Foreword of Special Issue on "Mobile System, Agent Technology, and Web Services"

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Agent technology is one of the most vibrant and active areas of research and development in information technology. Multi-agents and mobile agent technologies are making significant impacts upon almost all aspects of computing discipline. Boldly speaking, they are underpinning the profound changes taking place in our information society. One of the admittedly most successful applications is in global business partnerships, directly due to the nature of the problem. In fact, virtual organizations and e-commerce have become fashionable practices of today's global businesses. At the right time, agents act as key components in the Internet-wide information and e-commerce systems that are currently being developed across the globe, and multi-agents and mobile agents provide most feasible and effective computational frameworks for contemporary business practices. Wireless communication and Mobile networking technology has been received much attention in the last decade. In particular, wireless sensor networks, Bluetooth networks, and wireless ad-hoc networks are deemed as the next generation mobile systems. Research in these systems is emergent and crucial, not only in academic and research community, but also in industrial field. In this decade, the Web service researches are very popular. This special issue focuses on the state-of-the-art software technology related to these issues, including multimedia networking, agent technology, web services, Computer-Supported Cooperative Work, Information Systems Development, Data Mining, Mobile and Ubiquitous Computing .Ten papers are included in this special issue.

In the first paper entitled "An Intelligent Home Environment based on Service Planning over Peer-to-Peer Overlay Network", Dr. Chuan-Feng Chiu, Dr. Steen J. Hsu, and Dr. Sen-Ren Jan discussed a middleware to realize smart home environment over peer-to-peer overlay network to resolve the heterogeneous home environment problem and propose the service collaboration framework to use home services intelligently.

Automatic discovery of semantic relations between resources is a key issue in Web-based intelligent applications such as document understanding and Web services. The second paper entitled "Automatic Discovery of Semantic Relations Based on Association Rule" by Xiangfeng Luo, Kai Yan and Xue Chen point out how to automatically discover the latent semantic relations and their properties based on the existing association rules.

STPN (Stochastic Timed Petri Nets）is a high-level graphical model widely used in modeling system. Dr. Po-Zung Chen, Chu-Hao Sun, and Shih-Yang Yang put forth the use of STPN as the Web structure model. They adopt Place in the STPN model to represent webpage on the websites and use Transition to represent hyperlink. Through the model, they conduct Web structure analysis. The detailed contribution will be described in the third article entitled "Modeling and Analysis the Web Structure Using Stochastic Timed Petri Nets".

"Reasoning with Semantic Web Technologies in Ubiquitous Computing Environment" written by Prof. WenYing Guo illustrate the attempt to apply Semantic Web technologies to ubiquitous computing, She used OWL for defining a domain family ontology, then set up rules in JESS engine, finally run reasoning by Racer.

In "An Object-oriented Design and Pushing Web Server based Framework for Physical Object Interactions and Services", Prof. Runhe Huang, Kei Nakanishi, Jianhua Ma, and Bernady O. Apduhan present their research progress in developing a framework based on the object-oriented design approach and the use of a push web server. Readers can understand the concept of object abstraction. An object can hide its internal structure from the outside world.

Prof. Han-Bin Chang, Hsuan-Pu Chang, and Jason C. Hung point out the Ubi-media research issue. In the sixth paper entitled "Interactive Traveling Assistant based on Agent Technologies and Mobile Computing", the interactive traveling assistant application is designed for helping visitors to easily record and share wonderful experience in a journey via internet. The proposed system can save time for creating travel notes. Visitors can use handheld mobile devices like PDA to capture photos or videos and collect related resources from internet by agents.

"The Practical Design of Constructing Data Transition Interface with ZigBee WSN and RS-485 Wired Interface—Example with Small-scaled Wind-power Electricity Generator System" written by Prof. Chun-Liang Hsu and Wei-Bin WU proposed to explore the related practical techniques of monitoring and controlling system in designing renewable energy system, especially for Small-scaled wind-power generator.

Ubiquitous Media research issues are discussed in these years, Jason C. Hung, Yi-Chun Liao, Chun-Hong Hwang, Nick C. Tang and Ta-Jen Chen developed a method to improve the inpainting technique for destroyed image over the ubiquitous environment. "Exemplar-based Image Inpainting base on Structure Construction" points out after the structure information of an image is determined, destroyed contours will be connected in curve fitting process and damaged regions will be inpainted by using exemplar-based inpainting method.

In the ninth paper entitled "Providing Data Items with Time Constraints in Multi-Channel Broadcasting Environments", Ding-Jung Chiang, Hwei-Jen Lin, and Timothy K. Shih studied broadcast scheduling strategies for push-based broadcast with timing constraints in the form of deadlines. They provided scheduling algorithms for broadcast systems that ensure requests meet their deadlines and presented a study of the performance of traditional real-time strategies and mobile broadcasting strategies, and demonstrate that traditional real time algorithms do not always perform the best in a mobile environment. Authors propose a multi-channel model based on push-based real-time broadcast system and also provide an efficient scheduling algorithm, called dynamic adjustment with time constraint (DATC), which is designed for timely delivery of data to mobile clients.

In the last paper entitled "Using Data Mining in MURA Graphic problems", Prof. Wen-Hsing Kao and Victoria Hsu designed and developed a MURA related association rules which suitable for the MURA model requirements, and they named MURA Risk rating system. The quality problems of Photomask cause the MURA phenomenon in LCD panels. Their purpose is to figure out the effective application of data mining algorithms in monitoring and control of complex Large Area Photomask systems. By combining the Data Mining into MURA risk management. It could be suitable not only for every Photomask company, but also companies facing to the MURA problems.

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