

# HONGWEI ZHANG

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- Research Interests**
- ◇ *Wireless, vehicular, embedded, and sensor networks*: application-adaptivity, QoS, architecture, mobility, messaging, data storage and data processing
  - ◇ *Dependable networked and distributed systems*: federated networking and computing resource management, dependable middleware services, fault-tolerant network protocols, fault containment, self-stabilization, security
  - ◇ *Theory*: mathematical modeling, optimization, formal methods
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- Education**
- ◇ *Ph.D.*, Computer Science & Engineering, The Ohio State University, August 2006
  - ◇ *M.S.*, Computer Engineering, Chongqing University, China, June 2000
  - ◇ *B.S.*, Computer Engineering, Chongqing University, China, June 1997
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- Experience**
- ◇ *Assistant Professor*, Wayne State University, January 2007 -
  - ◇ *Instructor*, Wayne State University, August 2006 - December 2006
  - ◇ *Graduate Research Associate*, The Ohio State University, September 2001 - August 2006
  - ◇ *Research Intern*, Motorola Labs, June - September 2005
  - ◇ *Graduate Fellow*, The Ohio State University, September 2000 - August 2001
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- Research Grants**
- ◇ Co-PI (PI from WSU), *GENI-fying and Federating Autonomous Kansei Wireless Sensor Networks*, NSF GENI program, 10/01/2008 - 09/31/2011; PI: Anish Arora, Co-PIs: Rajiv Ramnath, Vipul Gupta, Sami Ayyorgun; Total funding: \$500,000, Zhang's share: \$127,874
  - ◇ PI, *Predictable Wireless Networking for Vehicular Cyber-Physical Systems*, **Wayne State University** Faculty Research Grant, 2009; Funding: \$10,000
  - ◇ Co-PI, *Hierarchical and Distributed Control for Alternative-Energy Cyber-Physical Systems*, **Wayne State University** GRA Competition, 2009; PI: Caisheng Wang, C-PI: Feng Lin; Funding: \$30,000
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- Journal Papers**
- ◇ Lifeng Sang, Anish Arora, Hongwei Zhang, "On Link Asymmetry and One-way Estimation in Wireless Sensor Networks", *ACM Transactions on Sensor Networks*, to appear
  - ◇ Hongwei Zhang, Lifeng Sang, Anish Arora, "On the Convergence and Stability of Data-driven Link Estimation and Routing in Sensor Networks", *ACM Transactions on Autonomous and Adaptive Systems*, special issue on "Self-adaptive and Self-organizing Wireless Networking Systems", to appear (Acceptance rate: 10% = 4/40; A short version appeared in *WICON* 2008)

- ◇ Hongwei Zhang, Anish Arora, Prasun Sinha, “Link Estimation and Routing in Sensor Network Backbones: Beacon-based or Data-driven?”, *IEEE Transactions on Mobile Computing*, to appear (A short version appeared in *IEEE INFOCOM* 2006.)
- ◇ Hongwei Zhang, Anish Arora, Young-ri Choi, Mohamed Gouda, “Reliable Bursty Converge-cast in Wireless Sensor Networks”, *Computer Communications (Elsevier)*, special issue on “Sensor-Actuator Networks”, 30(13), September 2007 (Acceptance rate: ~20%; A short version appeared in *ACM MobiHoc* 2005.)
- ◇ Vinayak Naik, Anish Arora, Prasun Sinha, Hongwei Zhang, “Sprinkler: A Reliable and Energy Efficient Data Dissemination Service for Extreme Scale Wireless Networks of Embedded Devices”, *IEEE Transactions on Mobile Computing*, 6(7):762-776, July 2007 (A short version appeared in *IEEE RTSS* 2005.)
- ◇ Hongwei Zhang, Anish Arora, “Guaranteed Fault Containment and Local Stabilization in Routing”, *Computer Networks (Elsevier)*, 50(18):3585-3607, December 2006
- ◇ Anish Arora, Hongwei Zhang, “LSRP: Local Stabilization in Shortest Path Routing”, *IEEE/ACM Transactions on Networking*, 14(3):520-531, June 2006 (Authors in alphabetic order; a short version appeared in *IEEE-IFIP DSN* 2003.)
- ◇ Young-ri Choi, Mohamed Gouda, Hongwei Zhang, Anish Arora, “Stabilization of Grid Routing in Sensor Networks”, *AIAA Journal of Aerospace Computing, Information, and Communication*, 3:214-233, May 2006
- ◇ A. Arora, P. Dutta, S. Bapat, V. Kulathumani, Hongwei Zhang, V. Naik, V. Mittal, H. Cao, M. Demirbas, M. Gouda, Y. R. Choi, T. Herman, S. Kulkarni, U. Arumugam, Mikhail Nesterenko, A. Vora, M. Miyashita, “A Line in the Sand: A Wireless Sensor Network for Target Detection, Classification, and Tracking”, *Computer Networks (Elsevier)*, 46(5):605-634, December 2004
- ◇ Hongwei Zhang, Anish Arora, “GS<sup>3</sup>: Scalable Self-configuration and Self-healing in Wireless Sensor Networks”, *Computer Networks (Elsevier)*, 43(4):459-480, November 2003 (Acceptance rate: 24% = 6/25; A short version appeared in *ACM PODC* 2002.)

