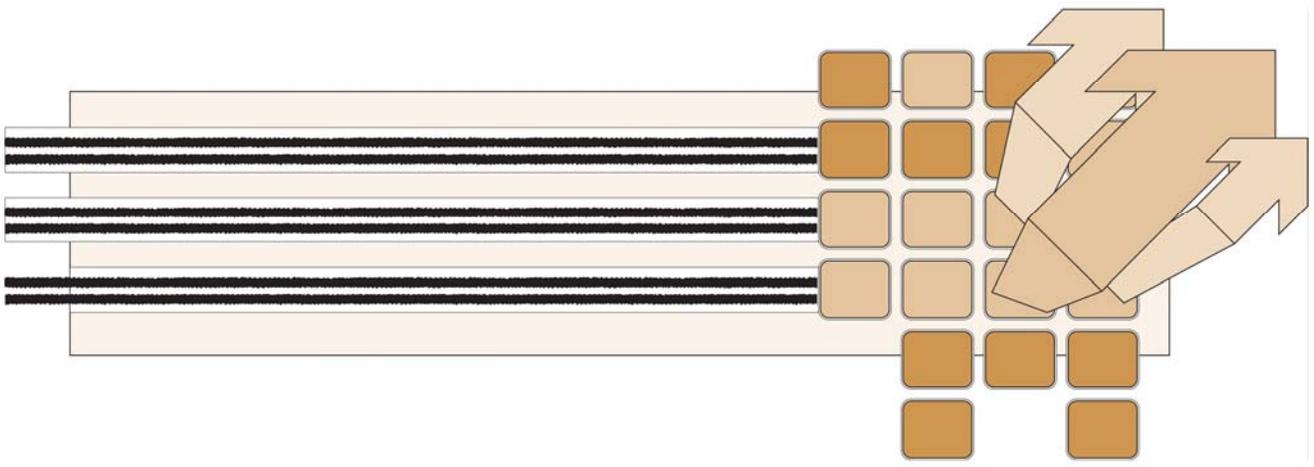


*Final Program*

# 28<sup>th</sup> IEEE International Symposium on Reliable Distributed Systems (SRDS 2009)



**Niagara Falls, NY, USA**  
**September 27-30, 2009**

[www.cse.buffalo.edu/srds2009](http://www.cse.buffalo.edu/srds2009)

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# Message from the General Chair

On behalf of the organizing committee of the 28<sup>th</sup> IEEE Symposium on Reliable Distributed Systems (SRDS 2009), it is my pleasure to welcome the participants of the symposium to Niagara Falls, New York. The workshop and symposium are being held at the state-of-the-art Conference Center Niagara Falls, which is a few steps away from Niagara Falls, one of the most famous water falls in the world. The venue is also within 20 minutes from the State University of New York at Buffalo and about 40 minutes from the Buffalo-Niagara International Airport.

The 30 accepted papers in this year's symposium represent 14 countries, which is a good geographical distribution. This year, we did the paper selection differently from the previous years. With the help of a conference management software and the excellent cooperation of the Technical Program Committee members, the Program Co-Chairs were able to handle the TPC meeting for paper selection in a virtual setting. This in no way compromised the quality of the technical sessions. SRDS has the reputation as a high quality symposium on reliable distributed systems with a focus on dependability and security and I feel confident that you will agree with me on this when you see this year's technical program. We have put together three keynote talks, one from academia, one from industry and one from a federal funding agency, covering both fundamental and practical aspects of the topic and its sustenance in the years to come. We have planned workshops on "Dependable Network Computing and Mobile Systems", "Field Failure Data Analysis" and "Embedded Systems and Communications Security", which I believe will bring added value to the symposium. This year, we have also included the Symposium's Best Paper Award. Special thanks go to Microsoft Research for their support in this regard.

I would like to thank the entire organizing committee for their timely support in putting together the technical program, publicity, finances, awards, workshops, local arrangements, and publication. The support of the steering committee all along is much appreciated. I would like to thank Bharat Bhargava and Andrea Bondavalli who were there always to help me at times of need. I would also like to thank Luigi Romano, Felicita Di Giandomenico, and Joni da Silva Fraga for sharing with me their invaluable experience of organizing last year's symposium. It will be incomplete if I do not thank our sponsor IEEE Computer Society and my institution, the State University of New York at Buffalo for its support. Last, but not least, I would like to take this opportunity to thank Professor K.H (Kane) Kim of the University of California, Irvine for his service to SRDS this year and in the past. Despite being busy directing the DREAM (Distributed Real-Time Ever-Available Microcomputing) laboratory at Irvine, he was kind enough to call and make sure that everything is taken care of in running the symposium. Kane, as we all know, is one of the founders of this symposium that was started in 1981 and is a longstanding contributor and advisor and has been a source of encouragement for the successful organization of this symposium every year.

