Lecture Notes in Computer Science   6221

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

Gopal Pandurangan   V. S. Anil Kumar
Gu Ming   Yunhao Liu   Yingshu Li (Eds.)

Wireless Algorithms, Systems, and Applications

5th International Conference, WASA 2010
Beijing, China, August 15-17, 2010
Proceedings

Volume Editors

Gopal Pandurangan
Nanyang Technological University
Singapore
E-mail: gopal@ntu.edu.sg

V. S. Anil Kumar
Virginia Tech
Blacksburg, VA, USA
E-mail: akumar@vbi.vt.edu

Gu Ming
Tsinghua University
Beijing, China
E-mail: guming@tsinghua.edu.cn

Yunhao Liu
Hong Kong University
of Science and Technology
Kowloon, Hong Kong
E-mail: liu@cse.ust.hk

Yingshu Li
Georgia State University
Atlanta, GA 30303, USA
E-mail: yli@cs.gsu.edu

Preface

Over the past decade, signficant advances in wireless communication and computing technologies have led to the proliferation of reliable and ubiquitous infrastructure and infrastructureless wireless networks all over the world, as well as a diverse range of new applications, such as mobile social networking, and the surveillance and protection of critical infrastructures and environments. At the same time, these applications have raised new challenges ranging from the theoretical foundations of these systems, algorithms and protocol design, security and privacy to rigorous and systematic design and evaluation methodologies and new architectures for next-generation systems.

The annual International Conference on Wireless Algorithms, Systems, and Applications (WASA) provides a forum for researchers and practitioners worldwide to exchange ideas, share new findings, and discuss challenging issues for the current and next-generation wireless networks. Past WASA conferences were held in Xian (2006), Chicago (2007), Dallas (2008), and Boston (2009).

WASA 2010, the 5th WASA conference, took place at the Beijing Wenjin International Hotel in Beijing during August 15–17, 2010. Each submission was reviewed by at least three Program Committee members, who in some cases were assisted by external referees. Following a rigorous review process, 29 (19 regular and 10 short) papers were selected for presentation at the conference. The best paper award was given to the paper titled "Approximate Optimization for Proportional Fair AP Association in Multi-rate WLANs" by Wei Li, Yong Cui, Shengling Wang, and Xiuzhen Cheng.

Four workshops were also organized along with WASA 2010: the Workshop on the Security of Wireless and Ad-hoc Networks (SWAN) 2010, the Workshop on Data Management and Network Control in Wireless Networks (DMNC), the First Workshop on Radar and Sonar Sensor Networks (RSSN), and the First Workshop on Compressive Sensing for Communications and Networking (CSCN). Eighteen papers from these workshops also appear in these proceedings. We thank the respective workshop organizers for their efforts in organizing these workshops and contributing to the success of the WASA 2010 conference.

We thank all the authors for submitting their papers to the conference. We also thank all the members of the Program Committee and external referees for their help in completing the reviewing process, especially under the tight time constraints. We are grateful to the members of the Steering Committee for their involvement, encouragement, and help throughout this process.

Finally, many other people contributed to the success of WASA 2010 directly and indirectly. Even though their names cannot be listed here because of space limitation, we owe them our gratitude.

August 2010   Gopal Pandurangan
                                                           V.S. Anil Kumar
                                                           Gu Ming
                                                           Yunhao Liu
                                                           Yingshu Li

Organization

Honorary General Chair

Sun JiaGuang   Tsinghua University, China

General Co-chairs

Gu Ming   Tsinghua University, China
Yunhao Liu   Hong Kong University of Science and
                           Technology, China

Program Committee Co-chairs

Gopal Pandurangan   Nanyang Technological University, Singapore
                           and Brown University, USA
Anil Vullikanti   Virginia Tech, USA

Registration Co-chair

Min Song   Old Dominion University, USA

Local Arrangements Co-chairs

Zhiguo Wan   Tsinghua University, USA
Jizhong Zhao   Xi'An Jiaotong University, China

Publicity Co-chairs

Jen-Yeu Chen   National Dong-Hwa University, Taiwan
Qilian Liang   University of Texas at Arlington, USA

Workshop Co-chairs

Costas Busch   Louisiana State University, USA
Xiuzhen Cheng   George Washington University, USA

Publication Co-chair

Yingshu Li   Georgia State University, USA

Steering Committee

Peng-Jun Wan	Illinois Institute of Technology, USA (Chair)
Xiuzhen Cheng	The George Washington University, USA
Wei Zhao	University of Macau, China
Ty Znati	National Science Foundation, USA