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**Conference Papers**

- ◇ Qiao Xiang, Jinhong Xu, Xiaohui Liu, Hongwei Zhang, Loren J. Rittle, “When In-Network Processing Meets Time: Complexity and Effects of Joint Optimization in Wireless Sensor Networks”, *30th IEEE Real-Time Systems Symposium (RTSS)*, 2009 (Acceptance rate: ~12%)
- ◇ Hongwei Zhang, Lifeng Sang, Anish Arora, “Comparison of Data-driven Link Estimation Methods in Low-power Wireless Networks”, *6th IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, 2009 (Acceptance rate: 18.8% = 81/431)
- ◇ Hongwei Zhang, Lifeng Sang, Anish Arora, “On Biased Link Sampling in Data-driven Link Estimation and Routing in Low-power Wireless Networks”, 4th International Wireless Internet Conference (WICON), 2008 (invited paper)
- ◇ Lifeng Sang, Anish Arora, Hongwei Zhang, “On Exploiting Asymmetric Wireless Links via One-way Estimation”, *8th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, 2007 (Acceptance rate: 18% = 27/146)
- ◇ Hongwei Zhang, Anish Arora, Prasun Sinha, “Learn on the Fly: Data-driven Link Estimation and Routing in Sensor Network Backbones”, *25th IEEE International Conference on Computer Communications (INFOCOM)*, 2006 (Acceptance rate: 18% = 252/1400)

- ◇ E. Ertin, A. Arora, R. Ramnath, M. Nesterenko, V. Naik, S. Bapat, V. Kulathumani, M. Sridharan, Hongwei Zhang, H. Cao, “Kansei: A Testbed for Sensing at Scale”, *5th IEEE/ACM International Conference on Information Processing in Sensor Networks, Special Track on Platform Tools and Design Methods for Network Embedded Sensors (IPSN/SPOTS)*, 2006
- ◇ Hongwei Zhang, Anish Arora, Young-ri Choi, Mohamed Gouda, “Reliable Bursty Converge-cast in Wireless Sensor Networks”, *6th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, 2005 (Acceptance rate: 14% = 40/281)
- ◇ Vinayak Naik, Anish Arora, Prasun Sinha, Hongwei Zhang, “Sprinkler: A Reliable Data Dissemination Service for Wireless Embedded Devices”, *26th IEEE Real-Time Systems Symposium (RTSS)*, 2005
- ◇ A. Arora, R. Ramnath, E. Ertin, P. Sinha, S. Bapat, V. Naik, V. Kulathumani, Hongwei Zhang, H. Cao, M. Sridhara, S. Kumar, N. Seddon, C. Anderson, T. Herman, N. Trivedi, C. Zhang, M. Gouda, Y. R. Choi, M. Nesterenko, R. Shah, S. Kulkarni, M. Aramugam, L. Wang, D. Culler, P. Dutta, C. Sharp, G. Tolle, M. Grimmer, B. Ferriera, K. Parker, “ExScal: Elements of an Extreme Scale Wireless Sensor Networks”, *11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCISA)*, 2005
- ◇ Hongwei Zhang, Anish Arora, Zhijun Liu, “A Stability-oriented Approach to Improving BGP Convergence”, *23rd IEEE Symposium on Reliable Distributed Systems (SRDS)*, 2004 (Acceptance rate: 23%)
- ◇ Anish Arora, Hongwei Zhang, “LSRP: Local Stabilization in Shortest Path Routing”, *IEEE-IFIP International Conference on Dependable Systems and Networks (DSN)*, 2003 (Acceptance rate: 21%)
- ◇ Hongwei Zhang, Anish Arora, “GS<sup>3</sup>: Scalable Self-configuration and Self-healing in Wireless Networks”, *21st ACM Symposium on Principles of Distributed Computing (PODC)*, 2002 (Acceptance rate: 29%)
- ◇ Hongwei Zhang, Arjan Durrezi, “Differentiated Multi-Layer Survivability in IP/WDM Networks”, *8th IEEE-IFIP Network Operations and Management Symposium (NOMS)*, 2002 (Acceptance rate: 32%)