Finally, I would like to thank the program committee members, reviewers and, in particular, the participants of this symposium for your contribution to SRDS 2009.

**Shambhu Upadhyaya**

University at Buffalo

*shambhu@buffalo.edu*

# Message from the Technical Program Chairs

For 28 years, the IEEE International symposium on Reliable Distributed Systems has been the premier venue for the dissemination of cutting-edge research results in reliable distributed systems. SRDS'09 continues this tradition of bringing together researchers, developers, and users of reliable distributed systems to share important new developments related to various aspects of this field such as replication, security, wireless sensor networks, fault tolerance, and network issues.

This year, we received 104 submissions from 24 countries. All manuscripts have undergone a rigorous reviewing process by the technical program committee and selected external reviewers. Among these, 23 were accepted as full papers and 7 were accepted as short papers. Due to the large number of submissions, we, unfortunately, even had to reject some good papers. The technical program is organized into the following eight technical sessions: replication, distributed services, security, fault tolerance, distributed algorithms, wireless sensor networks, network protocols, database and storage. We are pleased with the broad variety of topics of this program. We believe the presented papers will offer exciting new perspectives that will foster innovative future research.

The program is the result of hard work of many individuals. We want to thank all authors who submitted their research work to this symposium. Without their contributions, this program would not be possible. Thanks to the program committee members and the external reviewers who worked hard to provide thorough, critical and helpful reviews in a timely manner. Many thanks to the organizing committee for contributing to the success of this symposium. We would like to acknowledge the valuable support and guidance that we received from the steering committee members.

We hope that you will find this program interesting and stimulating. We also hope that the conference will provide you with a valuable opportunity to share ideas with other researchers and practitioners all over the world.

**Guohong Cao**  
The Pennsylvania State University  
*gcao@cse.psu.edu*

**Michael Mock**  
Fraunhofer IAIS, Germany  
*michael.mock@iais.fraunhofer.de*

# SRDS 2009 Keynotes



**Yi-Min Wang, Microsoft Research**

## **Security Challenges in an Increasingly Connected World**

### **Abstract:**

The world is becoming increasingly connected through the Internet, wireless connections, and social networking. Security attacks are becoming more sophisticated by exploiting that ever-increasing connectivity. In this talk, I will discuss security challenges in three web-based attack vectors: email spam, search spam, and proxy-based attacks. As traditional email spam loses its effectiveness, spammers and phishers are employing advanced spoofing techniques and incorporating personal information from social networks to increase their success rate. As search engines continue to gain popularity as an entry point to the Web, spammers are gaming search ranking algorithms to gain more exposure of their malicious websites to search users. As more and more people rely on HTTPS for secure online banking and purchases, proxy-based end-point attacks as demonstrated by Pretty-Bad-Proxy (PBP) are raising serious concerns about the safety of e-commerce. I will describe a simple two-step "Get Traffic, Make Money" model for web-based scam business, and present all these attacks under that model to provide a unified view of existing and future security challenges and their potential solutions.

### **Biography:**

Yi-Min Wang is Director of Internet Services Research Center (ISRC) at Microsoft Research, Redmond. He received his B.S. degree from National Taiwan University in 1986 and Ph.D. in Electrical and Computer Engineering from University of Illinois at Urbana-Champaign in 1993. After conducting research in the area of reliable distributed systems at AT&T Bell Labs from 1993 to 1997, Dr. Wang joined Microsoft in 1998 and was responsible for the creation of Cybersecurity and Systems Management Group at Microsoft Research. He was the inventor of Strider HoneyMonkey - the first automated system to patrol the Web and hunt for malicious websites that exploit zero-day vulnerabilities, and Strider Search Ranger - the first search-spam detection system based on dynamic crawling and traffic analysis. Dr. Wang is an Associate Editor of IEEE Transactions on Computers. His research interests include security, search quality, dependability, systems management, and distributed systems.



**Simone Fischer-Huebner, Karlstad University,**

**Sweden**

## **Privacy and Identity Management for Distributed Systems**

### **Abstract:**

In our networked society, users have lost effective control over their personal spheres and privacy is increasingly at risk. Emerging pervasive computing technologies, where individuals are usually unaware of a constant data collection and processing in their surroundings, will even heighten this problem. Privacy cannot be solely protected by laws, but should optimally also be enforced by privacy-enhancing technologies.

This talk will start with briefly discussing emerging privacy risks and providing an introduction to privacy-enhancing technologies at communication and application level. In particular, the talk will report on research conducted at Karlstad University in the areas of anonymous communication for mobile ad-hoc networks and privacy-enhancing identity management, which can help users to technically enforce user control and informational self-determination. Finally it will outline remaining research challenges in those areas.

