

Thomas Kunz
S.S. Ravi (Eds.)

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Preface

The 5th International Conference on Adhoc, Mobile and Wireless Networks (Adhoc-Now 2006) was held during August 17–19, 2006, in Ottawa, Canada. The first four conferences in this series were held in Toronto (2002), Montreal (2003), Vancouver (2004) and Cancun (2005), respectively. The purpose of this conference is to provide a forum for researchers from academia/industry and practitioners to meet and exchange ideas regarding recent developments in the areas of ad hoc wireless networks.

We received more than 170 papers for the conference submitted by authors from the following 25 countries: Australia, Bangladesh, Brazil, Canada, China, France, Germany, Greece, India, Iran, Ireland, Italy, Korea, Malaysia, Mexico, Nepal, Norway, Poland, Spain, Taiwan, The Netherlands, Turkey, UK, USA and Venezuela. Each paper was assigned to three members of the Technical Program Committee (TPC). Since each TPC member was responsible for generating reviews for six to nine papers, we encouraged TPC members to delegate some reviews to other qualified reviewers. The names of all the TPC members and the additional reviewers appear elsewhere in this volume. Based on the reviews, we decided to accept 25 submissions as regular papers and 10 as short papers. Regular papers were given 25 minutes for presentation while short papers were given 15 minutes. All of the accepted papers appear in this volume.

We are indebted to the TPC and the other reviewers for their detailed and timely reviews which enabled us to put together an excellent technical program. We thank Mani B. Srivastava (University of California at Los Angeles, USA) and Victor C. M. Leung (University of British Columbia, Canada) for accepting our invitation to present keynote addresses at the conference. We also thank the Publicity Committee for making sure that the call for papers received the maximum amount of publicity. Ivan Stojmenovic (University of Ottawa, Canada) deserves special thanks for his help with local arrangements. It is also a pleasure to acknowledge a number of student volunteers from Carleton University without whose help the conference could not have run so smoothly. Last but not the least, we thank our sponsors, namely Carleton University (Canada), University at Albany - State University of New York (USA) and the University of Ottawa (Canada).

August 2006

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Abstract. Internet and wireless technologies have flattened the world by revolutionizing the exchange of information among individuals and organizations at a global scale over the past decade. Similar technological forces have led to the emergence of embedded networked sensing systems, or sensor networks, that are bringing about the next revolution. This new local revolution is making the world “transparent” by enabling observation of physical, biological, chemical, enterprise, urban, social, and personal processes up close, and at spatial and temporal details that are simply impossible otherwise. Already this technology has led to new science resulting from observation of new phenomena in areas ranging from the investigation of critical microclimate on the scale of a mountain canyon, to distribution of contaminants and their introduction into ground water supplies, to the fine-scale properties of alpine plants. The considerable progress in the past few years have also led to the realization that the early view of sensor networks as “smart dust” - a large and ad hoc but flat and homogeneous single-purpose long-lived collection of static resource-constrained devices - needs to be considerably expanded to a view of these systems as multi-scale, multi-modal, multi-user rapidly-deployable actuated observing systems. The talk will describe how the early technical challenges such as autonomous self-configuration, energy-aware protocols, and efficient embedded software are now giving way to new challenges involving system and data integrity, safety and robustness, software re-configuration, and active sensing. Moreover, as the embedded sensing technology moves from scientific, engineering, defense, and industrial contexts to the wider personal, social and urban contexts, a new class of applications are emerging which draw on sensed information about people, objects, and physical spaces, and integrate with the global Internet and cellular infrastructure. The talk will discuss the privacy and data sharing requirement of these applications, and speculate on their implications on the Internet and cellular network fabric and services.