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**Short  
Conference &  
Workshop  
Papers**

- ◇ Hongwei Zhang, “Predictable Messaging in Wireless Automotive CPS”, NITRD/NSF National Workshop on Research on Transportation Cyber-Physical Systems: Automotive, Aviation, and Rail, 2008
- ◇ Vinayak Naik, Emre Ertin, Hongwei Zhang, Anish Arora, “Wireless Testbed Bonsai”, *2nd International Workshop on Wireless Network Measurement (WinMee)*, 2006
- ◇ Hongwei Zhang, Anish Arora, “Brief Announcement: Continuous Containment and Local Stabilization in Path-vector Routing”, *24th ACM Symposium on Principles of Distributed Computing (PODC)*, 2005 (Acceptance rate: 22%)

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**Book**

- ◇ Hongwei Zhang, “Dependable Messaging in Wireless Sensor Networks”, VDM Publishing House Ltd., Germany, 2009. ISBN-NR: 978-3-639-11031-9 (Based on the author’s Ph.D. dissertation)

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**Book  
Chapters**

- ◇ Mukundan Sridharan, Wenjie Zeng, William Leal, Xi Ju, Rajiv Ramnath, Hongwei Zhang, Anish Arora, “KanseiGenie: Software Infrastructure for Resource Management and Programmability of Wireless Sensor Network Fabrics”, *Next Generation Network Architecture*, Krishna Moorthy Sivalingam et al. (editors), Springer, to appear

- ◇ Hongwei Zhang, Vinayak Naik, “Data Transport Control in Wireless Sensor Networks”, *Handbook of Wireless Ad Hoc and Sensor Networks*, Sudip Misra, Isaac Woungang, and Subhas C. Misra (editors), Springer, 2009
  - ◇ Divya Sakamuri, Hongwei Zhang, “Elements of Sensornet Testbed Design”, *Handbook of Sensor Networks*, Yang Xiao, Hui Chen, and Frank H. Li (editors), World Scientific Publishing Co, 2009
  - ◇ Hongwei Zhang, Anish Arora, Prasun Sinha, Loren J. Rittle, “Messaging in Sensor Networks: Addressing Wireless Communications and Application Diversity”, *Handbook of Real-Time and Embedded Systems*, Insup Lee, Joe Leung, and Sang Son (editors), CRC Press, 2007
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## Posters

- ◇ Anish Arora, Rajiv Ramnath, Hongwei Zhang, Vipul Gupta, Sami Ayyorgun, Mukundan Sridharan, Wenjie Zeng, Xi Ju, “Kansei Genie: Federated Sensing Platforms”, 3rd NSF GENI Engineering Conference, 2008
  - ◇ Hongwei Zhang, Lifeng Sang, Anish Arora, Unraveling the Subtleties of Link Estimation and Routing in Wireless Sensor Networks, ACM SIGCOMM, 2008
  - ◇ Anish Arora, Prasun Sinha, Emre Ertin, Vinayak Naik, Hongwei Zhang, Mukundan Sridhara, Sandip Bapat, “ExScal Backbone Network Architecture”, *3rd ACM/USENIX International Conference on Mobile Systems, Applications, and Services (MobiSys)*, 2005
  - ◇ Anish Arora, Rajiv Ramnath, Emre Ertin, Prasun Sinha, Sandip Bapat, Vinayak Naik, Vinod Kulathumani, Hongwei Zhang, et al., “Project ExScal”, *International Conference on Distributed Computing in Sensor Systems (DCOSS)*, 2005
  - ◇ Anish Arora, Emre Ertin, Rajiv Ramnath, Vinayak Naik, Sandip Bapat, Hongwei Zhang, Chris Anderson, Gavin Fox, John Wieseman, “Kansei: Sensor Network Testbed for At-Scale Experiments”, *2nd TinyOS Technology Exchange*, 2005
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## Other Publications