### **Biography:**

Simone Fischer-Hübner has been a Full Professor at Karlstad University since June 2000, where she is the head of the Privacy & Security (PriSec) research group. She received a Diploma Degree in Computer Science with a minor in Law (1988), and a Ph.D. (1992) and Habilitation (1999) Degrees in Computer Science from Hamburg University. Her research interests include IT and network security and privacy-enhancing technologies. She was a research assistant and assistant professor at Hamburg University (1988-2000) and a Guest Professor at the Copenhagen Business School (1994-1995) and at Stockholm University/KTH (1998-1999). She is the vice chair of IFIP WG 11.6 on “Identity Management”, a member of the External Advisory Board of the IBM Privacy Institute, board member of the of IEEE-Sweden – Section Computer/Software Engineering Chapter, member of the NordSec steering committee, coordinator of the Swedish IT Secure Network for Ph.D. students. She has been partner in many European research projects, including the ongoing EU Framework Programme 7 projects PrimeLife (Privacy and Identity Management for Life) and Newcom++.



**Sajal K. Das, National Science Foundation**

## **Vulnerability Analysis of Wireless Sensor Networks: Challenges and Solutions**

### **Abstract:**

Wireless sensor networks (WSNs) are now being deployed for national and global security as well as for securing critical infrastructures via situation monitoring, data gathering and aggregation, and intelligence extraction from physical phenomena. Thus, providing high information assurance in WSNs is crucial, more so in unattended and hostile environments. However, due to severe resource limitations, wireless sensor nodes are extremely vulnerable to adversaries, often leading to revealed secrets and security breaches. An adversary can launch an attack by physically capturing a node, or carefully analyzing communication and battery usage patterns, or via cyber attacks such as virus spreading over wireless links. The consequence can be catastrophic as a compromised node can further launch internal attacks such as forged data, fake commands, and virus spreading where cryptographic techniques are merely futile. This calls for rigorous mathematical models for vulnerability analysis in WSNs.

In this talk, we will develop a novel multi-layer integrated security framework to help detect, revoke, isolate, and purge compromised nodes in WSNs. Our framework is based on a rich set of theoretical and practical design principles, such as epidemic theory, trust/reputation model, information theory, and digital watermarking techniques. Specifically, we will discuss how to: 1) characterize and measure trust to effectively detect malicious sensor nodes (internal attackers), thus resulting in secure aggregation against possible false data injection; 2) model the speed of malware propagation based on epidemic theory, leading to novel defense mechanisms to control possible outbreaks; and 3) design digital watermarking based aggregation scheme to correct tampered data. The talk will be concluded with open issues and challenges in WSN security.

