Lecture Notes in Computer Science   7234

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Web Technologies and Applications

APWeb 2012 International Workshops:
SenDe, IDP, IEKB, MBC
Kunming, China, April 11-13, 2012
Proceedings

Springer

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Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

General Chairs' Welcome Message

Welcome to APWeb 2012, the 14th Edition of Asia Pacific Web Technology Conference. APWeb is a leading international conference on research, development, and applications of Web technologies, database systems, and information management and software engineering, with a focus on the Asia-Pacific region. Previous APWeb conferences were held in Beijing (1998), Hong Kong (1999), Xian (2000), Changsha (2001), Xian (2003), Hangzhou (2004), Shanghai (2005), Harbin (2006) Huangshan (2007), Shenyang (2008), Suzhou (2009), Busan (2010), and Beijing (2011).

APWeb conferences cover contemporary topics in the fields of Web management and WWW-related research and applications, such as advanced application of databases, cloud computing, content management, data mining and knowledge discovery, distributed and parallel processing, grid computing, Internet of things, Semantic Web and Web ontology, security, privacy and trust, sensor networks, service-oriented computing, Web community analysis, Web mining and social networks.

The APWeb12 program featured a main conference and five satellite workshops. The main conference had two eminent keynote speakers—Patrick McDaniel from Pennsylvania State University, USA, and Vijay Varadharajan from Macquarie University, Australia—39 full papers, 34 short papers, and 5 demo papers.

The five workshops reported on some recent developments and advances in contemporary topics in the related fields of: Information Extraction and Knowledge Base Building (IEKB) Data Mining for Information Security and Privacy Intelligent Data Processing (IDP 2012) Sensor Networks and Data Engineering (SenDe 2012), and Mobile Business Collaboration (MBC 2012).

Both main conference program and workshop sessions were of high quality owing to the strong support and commitment from their international Program Committee. We wish to take this opportunity to thank Program Co-chairs Michael Sheng, Guoren Wang and Christine S. Jensen for their dedication and effort in ensuring a high-quality program. I would also like to thank Workshop Chairs Hua Wang and Lei Zou, and each workshop organizer, for their contribution to developing an interesting and attractive workshop program.

Many colleagues helped toward the success of APWeb 2012. They are Local Arrangements Co-chairs: Jianfeng He and Guangyan Huang; Financial Chair: Jing He; Publication Chair: Guandong Xu; Industry Chairs: Gary Morgan and Qingzhong Li; Demonstration Chair: Chaoyi Pang ; Publicity Co-chairs: Haolan Zhang and Jiangang Ma; and Webmasters: Zhi Qiao and Zhangwei Jiang.

We would like to sincerely thank our financial supporters and sponsors. The following organizations generously supported and sponsored APWeb 2012: Hebei University of Engineering, Nanjing University of Finance and Economics, National Science Foundation of China, Kunmin University of Technology, Graduate University of Chinese Academy of Science, and Victoria University.

We wish also to thank the APWeb Steering committee led by Xuemin Lin for offering the opportunity to organize APWeb 2012 in Kunming.

Finally, we wish to thank the host Kunming University of Technology and the local Arrangements Committee and volunteers for the assistance in organizing this conference. The following members helped with the registration, accommodation, and various logistics: Jing Yang, Xun Zhou, and Shang Hu.

April 2012   Xaoxue Zhang
                                                            Yanchun Zhang
                                                        Masaru Kitsuregawa

Preface

Following the tradition of the APWeb conference, a leading international conference on research, development and applications of Web technologies, database systems, information management and software engineering, there were several satellite workshops of the 14th Asia Pacific Web Conference Workshops held in Kunming on April 11, 2012. This year, four workshops were organized in conjunction with APWeb 2012, coving a wide range of topics, such as information extraction, information security, intelligent data processing, sensor network and business intelligence. These topics play very important roles in creating the next-generation information technology architectures and solutions.