- ◇ Hongwei Zhang, “Dependable Messaging in Wireless Sensor Networks”, *Ph.D. dissertation, The Ohio State University, USA*, 2006
  - ◇ Hongwei Zhang, “An Engineering Network Security Model”, *Master thesis, Chongqing University, China*, 2000
  - ◇ Hongwei Zhang, “Efficient Database Transactions in Large Scale Networked Systems”, *Journal of Computer Applications, Chinese Computer Federation*, August 1999
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## Patent

- ◇ Loren J. Rittle, Hongwei Zhang, “A System for Application-Driven Packing and Scheduling of Information Elements in a Multi-Hop Wireless Sensor Network”, *US patent #20070268127* (pending)
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## Developed Systems

- ◇ *NetEye: Networked Embedded Sensing Testbed*  
Wayne State University, Detroit, Michigan, USA

NetEye consists of 130 TelosB motes (with IEEE 802.15.4 radios), 15 Dell Vostro laptops (with IEEE 802.11 b/g radios), and one compute server which are deployed in State Hall — the Computer Science building at Wayne State University. In addition to providing a local facility for supporting research and educational activities, NetEye is being connected to Kansei as a part of the Kansei consortium; Kansei consortium is initiated to enable experimentation across shared, widely distributed sensornet testbeds at organizations such as

Wayne State University, The Ohio State University, Los Alamos National Laboratory, and ETRI, Korea. NetEye and the Kansei consortium are implemented to be interoperable with NSF GENI (i.e., Global Environment for Network Innovations), and are being incorporated into the national GENI facility. NetEye will also provide live sensing data (e.g., environmental noise, temperature, and humidity) that can be used to drive experimentations and to provide useful information about occupational health in urban universities.

- ◇ *Application-adaptive Messaging for Wireless Sensor Networks*  
Motorola Labs, Schaumburg, Illinois, USA, August 2005

As a research intern at Motorola Labs, I proposed an architectural and algorithmic framework for application-adaptive messaging. Taking into account application properties (e.g., traffic and data correlation patterns) in network structuring and scheduling, application-adaptive messaging significantly improves network performance (e.g., packet delivery reliability and energy efficiency).

Using a testbed of *Tmote Sky* nodes with light sensors, the experiment demonstrated the feasibility and benefits of my proposal. For the experiment, I implemented my proposal in TinyOS/Maté; I also implemented a GUI interface which presented the packet delivery performance and the sensing state in the network.

- ◇ *ExScal: Extreme Scale Wireless Sensor Networking*  
DARPA Networked Embedded Systems Technology (NEST) field demonstration  
Avon Park, Florida, USA, December 2004

The experiment demonstrated the scalability of our system software on the largest sensor network ever deployed at its time: 985 XSM motes, 203 MICA2 motes, and 203 Stargates were deployed in an area of 1260 meters by 288 meters. We successfully demonstrated target detection, classification, and tracking in this large-scale sensor network. (Details can be found at <http://www.cse.ohio-state.edu/exscal/>.)

My major responsibilities in the project were twofold. First, to provide real-time and reliable data transport over the IEEE 802.11b mesh network of the 203 Stargates, I studied the IEEE 802.11b link properties (e.g., MAC transmission time and reliability) in the presence of bursty event traffic, and accordingly I designed and implemented a beacon-free routing protocol *Learn On The Fly* (LOF). Instead of using beacon packets, LOF estimates link properties based on data traffic itself. Since it models the network state in the presence of data traffic, LOF chooses routes that incur shorter delay and less energy consumption than those chosen by beacon-based protocols (e.g., those using beacon-based ETX metric). Second, to reduce channel contention and to balance load at the XSM mote network, I assisted in designing the routing protocol *Logical Grid Routing* (LGR).