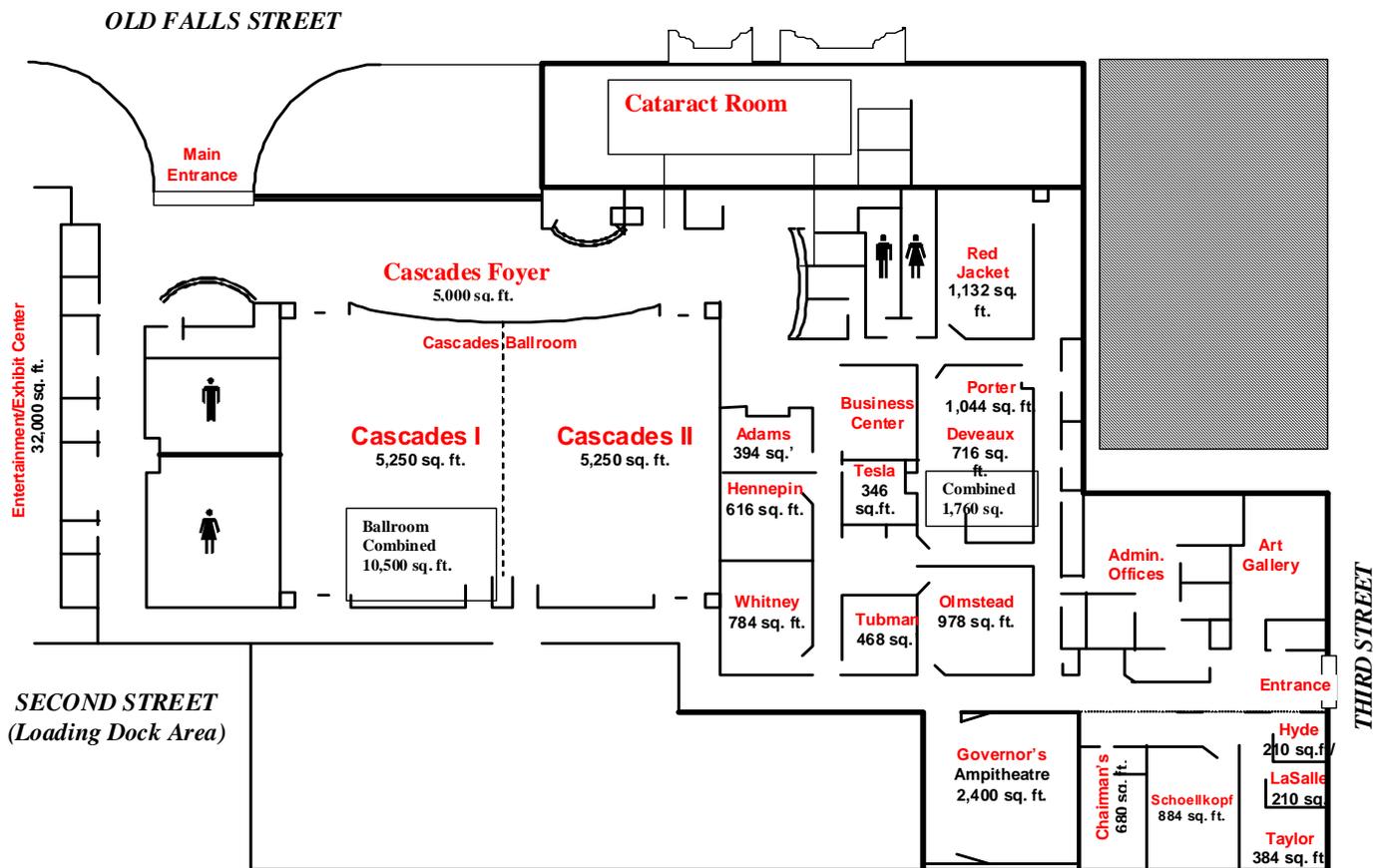
### **Biography:**

Dr. Sajal K. Das is currently a Program Director at NSF in the Computer and Network Systems Division. He is also a University Distinguished Scholar Professor of Computer Science and Engineering and the Founding Director of the Center for Research in Wireless Mobility and Networking (CRWMan) at the University of Texas at Arlington. Dr. Das is a Visiting Professor at Indian Institute of Technology (IIT), Kanpur; Honorary Professor at Fudan University, Shanghai, China; and Visiting Scientist at the Institute of Infocom Research, Singapore. He is frequently invited as keynote speakers at various conferences and symposia.

Dr. Das' current research interests include wireless and sensor networks, security, smart environments, mobile and pervasive computing, applied graph theory and game theory. He has published over 400 articles in journals and international conferences, and over 40 invited book chapters. He holds 6 US patents, and coauthored two books: "Smart Environments: Technology, Protocols, and Applications" (Wiley, 2005), and "Mobile Agents in Distributed Computing and Networking" (Wiley, 2009). Dr. Das is a recipient of 7 Best Paper Awards in conferences including EWSN'08, IEEE PerCom'06, and ACM MobiCom'99. He is also a recipient of the IEEE Computer Society 2009 Technical Achievement Award, IEEE Region 5 Outstanding Educator Award (2009), Lockheed Martin Award for Teaching Excellence (2009), IEEE Engineer of the Year Award (2007), UTA Academy of Distinguished Scholars Award (2006), University Award for Distinguished Record of Research (2005), and UTA College of Engineering Research Excellence Award (2003).

Dr. Das serves as the Founding Editor-in-Chief of Pervasive and Mobile Computing (PMC) journal, and Associate Editor of IEEE Transactions on Mobile Computing, ACM/Springer Wireless Networks, IEEE Transactions on Parallel and Distributed Systems, and Journal of Peer-to-Peer Networking. He is the founder of IEEE WoWMoM and IEEE PerCom conferences. He has served as General Chair, Program Chair and TPC member of numerous IEEE and ACM conferences. He is a senior member of IEEE.

# Conference Center Niagara Falls Map



# Symposium Program

## Sunday September 27, 2009

- 9:00 am – 5:00 pm Pre-Symposium Workshops (Olmstead and Whitney, CCNF)
- 5:30 pm – 7:30 pm Reception and Pre-Registration (Sapphire, Crowne Plaza Hotel)

