

Wireless and Sensor Network Security (*WSNS* 2009)

Message from the Workshop Chairs

Welcome to WSNS 2009, the 5th IEEE International Workshop on Wireless and Sensor Networks Security held in conjunction with the 6th IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS 2009).

Wireless networks have experienced an explosive growth during the last few years. Nowadays, there is a large variety of networks spanning from the well-known cellular networks to non-infrastructure wireless networks such as mobile ad hoc networks and sensor networks. Security is a central concern for achieving secured communication in these networks. Interest has increased in this area. This includes attacks and countermeasures, authentication and access control, computer-aided tool for security, cross-layer design for security, cryptographic protocol, denial of service (DoS), key management, information hiding, intrusion detection and response, malicious behavior detection and analysis, privacy and anonymity, secure localization and synchronization, security and performance tradeoff, security policy and enforcement issues, security protocols analysis, design, and proof, secure routing/MAC, surveillance and monitoring, trust establishment and management, and so on. This one-day workshop aims to provide a forum for continued activity in such an area, to allow interaction of security researchers and developers, and to give attendees of MASS 2009 an opportunity to network with experts in wireless sensor networks security.

In response to the call for papers of this workshop, 25 papers from 14 different countries and regions were submitted. Each paper was reviewed by 3-5 experts including program committee members and external reviewers. The program committee made selection based on the received review reports and space and time limitation. As a result, 11 regular papers will be presented at WSNS 2009.

The technical program for WSNS 2009 is the result of the hard work of many authors, reviewers, program committee members. We are grateful to them for their help and investing time and energy in the development of the very high quality technical program. We thankfully acknowledge the MASS 2009 Workshops Chair, Professor Ivan Stojenovic (University of Ottawa), and MASS 2009 Local Chairs, Professor Zhiguo Gong and Professor Jingzhi Guo (University of Macau) for the help in organizing this workshop. We also appreciate the advices and supports from our WSNS 2009 Steering Committee members, Professor Dharma Agrawal (University of Cincinnati), Professor Sajal Das (University of Texas at Arlington & US National Science Foundation), Professor Yong Guan (Iowa State University), Professor Thomas La-Porta (Pennsylvania State University), and Professor Jie Wu (Temple University).

We hope you will enjoy and benefit from the presentations and discussions of WSNS 2009!

October, 2009

Falko Dressler, University of Erlangen, Germany

Zhen Jiang, West Chester University, USA

Wensheng Zhang, Iowa State University, USA

WSNS 2009

Workshop Organization

Workshop Chairs

Falko Dressler, *University of Erlangen, Germany*
Zhen Jiang, *West Chester University, USA*
Wensheng Zhang, *Iowa State University, USA*

Steering Committee

Dharma Agrawal, *University of Cincinnati, USA*
Sajal Das, *University of Texas, Arlington, USA & US National Science Foundation*
Yong Guan, *Iowa State University, USA*
Thomas La-Porta, *Penn. State University, USA*
Jie Wu, *Florida Atlantic University,*

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S. Yang, *Rensselaer Polytechnic Institute, USA*
S. Zhong, *State University of New York, Buffalo, USA*
X. Zou, *IUPUI, USA*

WSNS 2009

Workshop Program

Session 1: Opening session

Introduction to WSNS'09

Falko Dressler (University of Erlangen, DE); Zhen Jiang (West Chester University, US); Wensheng Zhang (Iowa State University, US)

Session 2: Key Management

A new Group Key Management Scheme based on DMST for Wireless Sensor Networks

Yingzhi Zheng (National University of Defence Technology, CN); Yan Xia (National University of Defence Technology, CN); JinShu Su (National University of Defence Technology, CN)

Design and Implementation of a Security Manager for WirelessHART Networks

Shahid Raza (Swedish Institute of Computer Science (SICS) Kista Sweden, SE); Thiemo Voigt (Swedish Institute of Computer Science, SE); Adriaan Slabbert (Swedish Institute of Computer Science - SICS, SE); Krister Landernäs (ABB Corporate Research Västerås, Sweden, SE)

Session 3: Emerged Topics and Challenges

A Per-Hop Security Scheme for Highly Dynamic Wireless Sensor Networks

Syed Taha Ali (University of New South Wales, AU); Vijay Sivaraman (University of New South Wales, AU); Ashay Dhamdhere (University of New South Wales, AU)

DiffUser: Differentiated User Access Control on Smartphone

Xudong Ni (The Ohio State University, US); Zhimin Yang (The Ohio State University, US); Xiaole Bai (The Ohio State University, US); Adam C. Champion (The Ohio State University, US); Dong Xuan (The Ohio State University, US)

Cooperative anonymity authentication in vehicular networks

Jianmin Chen (Florida Atlantic University, US); Jie Wu (Florida Atlantic University, US)

Session 4: Quality and Performance

Quantum Communication in Distributed Wireless Sensor Networks

Jung-Shian Li (Cheng Kung University, TW); Ching-Fang Yang (Cheng Kung University, TW)

Randomly Directed Exploration: An Efficient Node Clone Detection Protocol in Wireless Sensor Networks

Zhijun Li (University of Waterloo, CA); Guang Gong (University of Waterloo, CA)

Performance Impact of and Protocol Interdependencies of IEEE 802.15.4 Security Mechanisms

Feng Chen (Siemens AG Automation and Drives, DE); Xiaolong Yin (University of Erlangen, DE); Reinhard German (University of Erlangen, DE); Falko Dressler (University of Erlangen, DE)

Session 5: Privacy Issue & Localization

A Principal-Agent Method to Prevent Selfish MAC Layer Behavior in Wireless Networks

Kai Shi (Tianjin University, CN); Yantai Shu (Tianjin University, CN); Oliver Yang (University of Ottawa, CA); Chunfeng Liu (Tianjin University, CN)

Private Cluster Head Election in Wireless Sensor Networks

Levente Buttyan (Budapest University of Technology and Economics, HU); Tamás Holczer (Budapest University of Technology and Economics, HU)

SecMCL: A Secure Monte Carlo Localization Algorithm for Mobile Sensor Networks

Yingpei Zeng (Nanjing University, CN); Jiannong Cao (Hong Kong Polytechnic Univ, HK); Jue Hong (Nanjing University, CN); Shi-Geng Zhang (Nanjing University, CN); Li Xie (Dept of Computer Science and Technology, Nanjing University, CN)