- ◇ *A Line in the Sand: A Wireless Sensor Network for Target Detection, Classification, and Tracking*  
DARPA NEST field demonstration  
MacDill Air Force base, Florida, USA, August 2003

The experiment demonstrated the potential of sensor networks for unattended ground sensing over a large, distributed region. More specifically, we showcased how to detect, classify, and track various types of objects (such as persons and cars) using 90 MICA2 motes. (Details can be found at [http://www.cse.ohio-state.edu/siefast/nest/nest\\_webpage/ALineInTheSand.html](http://www.cse.ohio-state.edu/siefast/nest/nest_webpage/ALineInTheSand.html).)

My major responsibility in the project was designing and implementing mechanisms to transport, reliably and in real-time, large bursts of data packets from different network locations

to a base station (one major technical challenge of the project). With existing messaging services, only 50% data were successfully delivered and packet delivery was also significantly delayed, which was insufficient for supporting application logic. To tackle this challenge, I studied the limitations of existing transport control techniques, and I designed a new protocol *Reliable Bursty Convergecast* (RBC): to alleviate retransmission-incurred channel contention, I introduced differentiated contention control; to improve channel utilization and to reduce ack-loss, I designed a window-less block acknowledgment scheme that guarantees continuous packet forwarding (regardless of packet as well as ack loss) and replicates the acknowledgment for a packet. Moreover, I designed mechanisms to handle varying ack-delay and to reduce delay in timer-based retransmissions. With RBC, 96% data were successfully delivered in real-time such that the network goodput was close to optimal.

- ◇ *Kansei: Sensor Network Testbed for At-Scale Experiments*  
The Ohio State University, USA

Consisting of 210 XSM motes and 210 Stargates, Kansei provides a testbed infrastructure to conduct large scale experiments with both IEEE 802.11 and mote networks. (Details can be found at <http://www.cse.ohio-state.edu/kansei>.)

My involvement in building Kansei has been (a) designing the 210-node 802.11 network such that link and network properties in Kansei mimic those outdoor, (b) designing the experiment scheduler to enable flexible and dependable experimentation, and (c) setting up the hardware and software platforms for Kansei. To facilitate high-fidelity wireless network experimentation, in particular, I have studied both indoor and outdoor wireless link properties, and have co-designed the network system (such as signal attenuators and small form-factor omni-directional antennae) to enable high-fidelity experimentation with reconfigurable network setup (e.g., node distribution density, wireless link reliability, etc.).

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## Honors & Awards

- ◇ Excellence in Teaching Award, College of Liberal Arts and Sciences, Wayne State University, 2009
- ◇ Outstanding Research Award, Department of Computer Science and Engineering, The Ohio State University, 2006
- ◇ Graduate Fellow, The Ohio State University, 2000
- ◇ Honor Societies:
  - Inclusion in *Man of The Year in Education*, American Biographical Institute, 2009
  - Inclusion in *Cambridge Who's Who*, 2008
  - Inclusion in *AcademicKeys Who's Who in Sciences Higher Education*, 2008
  - Inclusion in *Strathmore's Who's Who*, 2007
  - Inclusion in *Marquis Who'sWho in Science and Engineering*, 2006
  - Inclusion in *Marquis Who'sWho in America*, 2005
  - Phi Kappa Phi, Upsilon Pi Epsilon
- ◇ Member of SIEMENS International Student Circle, SIEMENS Ltd., Germany, 1999
- ◇ Honorable Mention in the International Mathematical Contest in Modeling, USA, 1997
- ◇ Distinguished Graduates of Sichuan Province, China, 1997
- ◇ Certificate of Software Engineer, Bureau of Computer Software Engineer Qualification Test, China, 1996
- ◇ Second Prize in the National Mathematical Contest in Modeling, China, 1995

