no structure. Big Data is increased at a great velocity every day but may be less trustable. The use of big data underpins critical activities in all sectors of our society. Many data processing tasks (such as data collection, data integration, data sharing, information extraction, and knowledge acquisition) require various forms of data preparation and consolidation with complex data processing and analysis techniques. Achieving the full transformative potential of Big Data requires both new data analysis algorithms and a new class of systems to handle the dramatic data growth, the demand to integrate structured and unstructured data analytics, and the increasing computing needs of massive scale analytics. The consensus is that the quality of data and the veracity of data have to span over the entire process of data collection, preparation, analysis, modelling, implementation, use, testing, and maintenance, including novel algorithms and usable systems.

Conventional web service research and development activities involve in complex processes such as service composition, SOA design, service discovery, dynamic service substitution, service orchestration, service scheduling, service level agreement (SLA) analysis, and semantic web services. Nowadays, these complex processes undoubtedly undertake the challenge of Big Data. Take SLA as an example. SLA is a specification of services in terms of customers' requirements matching services to customers' needs based on the services attributes. However, the values for the customers' needs and services attributes are already massive. Furthermore, one major concern on the users need and services quality is whether they are reliable trustable.

OBJECTIVE OF THE SPECIAL ISSUE

The objective of this special issue of IJWSR is to provide the researchers to publish their recent, unpublished, research results which study and bridge the gap between Service Science and Big Data. This Special Issue on Trust on Big Data presents four high quality research articles on data and information quality issues prevalent in current and emerging research in the fields of trust computing and big data computing applied to the solutions in social networking systems, recommendation systems, and graphic representations of services and public databases. We consider that *a critical point of the computing infrastructure lies in a theoretical foundation of a deep structure linking trusts with big*

data. We believe the approaches and methods proposed in these four papers will start an explorative investigation and provide an inspiring insight into solutions to this critical problem. In January, 2014, we launched an open call for submissions to this special issue of the *International Journal of Web Services Research*. We received about 20 submissions, and the following four articles were selected through a rigorous review process:

- In the first paper, "Combining Trust Propagation and Topic-Level User Interest Expansion in Recommender Systems", Zukun Yu et al. propose a recommendation model TT-Rec based on trust propagation and topic-level user interest expansion, with a reputation-based method to weight users' influence on other users when propagating trust in social networks.
- In the second paper, "Conceptual Graph: An Approach to Improve Quality of Business Services Modelling", Xiaofeng Du et al. consider a conceptual modelling method to address how to bridge the gap between business and service descriptions with a semantic service description for usage contextual approach formalized with the conceptual graphs formalism.
- In the third paper, "On transforming a road network database to a graph for localization purpose", Xiangli Meng et al. propose a procedure of converting the road network database to a road graph which could be used for localization problems existing in the transformation processes which are commonly met when dealing with national road network data bases.
- In the fourth paper, "Recommender System with Composite Social Trust Networks", Chaochao Chen et al. propose a composite trust-based probabilistic matrix factorization model, with its system composing of building a composite trust network and minimizing the rating difference and the trust difference between the true value and the inferred value.

In additional, we also accepted the fifth paper, "A Static Change Impact Analysis Approach based on Metrics and Visualizations to Support the Evolution of Workflow Repositories", which is a regular paper reviewed and recommended by the editorial board, in this issue for the sake of maximum using of space. This paper introduce a change impact analysis approach based on metrics and visualizations to support the evolution of workflow repositories.

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William Wei Song is full professor of Information Systems and Business Intelligence and Director of Micro-data Analysis at Dalarna University, Sweden. Previously he was academic staff at Durham University and the head of the Web Intelligence, Services, and Agent Technology Lab in England. Prof. Song is PC member of many international conferences and workshops (among others, he was workshop organizer and chair for the WISE conferences in 2000, 2013, and 2014) and editorial boards of international journals. He is a guest editor of the International Journal on Web Services Research (IJWSR). Prof. Song has been leader of research projects, funded by ESPRIT and FP6 (EU), EPSRC (UK), VINOVA (Sweden), and ITF (Hong Kong SAR). He has published over 150 research papers in key international journals and conferences, covering the research fields of conceptual modelling, semantic web, micro-payment in e-commerce, intensive data analysis, web and service science, trust computing, and requirements engineering.

Deren Chen is full professor of Computer Science and Technology and Director of the Research Center of electronic services, Zhejiang University, China. Previously he was Deputy Dean of the School of Computer Science and Technology, Zhejiang University and President of the Software Institute of Zhejiang University (Ningbo), Zhejiang University. He is also specially appointed expert to the state ministry of science and technology, China. Prof. Chen was a visiting scholar to IBM TJ Watson Research Center, New York in 1990, and visiting professor at Nanyang Technological University, School of Applied Science in 1999. He served as member of PCs in many international and national conferences and editorial boards of international journals. Prof. Chen is leader of over 20 national projects of national key scientific and technological research, funded by the National Natural Science Foundation of China, National 863 Research and Development Program, National Defense Advance Research. He has won many awards, including National Science and Technology Progress Award, National Teaching Achievement Award a National Teaching Achievement Award, Zhejiang Provincial Science and Technology Progress Award, and Ministry of Education, Science and Technology Progress Award. Prof. Chen has published more than 140 academic papers and is the author or co-author of eight monographs, covering the fields of discrete mathematics, computer graphics, e-commerce system structure, the e-commerce technology foundation, China's e-commerce case Showcase, and Fundamentals of Computer Application.