Biography

Professor Mani Srivastava received both the M.S. and Ph.D. degrees from the University of California, Berkeley, in 1987 and 1992, respectively. His M.S.

project was on automatic compilation of CMOS bit-slice datapaths as part of the Lager silicon compiler for DSP VLSI, while his Ph.D. dissertation was on hardware-software rapid prototyping and co-design for embedded DSP and control applications. Prior to joining the UCLA Electrical Engineering Department faculty in 1996, Dr. Srivastava worked on mobile and wireless networking at the Networked Computing Research Department at AT&T Bell Labs in Murray Hill, NJ (now Lucent Technologies - Bell Labs Innovations).

Since joining the EE Department at UCLA, Professor Srivastava's research and teaching have focussed on architecture, algorithms, and design optimization techniques for wireless networked and embedded systems, and DSP VLSIs. In recent years his main focus has been on mobile and wireless multimedia systems, and distributed wireless sensor networks, with emphasis on issues such as power-aware computing and communications, and quality of service. He has been the Editor-in-Chief of ACM Sigmobile Mobile Computing and Communications Review since January 2005.

Professor Srivastava holds five patents for: the method for call establishment and rerouting in mobile computing networks; medium access control and air interface subsystems for an indoor wireless ATM network; wireless adapter architecture for mobile computing; scheduling in wireless access protocols based on battery power level; and mobile host roaming in ATM networks. He has published extensively on wireless networking, low-power systems, and embedded system design tools. He is a member of the IEEE and of the ACM.

Advances in Wireless Personal Area Networking

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Abstract. Over the last ten years, the emergence of license-free wireless networking technologies has been one of the most exciting developments in the communications area. These technologies are already widely used in wireless local area networks, which provide local area connectivity in computer networks. Wireless personal area networks (WPANs), which communicate using license-free radios over much shorter distances, are emerging to bring ubiquitous network connectivity to consumer electronic devices. First generation WPANs based on the Bluetooth technology are already widely deployed in cellular telephones, audio headsets, and personal digital assistants. In the next few years, high data rate WPANs, especially those employing ultra wideband (UWB) transmissions, will increasingly provide multimedia connectivity to home entertainment systems. This presentation will describe the advances of WPAN technologies from Bluetooth to high data rate WPANs. Research results in Bluetooth and high data rate WPANs accomplished at the University of British Columbia will be highlighted. Future trends and open research problems will be discussed.

Biography

Victor C. M. Leung received the B.A.Sc. (Hons.) and Ph.D. degrees in electrical engineering from the University of British Columbia (U.B.C.) in 1977 and 1981, respectively. From 1981 to 1987, Dr. Leung was a Senior Member of Technical Staff at MPR Teltech Ltd. In 1988, he was a Lecturer in the Department of Electronics at the Chinese University of Hong Kong. He returned to U.B.C. as a faculty member in 1989, where he currently holds the positions of Professor and TELUS Mobility Research Chair the Department of Electrical and Computer Engineering, and is a member of the Institute for Computing, Information and Cognitive Systems. He was a project leader and a member of the Board of Directors in the Canadian Institute for Telecommunications Research, a Network of Centres of Excellence funded by the Canadian Government. His research interests are in the areas of architectural and protocol design and performance analysis for computer and telecommunication networks, with applications in satellite, mobile, personal communications and high speed networks. He has authored or co-authored about 300 publications in refereed international journals and conferences.

The many academic awards that Dr. Leung has received include the APEBC Gold Medal as the head of the graduating class in the Faculty of Applied Science,

UBC, and Natural Sciences and Engineering Research Council Postgraduate Scholarships. Dr. Leung is a Fellow of IEEE and a voting member of ACM. He is an editor of the IEEE Transactions on Wireless Communications, an associate editor of the IEEE Transactions on Vehicular Technology, and an editor of the International Journal of Sensor Networks. He has served on the committees of numerous international conferences, and was the General Co-chair of IEEE/ACM MSWiM'05 in Montreal, PQ, and the TPC Vice-chair of IEEE WCNC'05 in New Orleans, LA. He is the Local Chair of IWCMC 2006 in Vancouver, BC, and chairs the Next Generation Mobile Networks Symposium in the same conference.