- ◇ Scholarships:
    - SIEMENS Prize, SIEMENS Ltd., Germany, 1998
    - IDG China Computer-World Scholarship, 1997
    - Longfuhang Scholarship, Longfuhang Ltd., Taiwan, 1996
    - Baoshan Scholarship for Distinguished Students, Shanghai Baoshan Ltd., China, 1995
    - Scholarship for Distinguished Students, Chongqing University, China, 1993 - 1997
- 

- Invited talks**
- ◇ “KanseiGenie: Architecture and ORCA Integration”, 4th NSF GENI Engineering Conference, Miami, Florida, April 2009
  - ◇ “Messaging in Wireless Cyber-physical Systems: Predictability in an Uncertain World”, GM Research, Warren, MI, November 2008
  - ◇ “Messaging in Wireless Cyber-physical Systems: Predictability in an Uncertain World”, Bosch Research, Palo Alto, California, October 2008
  - ◇ “Slice Control and Programmability in Wireless Sensor Networks”, 3rd NSF GENI Engineering Conference, Palo Alto, California, October 2008
  - ◇ “Federated, Autonomous Kansei Wireless Sensor Networks”, 2nd NSF GENI Engineering Conference, Arlington, Virginia, March 2008
  - ◇ “Dependable Messaging in Wireless Sensor Networks”, Merit Member Conference, Merit Networks, Ann Arbor, Michigan, June 2007
  - ◇ “On Evolving An Integration Environment: the *Kansei* Consortium”, Microsoft Research Sensor Networks Workshop, Woodinville, Washington, October 2005
  - ◇ “Continuous Fault Containment and Local Stabilization in Path-vector Routing”, BIRS/MSRI International Workshop on Self-stabilizing Distributed Systems, Banff, Alberta, Canada, October 2004
  - ◇ “A Stability-oriented Approach to Improving BGP convergence”, BIRS/MSRI International Workshop on Self-stabilizing Distributed Systems, Banff, Alberta, Canada, October 2004
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- Professional Activities**
- ◇ Session Chair
    - International Workshop on Mobile Device and Urban Sensing (MODUS), 2008
  - ◇ Local Arrangements Chair
    - International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), 2008
  - ◇ Program Committee Member
    - IEEE International Conference on Communications (ICC): 2010
    - IEEE Global Communications Conference (GLOBECOM): 2010, 2008
    - ACM Symposium on Applied Computing (SAC): 2010
    - IEEE Sensor Applications Symposium (SAS): 2010
    - International Conference on Wireless Access in Vehicular Environments (WAVE): 2009, 2008
    - International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS): 2009
    - IEEE International Conference on High Performance Computing (HiPC): 2009
    - IEEE International Conference on Computer Communications and Networks (ICCCN): 2009, 2008, 2007

- International Conference on Sensor Technologies and Applications (SENSORCOMM): 2009, 2008, 2007
- IEEE International Conference on Advanced Information Networking and Applications (AINA): 2009
- ICST International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (QShine): 2009
- International Symposium on Innovations and Real-time Applications of Distributed Sensor Networks (IRADSN): 2009
- International Conference on Multimedia and Ubiquitous Engineering (MUE): 2009
- IEEE First International Workshop on Generation C Wireless Networks (GenCWINets): 2008
- ICST International Conference on Scalable Information Systems (INFOSCALE): 2008
- IEEE International Conference on Ubiquitous Intelligence and Computing (UIC): 2008
- IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS): 2007
- International World Wide Web Conference (WWW): 2007
- International Workshop on Protocols and Algorithms for Reliable and Data Intensive Sensor Networks (PARIS): 2007
- ◇ Paper Referee
  - *Journals and Magazines*: IEEE/ACM Transactions on Networking, ACM Transactions on Sensor Networks, IEEE Transactions on Mobile Computing, ACM Transactions on Autonomous and Adaptive Systems, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Computers, IEEE Transactions on Vehicular Technology, IEEE Communications Surveys and Tutorials, Computer Networks (Elsevier), Ad Hoc Networks (Elsevier), Distributed Computing (Springer-Verlag), Journal of Parallel and Distributed Computing (Elsevier), Information Sciences (Elsevier), Theoretical Computer Science (Elsevier), AIAA Journal of Aerospace Computing, Information, and Communication (JACIC), International Journal of Ad Hoc and Ubiquitous Computing (Inder-science), Journal of High Speed Networks, International Journal of Distributed Sensor Networks (IJDSN), International Journal of Information and Computer Security (Inder-science), EURASIP Journal on Advances in Signal Processing
  - *Conferences*: ACM SenSys, ACM PODC, ACM WSNA, IEEE INFOCOM, IEEE ICNP, IEEE DSN, IEEE ICDCS, IEEE SRDS, IEEE RTSS, IEEE SECON, IEEE MASS, IEEE NOMS, IEEE AINA, SSS, WinMee, OPODIS, FSTTCS, TRIDENTCOM, CODES+ISSS
- ◇ Proposal Review Panel Member and Reviewer
  - National Science Foundation (NSF)
  - Department of Homeland Security (DHS)
- ◇ Member
  - ACM, ACM SIGCOMM, ACM SIGMOBILE, ACM SIGBED, ACM SIGMETRICS
  - IEEE, IEEE Communication Society, IEEE Computer Society
  - USENIX, SAE
  - IEEE Technical Committees on Ad Hoc & Sensor Communications & Networks, Computer Communications, Tactical Communications, Wireless Communications, Internet, Communications Systems Integration & Modeling, Communications Switching & Routing, Communications and Information Security, Communications Software, Multimedia Communications, Wearable Information Systems, Fault Tolerant Computing, Mathemat-

