
Introduction

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Biographical notes: Honghao Gao received his PhD in Computer Application Technology from the School of Computer Engineering and Science, Shanghai University, China, in 2012. He is currently an Associate Professor with the Computing Center of Shanghai University. His research interests include service computing, model checking-based software verification, and sensors data application. Until now, he has approximately 40 publications in professional journals and more than 20 publications in scientific conferences, and has obtained 13 patent applications and registered eight software copyrights in China. He is currently an Associate Professor at the Shanghai University, IEEE senior member, CCF senior member, and CAAI senior member.

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With the greatly increased data, the importance of data-intensive computing has been rising and will continue to be a foremost field of research. To satisfy users' kinds of requirements and provide friendly used functions, service-oriented architecture (SOA) is the widely accepted and applied paradigm. Hence, we believe that data intensive services-based applications, a collection of related structured tasks or services that produce a specific result, will have a great impact on both industrial and academic field. However, some key researches in related areas are still immature. The design, development, maintenance and evolution of data intensive service application need to be studied. How to formally describe data intensive service behaviours, semantic and context; how to orchestrate service components to achieve the final goal; how to recommend data intensive service candidates based on different requirements; how to support services to process massive data and improve the performance; how to evaluate emerging data intensive services. These could have a significant impact on the ongoing standardisation efforts for data intensive services. Therefore, there is an urgent need for the research community and industry practitioners to develop comprehensive methodologies, engineering principles and environment support for data intensive services and its applications.

The call for contributions to this special issue focused on theoretical and practical aspects of data intensive services-based application. After thorough reviewing by independent reviewers, a collection of very high quality papers were selected for publication in the special issue.

The research papers in this special issue give a significant contribution to the field of data intensive services in the specific areas of service abstraction, knowledge learning, data classification, collaborative filtering, recommendation algorithm, parallelisation, industry application, service-based system design and modelling, massive data processing and fusion, business process modelling and so on.

The first paper entitled 'Automatic service abstraction through data, information and knowledge prioritisation' by Yucong Duan, Lixu Shao, Donghai Zhu, Xiaoxian Yang and Xiaobing Sun proposes a framework that can automatically build the service abstraction according to the users' service requirements which are refined by a hierarchy composing system of data graph, information graph and knowledge graph.

The second paper entitled 'A classification algorithm based on weighted ML-kNN for multi-label data' by Ming Jiang, Lian Du, Jianping Wu, Min Zhang and Zexin Gong proposes a weighted ML-kNN algorithm which assigns different weights to each label based on the proportion of labels and the mutual information of the spatial distribution of unseen instances to training instances in order to reduce the probability of misjudgement of the unseen instance's label set.

The third paper entitled 'Research on collaborative filtering recommendation algorithm based on social network' by Tian Zhang proposes a novel friend recommendation approach by leveraging a weighted friend network constructed from the real social network data and a local random walk-based user similarity measurement.

The fourth paper entitled 'Research on collaborative filtering recommendation algorithm based on user interest for cloud computing' by Kun He proposes a personalised parallel collaborative filtering recommendation method which predicts the potential customers' interest by calculating the mobile scenarios similarity according to the item scoring matrix.

The fifth paper entitled ‘Deep well construction of big data platform based on multi-source heterogeneous data fusion’ by Yu Zhang, Yange Wang, Hongwei Ding, Yongzhen Li and Yanping Bai proposes a deep well construction multi-source and heterogeneous big data management and analysis system which improves the accuracy and efficiency of smart mining system from the aspects of data acquisition, data fusion, data storage and data analysis.

The sixth paper entitled ‘Toward business process recommendation-based collaborative filtering’ by Wei Luo, Zhihao Peng, Ansheng Deng and Xiaoming Bi proposes a personalised process recommendation approach by considering both traditional process recommendation results and user behaviour preference which is calculated based on the historical tracks of similar users.

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