## Monday September 28, 2009

- 7:30 am – 8:30 am Breakfast and Registration (Common Break Area, CCNF)
- 8:30 am – 8:45 am Opening Remarks (Porter/DeVeaux, CCNF)
- 8:45 am – 9:00 am Opening Address - Satish Tripathi, Provost, University at Buffalo
- 9:00 am – 10:00 am Keynote: "Security Challenges in An Increasingly Connected World", Yi-Min Wang, Director of Internet Services Research Center (ISRC), Microsoft Research (Porter/DeVeaux, CCNF)
- 10:00 am – 10:30 am Coffee Break (Common Break Area)
- 10:30 am – 12:20 pm Session 1: Replication (Chair: Anand Tripathi, U. of Minnesota)  
Relaxed Atomic Broadcast: State-Machine Replication using Bounded Memory  
*Omid Shahmirzadi (EPFL, CH); Sergio Mena (EPFL, CH); Andre Schiper (EPFL, CH)*  
When and How to Change Quorums on Wide Area Networks  
*Michael Merideth (CMU); Florin Oprea (CMU); Mike Reiter (North Carolina at Chapel Hill)*  
Multithreading-Enabled Active Replication for Event Stream Processing Operators  
*Andrey Brito (TU Dresden, DE); Christof Fetzer (TU Dresden, DE); Pascal Felber (University of Neuchatel, CH)*  
Performance Evaluation of a Metaprotocol for Database Replication Adaptability (Short Paper)  
*María Idoia Ruiz-Fuertes (Instituto Tecnológico de Informática, ES); Francesc Muñoz-Escóí (Inst. Tecnológico de Informática, ES)*
- 12:20 pm – 1:30 pm Lunch (Cataract Room)
- 1:30 pm – 3:00 pm Session 2: Distributed Services (Chair: Andre Schiper, EPFL)  
Reliable and Highly Available Distributed Publish/Subscribe Service  
*Reza Sherafat Kazemzadeh (University of Toronto, CA); Hans-Arno Jacobsen (University of Toronto, CA)*  
Resource-Aware Migratory Services in Wide-Area Shared Computing Environments  
*Anand Tripathi (University of Minnesota, US); Vinit Padhye (University of Minnesota, US); Devdatta Kulkarni (University of Minnesota, US)*  
Model-Based Validation for Internet Services  
*Andrew Tjang (Rutgers University, US); Fabio Oliveira (Rutgers University, US); Ricardo Bianchini (Rutgers University, US); Richard P. Martin (Rutgers University, US); Thu D. Nguyen Rutgers University, US)*
- 3:00 pm – 3:30 pm Coffee Break (Common Break Area)
- 3:30 pm – 5:30 pm Session 3: Security (Chair: Sencun Zhu, Penn State U.)  
The Effects of Threading, Infection Time, and Multiple-Attacker Collaboration on Malware Propagation  
*Yu Zhang (Purdue, US); Bharat Bhargava (Purdue, US); Philipp Hurni (University of Bern, CH)*  
Designing System-level Defenses against Cellphone Malware (Short Paper)  
*Liang Xie (The Pennsylvania State University, US); Xinwen Zhang (Samsung Information Systems America, US); Ashwin Chaugule (Pennsylvania State University, US); Trent Jaeger (The Pennsylvania State University, US); Sencun Zhu (The Pennsylvania State University, US)*

PolyVaccine: Protecting Web Servers against Zero-Day, Polymorphic and Metamorphic Exploits (Short Paper)

*Luis Campo-Giralte (Universidad Politecnica de Madrid, ES); Ricardo Jimenez-Peris (Universidad Politecnica de Madrid, ES); Marta Patiño-Martinez (Universidad Politecnica de Madrid, ES)*

Fault Localization for Firewall Policies (Short Paper)

*JeeHyun Hwang (North Carolina State University, US); Tao Xie (North Carolina State University, US); Fei Chen (Michigan State University, US); Alex X. Liu (Michigan State University, US)*

DToken: a Lightweight and Traceable Delegation Architecture for Distributed Systems

*Erica Y. Yang (Rutherford Appleton Laboratory, Science and Technology Facilities Council, UK); Brian Matthews (STFC, UK)*