The high-quality program would not have been possible without the authors who chose APWeb 2012 workshops as a venue for their publications. This proceedings volume compiles the papers selected for presentation at the following four workshops:

- The First Workshop on Sensor Networks and Data Engineering(SenDe 2012)
- The First International Workshop on Intelligent Data Processing(IDP 2012)
- Workshop on Information Extraction and Knowledge Base Building(IEKB 2012)
- The Second International Workshop on Mobile Business Collaboration(MBC 2012)

We are very grateful to the workshop organizers and Program Committee members who put a tremendous amount of effort into soliciting and selecting research papers with a balance of high quality, new ideas, and novel applications. Furthermore, we would like to take this opportunity to thank the main conference organizers for their great effort in supporting the APWeb 2012 workshops.

We hope that you enjoy reading the proceedings of the APWeb 2012 workshops.

April 2012   Hua Wang
                                                                    Lei Zou

Message from the SenDe 2012 Co-chairs

Welcome to SenDe 2012, the first Sensor Networks and Data Engineering workshop. Data become more and more critical in our daily life, especially the data gathered by sensors from the physical world and data generated by people on the Web (virtual world). SenDe 2012 focused on discussing research problems arising from the following three aspects:

(1) Wireless sensor networks and sensor data analysis for risk monitoring in the physical world. Paulo de Souza was invited to give a talk— "Technological Breakthroughs in Environmental Sensor Networks"—which focused on the development of better sensors and more efficient sensor networks for monitoring environments. Wei Guo, Lidong Zhai, Li Guo, and Jinqiao Shi proposed a worm propagation control based on spatial correlation to resolve the security problems in wireless sensor network. Li Yang, Xiedong Cao, Jie Li, Cundang Wei, Shiyong Cao, Dan Zhang, Zhidi Chen, and Gang Tang modelled the security problem in the SCADA system for oil and gas fields into an online digital intelligent defense process. Xiedong Cao, Cundang Wei, Jie Li, Li Yang, Dan Zhang, and Gang Tang designed an expert system to forecast the potential risks of geological disasters through analyzing the real-time data of the large-scale network in the SCADA system.

(2) Efficient data processing for query and knowledge discovery. Ziqiang Deng, Husheng Liao, and Hongyu Gao presented a hybrid approach combining finite state machines and a holistic twig matching algorithm for memory-efficient twig pattern matching in XML stream query. Hongchen Wu, Xinjun Wang, Zhaohui Peng, Qingzhong Li, and Lin Lin provided a PointBurst algorithm for improving social recommendations when there are no, or too few, available trust-relationships. Yang Li, Kefu Xu, Jianlong Tan, and Li Guo provided a method of group detection and relation analysis for Web social networks. Xingsen Li, Zhongbiao Xiang, Haolan Zhang, and Zhengxiang Zhu develop a method for extension transformation knowledge discovery through further digging on the basis of traditional decision trees. Zhuoluo Yang, Jinguo You, and Min Zhou provided a two-phase duplicate string compression algorithm for real-time data compression.

(3) Distributing storage and balancing workload in the cloud. Keyan Liu, Shaohua Song, and Ningnan Zhou provided a flexible parallel runtime mechanism for large-scale block-based matrix multiplication for efficient use of storage. Xiling Sun, Jiajie Xu, Zhiming Ding, Xu Gao, and Kuien Liu propose an efficient overload control strategy for handling workload fluctuations to improve service performances in the cloud.

We accepted 10 from 27 submissions, with an acceptance rate of 37%. Each submission was carefully reviewed by at least three Program Committee members. We wish to thank the invited speaker: Paulo de Souza (ICT Centre, CSIRO, Australia), all of the authors, participants, and Program Committee members of the SenDe 2012 workshop.