Program Committee Members

John Augustine	Nanyang Technological University, Singapore
Costas Busch	Louisiana State University, USA
Jiannong Cao	Hong Kong Polytechnic University, China
Jen-Yeu Chen	National Dong-Hwa University, Taiwan
Susan Cheng	George Washington University, USA
Yong Cui	Tsinghua University, China
Sajal Das	NSF and University of Texas - Arlington, USA
Amitabha Ghosh	University of Southern California, USA
Sukumar Ghosh	University of Iowa, USA
Seth Gilbert	EPFL, Switzerland
Chuanhe Huang	Wuhan University, China
Anura Jayasumuna	Colorado State University, USA
Krishna Kant	Intel and NSF, USA
Maleq Khan	Virginia Tech, USA
Bhaskar Krishnamachari	University of Southern California, USA
Wonjun Lee	Korea University, Korea
Deying Li	Renmin University of China, China
Minming Li	City University of Hong Kong, China
Benyuan Liu	University of Massachusetts - Lowell, USA
Wei Lou	Polytechnic University of Hong Kong, China
Madhav Marathe	Virginia Tech, USA
Frederique Oggier	Nanyang Technological University, Singapore
Marimuthu Palaniswami	University of Melbourne, Australia
Christos Papadopoulos	Colorado State University, USA
Srinivasan Parthasarathy	IBM Research, USA
Sriram Pemmaraju	University of Iowa, USA
S.S. Ravi	SUNY at Albany, USA
Michael Segal	Ben Gurion University, Israel
Yi Shi	Virginia Tech, USA
Violet Syrotiuk	Arizona State University, USA
Jian Tan	Ohio State University, USA
Bharadwaj Veeravali	National University of Singapore, Singapore
Peng-Jun Wan	Illinois Institute of Technology, USA
Amy Wang	Tsinghua University, China
Qing Wang	IBM Research, China
Kui Wu	University of Victoria, Canada
Xinbing Wang	Shanghai Jiaotong University, China

Workshop Committee on the Security of Wireless and Ad-hoc Networks

Costas Busch	Louisiana State University, USA (General Chair)
Bo Sheng	Northeastern University, USA (Workshop Program Co-chair)
Haodong Wang	Virginia State University, USA (Workshop Program Co-chair)
Hui Chen	Virginia State University, USA
Xiuzhen Cheng	George Washington University, USA
Guevara Noubir	Northeastern University, USA
Chiu C. Tan	College of William and Mary, USA
Lei Xie	Nanjing University, China
Kai Xing	University of Science and Technology of China, China
Shuhui Yang	Purdue University at Calumet, USA)

Workshop Committee on Data Management and Network Control in Wireless Networks

Jinshu Su	National University of Defense Technology, China (General Chair)
Wei Cheng	The George Washington University, USA (Workshop Program Co-chair)
Nan Zhang	The George Washington University, USA (Workshop Program Co-chair)
Hongyang Chen	University of Tokyo, Japan
Tingjian Ge	University of Kentucky, USA
Mikyung Kang	ISI, University of Southern California, USA
Murat Kantarcioglu	University of Texas at Dallas, USA
Yujun Liu	Academy of Armored Forces Engineering, China
Wei Peng	National University of Defense Technology, China
Guangming Song	Southeast University, China
Chiu C. Tan	College of William and Mary, USA
Lingyu Wang	Concordia University, Canada
Kai Xing	University of Science and Technology of China, China
Mira Yun	The George Washington University, USA

Workshop Committee on Radar and Sonar Sensor Networks

Jing Liang	University of Texas at Arlington, USA (Workshop Program Co-chair)
Qingchun Ren	Microsoft, Seattle, USA (Workshop Program Co-chair)
Scott C.-H. Huang	City University of Hong Kong, Hong Kong
Ting Jiang	Beijing University of Posts and Telecommunications, China
Qilian Liang	University of Texas at Arlington, USA
Sherwood W. Samn	Air Force Research Laboratory/RHX, San Antonio, USA
Lingming Wang	iBiquity Digital Corporation, Basking Ridge, New Jersey, USA
Xinsheng Xia	Tellabs Inc, New Jersey, USA
Liang Zhao	Airvana Inc., Chelmsford, Massachusetts, USA
Zheng Zhou	Beijing University of Posts and Telecommunications, China

Workshop Committee on Compressive Sensing for Communications and Networking

Jing Liang	University of Texas at Arlington, USA (General Chair)
Dechang Chen	Uniformed Services University of the Health Sciences, USA (Workshop Program Co-chair)
Qilian Liang	University of Texas at Arlington, USA (Workshop Program Co-chair)
Xiuzhen Cheng	George Washington University, USA
Ting Jiang	Beijing Univerisity of Posts and Telecommunications, China
Qingchun Ren	Microsoft, Seattle, USA
Sherwood W. Samn	Air Force Research Laboratory/RHX, Texas, USA
LingmingWang	iBiquity Digital Corporation, Basking Ridge, New Jersey, USA
Xinsheng Xia	Tellabs Inc., New Jersey, USA
Liang Zhao	Airvana Inc., Chelmsford, Massachusetts, USA
Zheng Zhou	Beijing University of Posts and Telecommunications, China

External Referees

Dilum Bandara	Yuan Le	Vaishali Sadaphal
Andrew D. Berns	Jia Liu	Sushant Sharma
Wei Cheng	Guanhong Pei	Amin Teymorian
Dulanjalie Dhanapala	Mohan Raj	Yan Wu
Fei Huang	Sasanka Roy	Zhao Zhao

Sponsoring Institution

Tsinghua University

Table of Contents

Topology Control and Coverage

Theoretical Foundations

Energy-Aware Algorithms and Protocol Design

Wireless Sensor Networks and Applications

Applications and Experimentation

Scheduling and Channel assignment

Coding, Information Theory and Security

Security of Wireless and Ad-Hoc Networks

Data Management and Network Control in Wireless Networks

Radar and Sonar Sensor Networks

Compressive Sensing for Communications and Networking