

Guest Editorial Preface

Special Issue on BigData 2014

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INTRODUCTION

Big data means an all-encompassing term of large and complex data sets that it is hard to process them into commodity big data applications using traditional data processing computations. The congress series BigData started in 2012 aims to provide an international forum that formally explores various business insights of all kinds of big data architecture, modeling, and services. With the purpose of bring together congenial researchers and practitioners in the area of big data applications, complex capture, analysis, search, saving, sharing, transfer, visualization, and privacy violations of huge data sets are drivers for much of the ongoing research in the areas relevant to BigData.

HISTORICAL BACKGROUND

Big Data is a key enabler of exploring business insights and economics of services, which was addressed in the first version of this conference (i.e. The 2012 International Conference on Services Economics). A keynote session “Big Data, Big Analytics, and Big Insights” was conducted at SERVICES. Several important aspects of Big Data were also discussed in Tutorial “Internet of Touch and Big Data Industrialization.” The International Congress on Big Data (BigData Congress) is created to provide a dedicated forum that formally explores various business insights of all kinds of “services” in the field of Services Computing, which was formally promoted by IEEE Computer Society since 2003.

CONTENTS OF THIS SPECIAL ISSUE

This special issue of the IJSWR contains four articles based on papers presented at the BigData 2014.

The first contribution, by Cheng, (Chung-Chih), Cheng, (Fan-Chieh), Lin, Huang, (Wen-Tzeng), and Huang, (Shih-Chia), with the title “A Fastest Patchwise Histogram Construction Algorithm Based on Cloud-Computing Architecture”, is concerned with the huge image processing by adding the local histograms to feature the intensity probability of each image patch. The main architecture exploits the big data service computing by communication networks. Remarkably, its time complexity is much lower than other methods as the parallel architecture is developed by cloud-computing to construct several patchwise histograms at the same time. For various image processing procedures using local histograms, such as image fog removal, noise reduction, and contrast enhancement, the CPU loading of data transmission is efficiently shared via the developed architecture.

The second contribution, by Yu, Liu, Miao, Hwang, Wan, and Lu, has the title “Association Rule Mining of Personal Hobbies in Social Networks”. It proposes an effective scheme for association rule mining of personal hobbies in social networks via the connection and clipping techniques. In the process of associating frequent itemsets, the featured set operations dramatically reduce the number of databases visited. For exploring more practical rules, the interestingness level is also described to eliminate rules that few people are interested in.

The third contribution, by Tsai and Ma, has the title “Automatic Identification of Simultaneous and Non-Simultaneous Singers for Music Data Indexing”. It addresses the interesting question about auto-identification of multiple singers. This paper proposes an efficient system using a triangulation-based decision approach for improving singer identification. To handle the rapid proliferation of music data that have singing voices overlapping in time, an audio stream is segmented into a sequence of consecutive, non-overlapping, fixed-length clips using a sliding window.

The fourth contribution, by Chen, (Ching-Han), Chen, (Ching-Yi), Hsia, and Wu on “Efficient Vision-Based Smart Meter Reading Network” is concerned with a community gas supply system. It proposes a vision-based wireless meter-reading gateway in the gas meter-reading system. For building the big data collection infrastructure, the system analyzes the captured gas meter images and saves the recognized gas meter-readings.

We hope that readers will find the papers of this special issue interesting and inspiring.

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Patrick Hung has been working with Boeing Research and Technology in Seattle, Washington on aviation services-related research projects. He has a U.S. patent on the Mobile Network Dynamic Workflow Exception Handling System and a continuation-in-part pending patent application with Boeing. Dr. Hung is an Honorary International Chair Professor at National Taipei University of Technology, Taiwan and an Adjunct Professor at Wuhan University, China. In addition, he is a Visiting Researcher at the Shizuoka University and University of Aizu, Japan, a Guest Professor in University of Innsbruck, Austria, University of Trento and University of Milan, Italy. He has been an Adjunct Faculty Member at Department of Electrical and Computer Engineering in University of Waterloo, Ontario; Guest Research Professor at Kingdee International Software Group Co. at ShenZhen in China; Guest Professor at Institute of Computer Science in University of Innsbruck, Austria and Department of Information Engineering and Computer Science at the University of Trento, Italy. Further, he was a Visiting Faculty Member at Department of Computer Science and Engineering at both Hong Kong University of Science and Technology and Chinese University of Hong Kong. Before that, he was a Research Scientist with Commonwealth Scientific and Industrial Research Organization (CSIRO) in Canberra, Australia. He also has prior industrial experience in e-business projects in North America and Hong Kong. He is a founding committee member of Institute of Electrical and Electronics Engineers (IEEE) International Conference of Web Services, IEEE International Conference on Services Computing, IEEE Congress on Services, and IEEE Congress on BigData. He is Associate Editor of the IEEE Transactions on Services Computing, International Journal of Web Services Research and International Journal of Business Process and Integration Management, as well as an Executive Group Member and Co-ordinating Editor of the Information Systems Frontiers by Springer. From 2000 to 2004, Dr. Hung served as a panelist for the Small Business Innovation Research and Small Business Technology Transfer programs of the National Science Foundation (NSF) in the U.S. Dr. Hung has studied at CLC Japanese Language Institute at Tokyo in Japan and completed Level 2, 3 and 4 Certificates of Japanese-Language Proficiency (administered by the Japan Foundation and Association of International Education Japan). He has also been a visiting PhD student at the Graduate School of Informatics, Kyoto University, Japan and RSA Laboratories West in San Mateo, California.

Shih-Chia Huang is an Associate Professor with the Department of Electronic Engineering at National Taipei University of Technology, Taiwan, and an International adjunct professor with the Faculty of Business and Information Technology, University of Ontario Institute of Technology, Canada. Professor Huang has published more than 40 journal and conference papers and holds more than 30 patents in the United States, Europe, Taiwan, and China. In 2009, he received a doctorate degree in Electrical Engineering from National Taiwan University, Taiwan. Dr. Huang was presented with the Kwoh-Ting Li Young Researcher Award in 2011 by the Taipei Chapter of the Association for Computing Machinery, as well as the Dr. Shechtman Young Researcher Award in 2012 by National Taipei University of Technology. In addition, Professor Huang is an associate editor of the Journal of Artificial Intelligence. His research interests include image and video coding, wireless video transmission, video surveillance, error resilience and concealment techniques, digital signal processing, cloud computing, mobile applications and systems, embedded processor design, and embedded software and hardware co-design.