## Tuesday September 29, 2009

- **7:30 am – 8:30 am Breakfast and Registration (Common Break Area, CCNF)**
- **8:30 am – 9:30 am Keynote: "Privacy and Identity Management for Distributed Systems", Simone Fischer-Huebner, Karlstad University, Sweden (Porter/DeVeaux, CCNF)**
- **9:30 am – 11:00 am Session 4: Fault Tolerance (Chair: David Powell, LAAS-CNRS)**  
Constraint Based Automated Synthesis of Nonmasking and Stabilizing Fault-Tolerance  
*Fuad Abujarad (Michigan State University, US); Sandeep Kulkarni (Michigan State University, US)*  
Communication-based Prevention of Non-P-Pattern  
*Yiwei Ci (Harbin Institute of Technology, CN); Zhan Zhang (Harbin Institute of Technology, CN); De-Cheng Zuo (Harbin Institute of Technology, CN); Zhi-Bo Wu (Harbin Institute of Technology, CN); Xiao-Zong Yang (Harbin Institute of Technology, CN)*  
Spin One's Wheels? Byzantine Fault Tolerance with a Spinning Primary  
*Giuliana Santos Veronese (University of Lisbon, PT); Miguel Correia (University of Lisbon, PT); Alysson Neves Bessani (Faculdade de Ciencias da Universidade de Lisboa, PT); Lau Cheuk Lung (UFSC, BR)*
- **11:00 am – 11:30 am Coffee Break (Common Break Area)**
- **11:30 am – 1:00 pm Session 5: Distributed Algorithms (Chair: Rui Oliveira, U. do Minho)**  
A Self-Stabilizing  $O(n)$ -Round  $k$ -Clustering Algorithm  
*Ajoy K. Datta (UNLV, US); Stéphane Devismes (Université Joseph Fourier, FR); Lawrence L. Larmore (UNLV, US)*  
A Partition-tolerant Manycast Algorithm for Disaster Area Networks  
*Mikael Asplund (Linköping University, SE); Simin Nadjm-Tehrani (Linköping University, SE)*  
Genuine versus Non-Genuine Atomic Multicast Protocols for Wide Area Networks: An Empirical Study  
*Nicolas Schiper (University of Lugano, CH); Pierre Sutra (INRIA, FR); Fernando Pedone (University of Lugano, CH)*
- **1:00 pm – 2:00 pm Lunch (Cataract Room)**
- **2:00 pm – 4:10 pm Session 6: Wireless Sensor Networks (Chair: Mukesh Singhal, U. of Kentucky)**  
A Holistic Solution to Pursuer-Evader Tracking in Sensor Networks  
*Xuming Lu (University at Buffalo, SUNY, US); Murat Demirbas (SUNY Buffalo, US); Chunming Qiao (SUNY Buffalo, US)*  
PEQ: A Privacy-preserving Scheme for Exact Query Evaluation in Distributed Sensor Data Networks  
*Hai Vu (University of Texas at Dallas, US); Thuc Nguyen (Vietnamese National University at HCMC, University of Natural Sciences, VN); Neeraj Mittal (University of Texas at Dallas, US); Subbarayan Venkatesan (University of Texas at Dallas, US)*  
On Consistent Neighborhood Views in Wireless Sensor Networks

Arshad Jhumka (University of Warwick, UK); Luca Mottola (Swedish Institute of Computer Science (SICS), SE)

TASK: Template-Based Key Assignment for Confidential Communication in Wireless Networks (Short Paper)

Ramon Novales (The University of Texas at Dallas, US); Neeraj Mittal (University of Texas at Dallas, US)

ZoneTrust: Fast Zone-Based Node Compromise Detection and Revocation in Sensor Networks Using Sequential Analysis (Short Paper)

Jun-Won Ho (The University of Texas at Arlington, US); Matthew Wright (University of Texas at Arlington, US); Sajal K. Das (The University of Texas at Arlington, US)

- **4:10 pm – 4:30 pm Coffee Break (Common Break Area)**
- **4:30 pm – 6:00 pm Session 7: Network Protocols (Chair: Stefano Russo, University of Naples "Federico II", IT)**

The Blocking Option in Routing Protocols

Yan Li (The University of Texas at Austin, US); Mohamed G. Gouda (University of Texas at Austin, US)

X-BOT: A Protocol for Resilient Optimization of Unstructured Overlays

João Leitão (Inesc-ID / IST, PT); João Pedro Marques (Inesc-ID / IST, PT); Jose Pereira (Universidade do Minho, Braga, Portugal, PT); Luis Rodrigues (Inesc-ID/IST, PT)

A Framework for Distributed Monitoring and Root Cause Analysis for Large IP Networks

Dipyaman Banerjee (IBM India Research Lab, IN); Venkateswara R Madduri (IBM India Research Lab, IN); Mudhakar Srivatsa (IBM T.J. Watson Research Center, US)

- **7:00 pm – 9:00 pm Banquet (Cataract Room)**

## Wednesday September 30, 2009

- **7:30 am – 8:30 am Breakfast and Registration (Common Break Area, CCNF)**
- **8:30 am – 10:20 am Session 8: Database and Storage (Chair: Murat Demirbas, SUNY at Buffalo)**

On the Cost of Database Clusters Reconfiguration

Ricardo Vilaça (Universidade do Minho, PT); Jose Pereira (Universidade do Minho, Braga, Portugal, PT); Rui Carlos Oliveira (Universidade do Minho, PT); José Enrique Armendáriz-Iñigo (Universidad Pública de Navarra, ES); José Ramón González de Mendivil (Universidad Pública de Navarra, ES)

Location-Aware Cache-Coherence Protocols for Distributed Transactional Contention Management in Metric-Space Networks

Bo Zhang (Virginia Tech, US); Binoy Ravindran (Virginia Tech, US)

Co-Scheduling of Disk Head Time in Cluster-based Storage

Matthew Wachs (Carnegie Mellon University, US); Greg R. Ganger (Carnegie Mellon University, US)

Assessment and Improvement of Hang Detection in the Linux Operating System (Short Paper)

Domenico Cotroneo (University of Naples, IT); Roberto Natella (University of Naples "Federico II", IT); Stefano Russo (University of Naples "Federico II", IT)

- **10:20 am – 10:50 am Coffee Break (Common Break Area)**
- **10:50 am - 11:30 am Keynote: "Vulnerability Analysis of Wireless Sensor Networks: Challenges and Solutions" - Dr. Sajal Das (Program Director, Division of Computer and Network Systems, National Science Foundation, USA) (Porter/DeVeaux, CCNF)**
- **11:30am - 12:00 Noon Discussion on Research Funding Challenges**
- **12:00 Noon – 12:30 pm Business Meeting (Porter/DeVeaux, CCNF)**

# Workshop Program

Three workshops are being held in conjunction with SRDS 2009. The workshops will take place on Sunday September 27, 2009. Two of these workshops are held sequentially and the third one will be run concurrently with the others in Olmstead and Whitney rooms of Conference Center Niagara Falls (CCNF).

