EDITORIAL

Guest Editorial: Special Issue on EUC 2007

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Embedded and ubiquitous computing is an exciting new paradigm that provides computing and communication services all the time and everywhere. Its systems are now affecting every aspect of our life to the point that they are hidden inside various appliances. This emergence is a natural outcome of research and technological advances in embedded systems, pervasive computing and communications, wireless networks, mobile computing, distributed computing and agent technologies, etc.

This special issue has collected best papers presented in the 2007 IFIP International Conference on Embedded and Ubiquitous Computing (EUC 2007), held in Taipei, Taiwan, ROC. These papers present state of the art in the areas of real-time and embedded software, power-aware hardware management, network security, embedded compiler techniques, mobility and security in advanced wireless networks, and data crawling.

Best papers in the EUC 2007 conference were invited for submission. All the invited papers had undergone an intensive review process. The Editor-in-Chief agreed with our recommendation of the acceptance of eleven high quality papers.

The first four papers focus on software techniques in embedded and ubiquitous systems. The first paper, entitled "Task Scheduling for Context Minimization in Dynamically Reconfigurable Platforms", by Nei-Chiung Perng et al. describes a real-time approach to reducing the number of FPGA configuration contexts in dynamic reconfigurable systems. The second paper, entitled "Real-Time Embedded Software Design for Mobile and Ubiquitous Systems" by Pao-Ann Hsiung et al., describes a component-based software architecture that supports automatic synthesis and verification, aiming at high software design productivity. The third paper, entitled "SIGMA system: A Multi-OS Environment for Embedded Systems", by Wataru Kanda et al., introduces a virtualization technique to support multiple operating systems for multi-processor embedded architectures. The fourth paper, entitled "Compiling for Reduced Bit-Width Queue Processors" by Arquimedes Canedo et al., presents a compiler technique for generating compact codes for embedded processors.

The next three papers are on hardware management for embedded and ubiquitous computing. The fifth paper in this special issue, entitled "Energy-Efficient Considerations on a Variable-Bitrate PCI-Express Device", by Jian-Jia Chen et al., presents a dynamic power management (DPM) algorithm for variable-bitrate PCI devices for power saving. The sixth paper, entitled "Design and Synthesis of An Multi-processor System-on-Chip Architecture for Real-Time Biomedical Signal Processing in Gamma Cameras", by Kai Sun et al., discusses communication synthesis and area-cost reduction for an MPSOC Gamma Camera. The seventh paper, entitled "Variable Length Pattern Matching for Hardware Network Intrusion Detection System", by Chun Xue et al., presents a high-performance hardware-based network intrusion detection system.

The last four papers are related to wireless-network applications. The eighth paper in this special issue, entitled "A Lightweight Authentication Protocol for Low-Cost RFID" by Hung-Yu Chien et al., proposes a lightweight

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authentication protocol for low-cost RFID devices, aiming at reducing time of search the authentication database. The ninth paper, entitled "Analyze the Performance of the Cyclic Indexing Schemes for the Wireless Data Broadcast" by Long-Sheng Li et al., proposes a tuning-time measurement method and a indexing algorithm for wireless broadcast subject to the reduction of network-device power consumption. The tenth paper, entitled "An Evaluation Study of Mobility Support in ZigBee Networks", by Ling-Jyh Chen, investigates the inadequacies of existing mobility-handling methods for ZigBee networks. The eleventh paper, entitled "Finding and Extracting Data Records from Web Pages" by Manuel Álvarez et al., presents a crawling algorithm for structured HTML pages.

on Embedded and Ubiquitous Computing. He received the Distinguished Teaching Award from the National Chiao-Tung University in 2009. Prof. Chang's research interests include real-time computing, embedded software, and storage systems for embedded and portable devices.

Li-Pin Chang is Assistant Professor at National Chiao-Tung University, Hsin-Chu, Taiwan. He received the B.S. degree in Computer Science and Information Engineering from I-Shou University in 1995, and the M.S. and Ph. D. degrees in Computer Science and Information Engineering from National Taiwan University in 1997 and 2003, respectively. Prof. Chang has served in the technical program committees in many international conferences, including ACM Symposium on Applied Computing, IEEE Real-Time Systems Symposium, IEEE International Conference on Embedded and Real-Time Computing and Applications, and IFIP International Conference

Tei-Wei Kuo received the B.S.E. degree in Computer Science and Information Engineering from National Taiwan University in 1986. He received the M.S. and Ph.D. degrees in Computer Sciences from the University of Texas at Austin in 1990 and 1994, respectively. He is currently a Distinguished Professor of the Department of Computer Science and Information Engineering, National Taiwan University, where he was the department chairman and a Deputy Dean of his college. Prof. Kuo has served in the editorial board of many journals, including the Journal of Real-Time Systems and IEEE Transactions on Industrial Informatics. He is the Program Chair and General Chair of the IEEE Real-Time Systems Symposium (RTSS) in 2007 and 2008, respectively. Between 2005 and 2008, Prof. Kuo has served as the Steering Committee Chair of the IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA). Prof. Kuo serves as an Executive Committee member of the IEEE Technical Committee on Real-Time Systems since 2005. He received the Ten Young Outstanding Persons Award of Taiwan in 2004, the Distinguished Teaching Award from the National Taiwan University in 2005, and a number of research awards, including the Distinguished Research Award from the Taiwan National Science Council in 2003.