April 2012   Jing He
                                                             Guangyan Huang
                                                                  Xiedong Cao

Message from the IDP 2012 Co-chairs

Intelligent data processing (IDP) has attracted much attention from various research communities. Researchers in related fields are facing the challenges of data explosion, which demands enormous manpower for data processing. Artificial intelligence and intelligent systems offer efficient mechanisms that can significantly reduce the costs of processing large-volume data and improve data-processing quality. Practical applications have been developed in different areas including health informatics, financial data analysis, geographic systems, automated manufacturing processes, etc.

Organized in conjunction with the 14th Asia Pacific Web Conference (APWeb 2012), the purpose of IDP 2012 was to provide a forum for discussion and interaction among researchers with interest in cutting-edge issues in intelligent data processing. IDP 2012 attracted 21 submissions from Japan, Korea, Hong Kong, Taiwan, China, and India with a 33.3% acceptance rate. Each paper was carefully reviewed by two or three members of an international Program Committee (PC). Seven papers were selected to be included in this volume. These papers cover a wide range of both theoretical and pragmatic issues related to data processing.

IDP 2012 was sponsored by APWeb 2012. We would like to express our appreciation to all members of the APWeb 2012 Conference Committee for their instrumental and unfailing support. IDP 2012 had an exciting program with a number of features, ranging from keynote speeches, presentations, and social programs. This would not have been possible without the generous dedication of the PC members and external reviewers, and of the keynote speaker, Clement H.C. Leung of Hong Kong Baptist University. We especially would like to thank Jiming Liu of Hong Kong Baptist University, Yanchun Zhang of Victoria University, and Xinghuo Yu of RMIT University for their thoughtful advice and help in organizing the workshop.

April 2012

Chaoyi Pang
Junhu Wang
Hao Lan Zhang

Message from the IEKB 2012 Chair

Information extraction (IE) techniques aim at extracting structured information from unstructured data sources. Some low-level information extraction techniques have been well studied. Now, more IE research focuses on knowledge acquisition and knowledge base building. This workshop focused on issues related to information extraction and building knowledge base. IEKB 2012 was held in conjunction with the APWeb 2012 conference in Kunming, China. IEKB 2012 aimed at bringing together researchers in different fields related to information extraction who have common interests in interdisciplinary research. There were 11 submissions to IEKB 2012, and only five papers were accepted. The workshop provided a forum where researchers and practitioners can share and exchange their knowledge and experience.

April 2012   Dongyan Zhao

Message from the MBC 2012 Co-chairs

The recent advancement of workflow technologies and adoption of service-oriented architecture (SOA) have greatly facilitated the automation of business collaboration within and across organizations to increase their competiveness and responsiveness to the fast evolving global economic environment. The widespread use of mobile technologies has further resulted in an increasing demand for the support of mobile business collaboration (MBC) across multiple platforms anytime and anywhere. Examples include supply-chain logistics, group calendars, and dynamic human resources planning. As mobile devices become more powerful, the adoption of mobile computing is imminent. However, mobile business collaboration is not merely porting the software with an alternative user interface, but rather involves a wide range of new requirements, constraints, and technical challenges.

The Second International Workshop on Mobile Business Collaboration (MBC 2012) was held on April 11, 2012, in Kunming in conjunction with APWeb 2012. The overall goal of the workshop was to bring together researchers who are interested in the optimization of mobile business collaboration.

The workshop attracted nine submissions from Germany, USA, Korea, and China. All submissions were peer reviewed by at least three Program Committee members to ensure that high-quality papers were selected. On the basis of the reviews, the Program Committee selected six papers for inclusion in the workshop proceedings (acceptance rate 66%).

The Program Committee of the workshop consisted of 14 experienced researchers and experts. We would like to thank the valuable contribution of all the Program Committee members during the peer-review process. Also, we would like to acknowledge the APWeb 2012 Workshop Chairs for their great support in ensuring the success of MBC 2012, and the support from the Natural Science Foundation of China (No. 60833005).

April 2012

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Dickson W. Chiu
Jie Cao
Yi Zhuang
Zhiang Wu

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