## Joint Workshop on Dependable Network Computing and Mobile Systems (DNCMS) and Field Failure Data Analysis (F2DA) 2009

### Sunday September 27, 2009

- **8:00 am - 9:00 am** Breakfast and Registration (**Common Break Area, CCNF**)
- **9:00 am - 9:10 am** Opening Remarks (**Olmstead, CCNF**)  
Isaac Woungang, Ryerson University, Canada;  
Domenico Cotroneo, Federico II University of Naples, Italy
- **9:10 am - 10:40 am** Session 1 (DNCMS) - **Chair: Isaac Woungang, Ryerson University, Canada**
- Intrusion-Tolerant Group Management for Mobile Ad-Hoc Networks  
*Jonathan Kirsch (Johns Hopkins University, USA); Brian Coan (Telcordia Technologies, USA)*
- A Data Mining Based Approach to Reliable Distributed Systems  
*Michael Mock (Fraunhofer IAIS, Germany); Dennis Wegener (Fraunhofer IAIS, Germany)*
- PNETMAP: Virtual Network Implementation on a Partially-Known Physical Network  
*Cristian Ferent (State University of New York at Stony Brook, USA); Alex Doboli (State University of New York at Stony Brook, USA)*
- Developing Attack Defense Ideas for Ad Hoc Wireless Networks  
*Ruy De Oliveira (IFMT, Brazil); Bharat Bhargava (Purdue University, USA); M. Azarmi (Purdue University, USA); Ed Wilson T. Ferreira (IFMT, Brazil); Weichao Wang (UNC-Charlotte, USA); Mark Linderman (Air Force Research Lab, USA)*
- **10:40 am - 10:55 am** Coffee Break (**Common Break Area**)
- **10:55 am - 11:55 am** Keynote Address – “Detection of Collaborative Attacks and Cyber Defense”, Bharat K. Bhargava, Purdue University, USA
- **11:55 am - 1:00 pm** Lunch (**Cataract Room**)
- **1:00 pm - 2:40 pm** Session 2 (DNCMS) - **Chair: Michael Mock, Fraunhofer IAIS, Germany**
- Performance Evaluation of the Impact of Attacks on Mobile Ad hoc Networks  
*Malcolm Parsons (Technische Universität Darmstadt, Germany); Peter Ebinger (Fraunhofer-Institut für Graphische Datenverarbeitung IGD, Germany)*
- Defending against Collaborative Packet Drop Attacks on MANETs  
*Weichao Wang (UNC-Charlotte, USA); Bharat Bhargava (Purdue University, USA); Mark Linderman (Air Force Research Lab, USA)*
- Improvement of Throughput Using Partially Node-disjoint Forward and Backward Paths for Mobile Ad Hoc Networks  
*Mario Takeuchi (Hiroshima City University, Japan); Eitaro Kohno (Hiroshima City University, Japan); Tomoyuki Ohta (Hiroshima City University, Japan); Yoshiaki Kakuda (Hiroshima City University, Japan)*
- A Neural Network Approach for Wireless Sensor Network Power Management  
*Ahmad Hosseingholizadeh (Ryerson University, Canada); Abdolreza Abhari (Ryerson University, Canada)*

- **2:40 pm - 3:15 pm**    **Coffee Break (Common Break Area)**
- **3:15 pm - 4:15 pm**    **Session 3 (F2DA) - Chair: Domenico Cotroneo, Federico II University of Naples, Italy**  
Improving FFDA of Web Servers through a Rule-Based Logging Approach  
*M. Cinque (University of Naples Federico II, Italy); R. Natella (University of Naples Federico II, Italy); A. Pecchia (University of Naples Federico II, Italy), S. Russo (University of Naples Federico II, Italy)*  
An Experimental Analysis of Open Source Software Reliability  
*Cobra Rahmani (University of Nebraska-Omaha, USA); Harvey Siy (University of Nebraska-Omaha, USA); Azad Azadmanesh (University of Nebraska-Omaha, USA)*  
Is RSSI a Reliable Parameter in Sensor localization Algorithms – An Experimental Study  
*Ambili Thottam Parameswaran (State University of New York at Buffalo, USA); Mohammad Iftekhar Husain (State University of New York at Buffalo, USA); Shambhu Upadhyaya (State University of New York at Buffalo, USA)*
- **4:15 pm**                    **Wrap-Up**

