
Editorial

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Biographical notes: Ching-Hsien Hsu is a Faculty in Computer Science Department, Chunghua University, Taiwan. His research interests are primarily in parallel and distributed computing, cloud, grid, P2P and services computing. He has published more than 100 papers in journals, books and conferences. He was awarded as Annual Outstanding Researcher by Chunghua University, in 2005, 2006, 2007 and the excellent research award in 2008. He is serving in a number of journal editorial boards; guest edited more than 20 international journal special issues. Currently, he is an IEEE senior member and serves as an executive committee of IEEE Technical Committee on Scalable Computing.

Jemal H. Abawajy is a faculty member of School of Engineering and Information Technology, Deakin University, Australia. He is actively involved in funded research in robust, secure and reliable resource management for pervasive computing (mobile, clusters, enterprise/data grids, web services) and networks (wireless and sensors) and has published more than 130 refereed conferences and journal papers. He is on the editorial board of several international journals and guest edited several journals. He has been a member of the organising committee for over 60 international conferences serving in various capacity including chair, general co-chair, publication chair.

Sang-Soo Yeo received his Bachelor's, Master's and PhD degrees in Computer Science from Chung-Ang University, Seoul, Korea. He previously taught at Dankook University, Seoul, Korea and then he has joined Kyushu University in Japan as a Visiting Scholar at the Graduate School of Information Science and Electrical Engineering (ISEE). After that, he came back to Korea and he worked for BTWorks, Inc. as a General Manager. Currently, he is a professor at

the Division of Computer Engineering, Mokwon University, Korea. His research interests include security, ubiquitous computing, multimedia service, embedded system and bioinformatics.

Grid and pervasive services (GPS) are emerging rapidly as an exciting new paradigm including technologies of ubiquitous computing, wireless communication and ambient intelligence to provide computing and communication services any time and anywhere. It usually refers to the creation and deployment of computing technology in such a way that it becomes an invisible part of the fabric of everyday life and commerce. As grid and pervasive computing present a new trend of information and communication technologies for connecting cyber and physical domains, in such era, computers in the traditional sense gradually fade from view. Namely, information and communication mediated by computers is available anywhere and anytime through devices that are embedded in our environment, completely inter-connected, intuitive, effortlessly portable and constantly available. Although grid and pervasive computing presents exciting enabling opportunities, the benefits will only be reaped if its services can be appropriately presented. This special issue is intended to foster the dissemination of state-of-the-art research in the area of GPS including service architectures, secure models and novel applications.

This special issue includes an extended version of the selected paper originally presented at the second International Conference on Multimedia and Ubiquitous Engineering, held at Busan, Korea and four regular papers selected from 13 external submissions, comprising a 30% acceptance rate. The papers selected for this issue not only contribute valuable insights and results, but also have particular relevance to the grid and pervasive computing community. All of them present high quality results for tackling problems arising from the ever-growing GPS.

This special issue includes five papers from researchers in Malaysia, India, Greece, China and UK, who have demonstrated the effectiveness and efficiency of a variety of services issues and applications in different areas of grid and pervasive computing.

The paper by F.F. Chua entitled ‘Adoption of service-oriented architecture (SOA) by information systems’ investigates how an organisation should apply a service-oriented design to systems that were previously standalone heterogeneous applications and in what way the SOA should be adopted. By utilising adoption-diffusion theory and using the service-oriented integration approach, it is possible to conclude when an organisation should adopt web services and to what extent the organisation should adopt these services when integrating applications. As adoption approaches vary, one organisation should consider the real needs of the SOA adoption based on the nature of the organisation which leads to the correct choice of the adoption path.

The paper by P. Varalakshmi and S. Thamarai Selvi entitled ‘Reputation and policy based three-tier grid architecture with genuine feedbacks’ proposes a three-tier architecture to ensure an unbiased selection of suitable SP for the consumer’s request. The trust-indices of brokers and SPs are employed and updated dynamically after the completion of each transaction to ensure the trustworthy services in the consumer community and leads to quicker selection of SPs. The result of the proposed model with integrated reputation and policy-based resource selection methodology shows further improvement in reduction of cost-loss to the consumers.

The paper by Christos Chrysoulas and Odysseas Koufopavlou entitled ‘Proposing a service-enabled semantic grid model’ introduces a resource management and a service deployment system supported by a simple matchmaking algorithm to address the problem of heterogeneous resource co-allocation. Inspired from the concept of autonomous decentralised systems, the proposed semantic grid system architecture is aimed to provide an improved infrastructure by bringing autonomy, semantic interoperability and decentralisation in the grid computing for emerging applications.

The paper by J. Li, J. Huai, L. Lin and J. Xu entitled ‘A negotiation-based trust establishment service for CROWN grid’ designs a novel negotiation-based trust establishment service which supports distributed credential chain construction and privacy preservation to enhance the grid security infrastructure. Specially, a credential federation mechanism supports identity mapping and credential conversion is presented. Several novel techniques, such as trust tickets and policy caching have been successfully implemented in the CROWN Grid, providing security services and enhancing its efficiency.

The paper by Y. Zhang, R. Chu and D. Li entitled ‘A peer-to-peer IO buffering service based on RAM-grid’ presents novel techniques to reduce the latency of IO operation and to improve the hit ratio of local cache on RAM-grid systems. The Peer-to-Peer I/O Buffering (PIB) service acts as a two-level disk cache which buffers obsolete blocks in idle nodes on the internet for IO-intensive applications. As a result, it reduces the IO latency of missed disk accesses by means of the speed advantage of network over disks, and improves the hit ratio of local cache based on accurate identification of IO patterns.

All of the above papers address either services architectures in grid and pervasive computing systems or propose novel application models in the various GPS fields. They also trigger further related research and technology improvements in application and security services of GPS. Honourably, this special issue serves as a landmark source for education, information, and reference to professors, researchers and graduate students interested in updating their knowledge about or active in services and novel application models for grid and pervasive computing systems.

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