**University  
Activities**

- ◇ Member, Personnel and Salary Committee, Department of Computer Science, 2008 -
  - ◇ Member, Graduate Committee, Department of Computer Science, 2008 -
  - ◇ Member, Networking Advisory Committee, Department of Computer Science, 2006 -
  - ◇ Member, Undergraduate Committee, Department of Computer Science, 2007
  - ◇ Member, Equity and Excellence Advisory Committee, Wayne State University, 2007
  - ◇ Member, Graduate Professional Scholarship Committee, Graduate School, 2007
  - ◇ Member, Scholarship Awards Committee, Department of Computer Science, 2006, 2007
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**Educational  
Activities**

- ◇ Undergraduate Teaching
    - Introduction to Computer Networks
  - ◇ Graduate Teaching
    - Data Communication and Computer Networks
    - Advanced Computer Networking
    - Broadband Network Architecture
  - ◇ Students
    - Current graduate students: Xin Che, Matthew P. Flavell, Eyad Hailat (co-advise with Loren Schwiebert), Xi Ju, Xiaohui Liu, Qiao Xiang
    - Current undergraduate student: Artan Ala, Marc Rush, Talia Selitsky (female)
    - Graduated: Bo Mi, Divya Sakamuri (female), Aparna Radhakrishnan (female)
  - ◇ Ph.D. Dissertation Committee
    - Jiayu Gong (ECE), Musab Al-Hadrusi (ECE), Jianqiang Luo, Peng Quan (Mechanical Engineering), Eyad Hailat, Yong Xi, Safwan Al-Omari
  - ◇ Ph.D. Qualifying Exam Committee
    - Guoxing Zhan, Sharrukh Zaman, John Cavicchio, Jianqiang Luo, Mochan Shrestha, Eyad Hailat, Tom Carroll
  - ◇ Master Thesis Committee
    - Guoxing Zhan, Chenjia Wang, Santhi Movva (female), Brandon Szeliga, Mandeep Kaur (female), Deeksha Ganju (female)
  - ◇ Undergraduate Research
    - Marc Rush (UWB networks), Talia Selitsky (female; environmental monitoring sensornets)
  - ◇ Educational Outreach
    - Wayne State University Graduate Open House, 2009
    - Avondale Meadows Upper Elementary (in Auburn Hills, MI) students, 2008; Water quality (e.g., pH, turbidity, temprature) monitoring along Clinton River, Auburn Hills, MI; media coverage by Detroit Public TV and Wayne Regional Education Service Agency (RESA).
    - High-school students of International Academy, 2008
    - Pre-major undergraduate students of Wayne State University, 2007
    - Dearborn Center for Math, Science and Technology (DCMST), 2006
    - MBA students of Wayne State University, 2007
    - Wayne State University Scholars Day, 2007
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**Reference**

Available on request.