Preface


With the advent of VLSI system level integration and system-on-chip, the center of gravity of the computer industry is now moving from personal computing into embedded computing. Embedded software and systems are increasingly becoming a key technological component of all kinds of complex technical systems, ranging from vehicles, telephones, aircraft, toys, security systems, to medical diagnostics, weapons, pacemakers, climate control systems, etc.

The ICESS 2005 conference provided a premier international forum for researchers, developers and providers from academia and industry to address all resulting profound challenges; to present and discuss their new ideas, research results, applications and experience; to improve international communication and cooperation; and to promote embedded software and system industrialization and wide applications on all aspects of embedded software and systems.

Besides the main conference, we also featured the following four workshops to extend the spectrum of the main conference:

- Scheduling Techniques for Real-Time Systems
- IXA/IXP Application in Embedded Systems
- The Modeling and Security of Ubiquitous Systems
- Intelligent Storage System and Technology

There was a very large number of paper submissions (360) for the ICESS 2005 main conference, not only from Asia and the Pacific, but also from Europe, and North and South America. All submissions were reviewed by at least three program or technical committee members or external reviewers. It was extremely difficult to select the papers for the conference because there were so many excellent and interesting submissions. In order to allocate as many papers as possible and keep the high quality of the conference, we finally accepted 140 papers and 31 papers for the main conference and for the workshops, respectively. There were 63 main conference papers and 8 workshop papers selected in the LNCS proceedings. We believe that all of these papers and topics not only provided novel ideas, new results, work in progress and state-of-the-art techniques in this field, but also promoted cutting-edge research and future cooperation, and stimulated future research activities in the area of embedded software and systems.

The exciting conference program was the result of the hard and excellent work of program vice-chairs, external reviewers, and program and technical committee members under a very tight schedule. We were also grateful to the members of the local organizing committee for supporting us in handling so many organizational
tasks. Last but not least, we hoped you enjoyed the conference’s technical and social program, and the natural and historic attractions of the ancient city of Xian.

October 2005

Laurence T. Yang, Xingshe Zhou, Wei Zhao, Zhaohui Wu, Yian Zhu and Man Lin
Organization

ICESS 2005 was organized by Northwestern Polytechnical University, China in collaboration with St. Francis Xavier University, Canada.

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Introduction

Welcome to the proceedings of the 2005 International Workshop on Scheduling Techniques for Real-Time Systems (IWSRT 2005) held in conjunction with ICESS 2005 in Xi’an, China, December 16-18, 2005. Traditionally, scheduling has been an important aspect of real-time systems in ensuring soft/hard timing constraints. As real-time computing becomes complicated and has more limitations (e.g., power consumption), the demand for more sophisticated scheduling techniques becomes increasingly apparent.

The purpose of this workshop was to bring together researchers from both universities and industry to advance real-time scheduling techniques and its applications. IWSRT 2005 focused on the current technological challenges of developing scheduling algorithms:

- Power aware scheduling for real time systems
- Heuristic scheduling for real-time systems
- Parallel real-time scheduling
- Scheduling for distributed real-time systems
- Schedulability test, analysis and verification
- QoS scheduling for multimedia applications

From the many submissions, six papers were included in the workshop program. The workshop consisted of short presentations by the authors and encouraged discussion among the attendees. We hope that IWSRT 2005 provided a relaxed forum to present and discuss new ideas and new research directions, and to review current trends in this area. The success of the workshop was the result of the hard work of the authors and the program committee members. We were grateful for everyone’s efforts in making the conference a success. Special thanks go to the members of the ICESS 2005 organizing committee for their support and help in many organizational tasks. We hoped you enjoyed the workshop program and the attractions of the ancient city of Xi’an.

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Workshop on IXA/IXP Application in Embedded Systems

Introduction

The 2005 International Workshop on IXA/IXP Application in Embedded Systems (IWIXA) was held in conjunction with the International Conference on Embedded Software and Systems (ICESS 2005), December 16-18, 2005, at Northwestern Polytechnical University, Xi’an, P.R. China. The workshop aimed to provide a stimulating environment for IXA/IXP researchers and developers to share their experience in order to promote the understanding of the latest trends in Network Processors and their application development in embedded systems. The workshop invited new and original submissions addressing theoretical and practical topics in the following fields (but not limited to these topics):

- Internet eXchange Architecture (IXA) in embedded systems
- Network Processors and IXP
- The IXA/IXP Network Processors-based applications
- New Network Technology
- IXA/IXP-related training and experiments

The workshop received 21 paper submissions. After careful review, 11 papers were accepted for the workshop program. The workshop committee was grateful to all authors for their interesting contributions.

Workshop Chair

Naiqi Liu, University of Electronic Science and Technology, China

Workshop Coordinator

Jeffrey Cao, Intel, China

Program/Technical Committee

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Introduction

Rapid progress in computer hardware technology has made computers compact (e.g. laptop, palmtop), powerful, and more affordable. Furthermore, recent advances in wireless data communications technology have spawned an increasing demand for various types of services. As a result, we are witnessing an explosive growth for research and development efforts in the field of ubiquitous communication and computing systems.

The global growth of interest in the Internet and in high-quality audio, and video conferencing and VOD, coupled with a growing high-bandwidth structure, will lead to a rapidly expanding market for ubiquitous multimedia services. The popularity of mobile services should eventually affect the market for ubiquitous networks. For this reason, mobile based technologies, such as mobile synchronization, QoS assurance, mobile IP-based multimedia technologies and the security of mobile information systems, need to be studied and developed for future services offered to subscribers in future mobile information systems. This ubiquitous information technology will allow users to travel within an office building, from office to home, around the country and the world with a portable computer in their hands. Disconnection will no longer be a network fault, but a common event intentionally caused by the user in order to preserve a consequence of mobility.

The workshop on Modeling and Security in Ubiquitous Information Systems contained a collection of high-quality papers on this subject. In addition to this, we received a few more papers, as a result of the call-for-papers for this topic. Each paper went through a rigorous, peer review process as required by the conference. Based upon the review committee’s decision, four papers were selected for their original contributions as well as their suitability to the topic of this workshop.

Many people have contributed to the creation of this workshop. Thanks are due to the members of Howon University’s Mobile Networks Laboratory and the members of Kyonggi University’s Security Laboratory for their support. Special thanks go to the members of the review committee for their excellent cooperation. Their hard work, comments and suggestions really helped to improve the quality of the papers. We would like to take this opportunity to thank everyone who made this workshop possible: the authors, the ICESS 2005 organizing committee and the publisher.

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Workshop on Intelligent Storage Systems and Technology

Introduction

With the present explosive growth in information, the demand for storage systems is increasing rapidly. To satisfy such mounting demand, storage systems are required to be more scalable, reliable, secure and manageable than they are currently. There is a clear and recent trend in which some intelligence is moved from host machines to storage devices and implemented in the embedded controller. The 2005 International Workshop on Intelligent Storage Systems and Technology (ISST 2005) brought together storage systems researchers and practitioners to explore new directions in the design, implementation, evaluation, and deployment of storage systems. ISST 2005 was one of the workshops held in conjunction with the 2nd International Conference on Embedded Software and Systems (ICESS 2005) held in Xian, China, December 16-18, 2005.

We were extremely grateful to the program committee members who worked under a very tight schedule to complete the rigorous review process for the large number of submissions received by ISST 2005. Their hard work lead to the selection of the 10 papers presented at the workshop.

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