## Embedded Systems and Communications Security (ESCS) 2009

### Sunday September 27, 2009

- **8:00 am - 9:00 am**    **Breakfast/Registration (Common Break Area, CCNF)**
- **9:00 am - 9:05 am**    **Opening Remarks (Whitney, CCNF)**  
**Vinodh Gopal, Intel Corporation**
- **9:05 am -10:25 am**    **Session 1 – Chair: Miroslav Velez, Aries Design Automation**  
Hardware Mechanism and Performance Evaluation of Hierarchical Page-Based Memory Bus Protection  
*Lifeng Su (STMicroelectronics), Albert Martinez (STMicroelectronics), Pierre Guillemi (STMicroelectronics), Sébastien Cerdany (Télécom ParisTech), Renaud Pacalety (Télécom ParisTech)*  
On the Complexity of Probabilistic Key Pre-distribution Schemes  
*Mahalingam Ramkumar (Mississippi State University)*  
Hierarchical Concealed Data Aggregation for Wireless Sensor Networks  
*Suat Ozdemir (Gazi University, Turkey), Yang Xiao (The University of Alabama Tuscaloosa)*  
Highly-Resilient Services for Critical Infrastructures  
*Giuliana Santos Veronese (Universidade de Lisboa, Portugal), Miguel Correia (Universidade de Lisboa, Portugal), Alysson Neves Bessani (Universidade de Lisboa, Portugal), Lau Cheuk Lung (Universidade Federal de Santa Catarina – Brazil)*
- **10:25 am -10:45 am**    **Coffee Break (Common Break Area)**
- **10:45 am -11:45 am**    **Keynote Address - “Message Digests for the Twenty-First Century: An Overview of the NIST SHA-3 Cryptographic Hash Algorithm Competition”, Alan Kaminsky, Rochester Institute of Technology**
- **11:45 am -1:00 pm**    **Lunch (Cataract Room)**
- **1:00 pm - 2:00 pm**    **Session 2 – Chair: Berk Sunar, Worcester Polytechnic Institute**  
Fast and Constant-Time Implementation of Modular Exponentiation

*Vinodh Gopal, James Guilford, Erdinc Ozturk, Wajdi Feghali, Gil Wolrich, Martin Dixon (Intel Corporation)*

SensorEar: A Sensor Network Based Eavesdropping System

*Ge Ruan, Soumya Jain and Sencun Zhu (The Pennsylvania State University)*

Accelerating Techniques for Rapid Mitigation of Phishing and Spam Emails

*Pranil Gupta, Ajay Nagrale and Shambhu Upadhyaya (University at Buffalo)*

- **2:00 pm - 2:45 pm**     **Invited Talk - “Embedded Security and Survivability”, Phil Koopman, Carnegie Mellon University**
- **2:45 pm – 3:15 pm**     **Coffee Break (Common Break Area)**
- **3:15 pm - 4:00 pm**     **Invited Talk - “Challenges and Opportunities in Embedded System Security: A View from the Trenches”, Nachiketh Potlapally, Intel Corporation**
- **4:00 pm - 4:45 pm**     **Panel Discussion – “Security Issues in Next Generation Smartphones”**  
**Panelists:** Mike Kurdziel, Harris Corporation; Berk Sunar, Worcester Polytechnic Institute and Miroslav Velez, Aries Design Automation
- **4:45 pm**                     **Wrap-Up and Closing Remarks**

## On-Site Logistics

### Registration

The SRDS 2009 registration desk will be open as follows:

- Sunday, September 27, 2009: 8:00 am - 11:00 am (Workshop registration only)
- Sunday, September 27, 2009: 5:30 pm - 8:00 pm (At Crowne Plaza)
- Monday, September 28, 2009: 7:00 am - 2:00 pm (At CCNF)
- Tuesday, September 29, 2009: 7:00 am - 2:00 pm (At CCNF)
- Wednesday, September 30, 2009: 7:00 am - 10:00 am (At CCNF)

### Wireless Internet and Business Center

Conference Center Niagara Falls is pleased to offer complimentary wireless Internet access throughout the program. The Login ID is “nfcguest” and the password is “niagara”. This service is intended for use by the conference attendees only. Presentation preparation and email checking can be done at the Business Center.

### Parking

Symposium attendees can park in the lot on 3<sup>rd</sup> street, adjacent to the hotel, for a nominal charge of \$5.00 (USD). The charge is waived for the guests staying at the Crowne Plaza. However, tickets should be validated at the front desk. In and out privilege is included.

### Border Crossing

After June 1, 2009, all travelers, including citizens of the United States, Canada and Bermuda, entering or re-entering the United States will be required to have a passport, passport card or WHTI-compliant document.