
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 are accepted and 9 of them 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 Stojevovic (University of Ottawa), and MASS 2009 Local Chairs, Professor Zhiguo Gong and Professor Jingtai 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

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Zhen Jiang, West Chester University, USA
Wensheng Zhang, Iowa State University, USA

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Sajal Das, University of Texas, Arlington, USA & US National Science Foundation
Yong Guan, Iowa State University, USA
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Y. Xia, University of Florida, USA
S. Yang, Rensselaer Polytechnic Institute, USA
S. Zhong, State University of New York, Buffalo, USA
X. Zou, IUPUI, USA
## WSNS’09 Workshop Program

**Monday, October 12th, 2009**  
Macau, SAR, P.R. China

### Opening Session (9:00 – 9:10): Introduction to WSNS’09

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

### Session 1 (9:10 – 10:00): Key Management & Security Schemes,  
Chair: F. Dressler (Univ. of Erlangen-Nuremberg, DE)

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<tbody>
<tr>
<td>1</td>
<td>Design and Implementation of a Security Manager for WirelessHART Networks</td>
<td>Shahid Raza; Thiemo Voigt; Adriaan Slabbert (Swedish Institute of Computer Science, SE); Krister Landernäs (ABB Corporate Research Västerås, SE)</td>
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<td>2</td>
<td>A Per-Hop Security Scheme for Highly Dynamic Wireless Sensor Networks</td>
<td>Syed Taha Ali; Vijay Sivaraman; Ashay Dhamdhere (University of New South Wales, AU)</td>
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**Break (10:00 – 10:30)**

### Session 2: Quality & Performance, Chair: J. Li (National Cheng Kung University, TW)

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<td>Quantum Communication in Distributed Wireless Sensor Networks</td>
<td>Jung-Shian Li; Ching-Fang Yang (National Cheng Kung University, TW)</td>
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<td>4</td>
<td>Randomly Directed Exploration: An Efficient Node Clone Detection Protocol in Wireless Sensor Networks</td>
<td>Zhijun Li; Guang Gong (University of Waterloo, CA)</td>
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<td>5</td>
<td>Performance Impact of and Protocol Interdependencies of IEEE 802.15.4 Security Mechanisms</td>
<td>Feng Chen (Siemens AG Automation and Drives, DE); Xiaolong Yin; Reinhard German; Falko Dressler (University of Erlangen, DE)</td>
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**Lunch (12:00 – 13:30)**

### Session 3: Privacy Issue & Localization, Chair: Z. Jiang (West Chester University, US)

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<td>6</td>
<td>A Principal-Agent Method to Prevent Selfish MAC Layer Behavior in Wireless Networks</td>
<td>Kai Shi; Yantai Shu (Tianjin University, CN); Oliver Yang (University of Ottawa, CA); Chunfeng Liu (Tianjin University, CN)</td>
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<td>7</td>
<td>Private Cluster Head Election in Wireless Sensor Networks</td>
<td>Levente Buttyan; Tamás Holczer (Budapest University of Technology and Economics, HU)</td>
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<td>8</td>
<td>SecMCL: A Secure Monte Carlo Localization Algorithm for Mobile Sensor Networks</td>
<td>Yingpei Zeng (Nanjing University, CN); Jianrong Cao (Hong Kong Polytechnic Univ, HK); Jue Hong; Shigeng Zhang; Li Xie (Dept of Computer Science and Technology, Nanjing University, CN)</td>
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<tr>
<td>9</td>
<td>A new Group Key Management Scheme based on DMST for Wireless Sensor Networks</td>
<td>Yingzhi Zeng; Yan Xia; JinShu Su (National University of Defence Technology, CN)</td>
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**Final Discussions**