

VITA

Anish Arora

April 2019

Address

The Ohio State University
Computer and Information Science
Dreese Hall, 2015 Neil Avenue Mall
Columbus, Ohio 43210
U.S.A

Office: +1-614-292-1836
Home: +1-614-264-8771
Fax: +1-614-292-2911
E-mail: arora.9@osu.edu
Web: <http://www.cse.ohio-state.edu/~anish>

Personal Data

Born May 27, 1964, New Delhi, India
Married to Aman Khosa; two sons, Aneetej and Sahar
U.S. Citizen

Research Interests

Wireless sensor networks; Internet of Things; low-power embedded systems; scalability;
Fault-tolerant, secure, robust computing; mobile ad-hoc networks; distributed systems;
Component-based design; formal methods; concurrency semantics; dynamical systems

Education

Ph.D., Computer Science, University of Texas at Austin, 1992
M.S., Computer Science, University of Texas at Austin, 1988
B.Tech., Computer Science & Engineering, Indian Institute of Technology, New Delhi, 1986

Experience

Professor, The Ohio State University, Columbus, September 2002 -
Faculty-in-Residence, Translational Data Science Institute, OSU, May 2017 -
CTO, The Samraksh Company, September 2006 -
Adjunct Faculty, Indian Institute of Technology, Delhi, December 2017 -
Visiting Professor, The Indian Institute of Science, Bangalore, Spring 2009
Visiting Researcher, Microsoft Research, Redmond, September 1999 - September 2000
Visiting Professor, EPFL, Lausanne, Switzerland, July - August 1999
Associate Professor, The Ohio State University, Columbus, September 1998 -

Assistant Professor, The Ohio State University, Columbus, September 1992 -
Member, Distributed Computing Group, MCC, January 1989 - August 1992
Teaching Assistant, UT-Austin, Fall 1991, September 1987 - May 1988
Research Assistant, UT-Austin, September 1988 - January 1989

Honors

NSDI Best Student Paper Award for “PhyCloak”, 2016
Usenix ATC Best of the Rest Paper Award for “PhyCloak”, 2016
IPSN Best Paper Runnerup Award for “Low Power Counting via Collaborative Wireless Communications”, 2013
MASS Best Paper Award for “Achievable Throughput in Duty-Cycled Wireless Networks”, 2012
IEEE Fellow, 2008
PoDSy Best Paper Award for Whisper: A Local Secret Maintenance Protocol, 2003.
OSU College of Engineering Lumley Research Award, 2009, 2003
ICDCS Best Paper Award for “Convergence Refinement”, 2002
N. Rama Rao Chair Visiting Professorship, Indian Institute of Technology, Kanpur, (declined) 2001
OSU College of Engineering Research Accomplishment Award, 1999
IEEE Computer Society Certificate of Appreciation, 2003, 1999
Ameritech Faculty Fellow, 1998 - 1999
NSF Research Initiation Award, 1993 - 1996
MCC Best Paper Award for “Distributed Reset”, 1991
Honor Societies: Phi Kappa Phi, Beta Alpha Phi, and Upsilon Pi Epsilon
Microelectronics and Computer Development Fellowship, UT-Austin, 1986 - 1988
Scholarships:

- Karuizawa’91: Advanced Course in Distributed Systems, Japan, 1991
- Intl. Summer School on Programming and Mathematical Method, Germany, 1990
- J.N. Tata Scholarship for Higher Studies, India, 1986
- National Talent Search Scholarship, India, 1980 - 1986

Research Grants

co-PI: “Spokes: MEDIUM: MIDWEST: Collaborative: Community-driven Data Engineering for Opioid and Substance Abuse in the Rural Midwest”, National Science Foundation (NSF), PI: Raghu Machiraju, \$651,000, 09/01/2018–08/31/2021
US PI: “Virtual Center for Optimizing System Performance and Energy in Multisensor

Visual Perception Systems”, US and India Science and Technology Foundation (IUSSTF), \$70,000 (\$35,000 US portion), August 2018

PI: Ohio State/Honda Innovation Laboratory Seed Grant, “If Roads Could Talk: Mote-Scale Wireless Infrastructure Sensing of Active Transport Users”, \$25,000, 04/2019-12/2019

PI: Measuring and Analyzing Active Transportation Using Low-Cost Wireless Sensor Networks”, OSU TDAI Seed Grant, co-PI: Harvey Miller, \$30,000, 08/15/2017–08/14/2018

co-PI: “SCC-Planning: Using Innovations in Big Data and Technology to Address the High Rate of Infant Mortality in Greater Columbus Ohio”, National Science Foundation (NSF), \$100,000, Total Award, PI: Raghu Machiraju, 08/15/2017–08/31/2018

PI: “Summer Workshop on Machine Learning on Constrained Devices”, Microsoft Research, \$10,000, Gift, May 2018

I: “Smart Columbus Challenge Demonstration”, Department of Transportation (DoT), \$40,000,000 Total Award, OSU Cost Share: \$15,000,000, OSU Lead PI: Bailo, C; Arora is one of 18 OSU Investigator, Research Contract, 9/1/2016–8/31/2021

OSU Site PI: “CPS: Frontier: SONYC: A Cyber-Physical System for Monitoring, Analysis, and Mitigation of Urban Noise Pollution”, National Science Foundation (NSF), \$4,628,210, Total Award, PI: Juan Bello (NYU), OSU portion: \$577,141, 8/1/2016–5/31/2021

PI: “Pilot Study of Poacher Surveillance Fence”, World Wildlife Fund, \$53,895, 11/2/2015–3/15/2017

PI: “Supplemental Award: PC3: Collaborative Research: Wireless Sensor Networks for Protecting Wildlife and Humans”, National Science Foundation, \$84,003, 07/2013 – 06/2015

PI: “GENI Educational Kits for Wireless Sensor Networks”, NSF/GENI GPO, \$204,884, 10/1/2011 - 9/30/2013

PI: “Sensor-Actuator Network Fabric for a (mini)Campus Smart Grid”, Center for Energy and Sustainability Engineering (CESE), \$12,000, 2012

PI: IBM SUR Research Grant Award, \$22,034, 2012

PI: “PC3: Collaborative Research: Wireless Sensor Networks for Protecting Wildlife and Humans”, National Science Foundation, \$178,209, 10/1/2011 - 9/30/2014

Co-PI: “CPS: Localization and System Services for SpatioTemporal Actions in Cyber-Physical Systems”, National Science Foundation (NSF), \$450,000, OSU portion: \$200,001, 9/1/2009 – 8/31/2012

PI: “Institute for Research on Wireless Networks (IRWiN)”, Los Alamos Research Labs (LANL) Contract, January 2009 – December 2011, \$430,000

PI: “GENI-fying and Federating Autonomous Kansei Wireless Sensor Networks”, NSF GENI

Contract, September 2008 – August 2011, \$500,000

PI: “Physical Primitives for Trust Management in Wireless Sensor Network Fabrics”, Air Force Research Labs (AFRL RYTC) Contract, September 2008 – September 2009, \$78,000; January 2012 – November 2014, \$50,000 plusup

Co-PI: “ETRI WSN Testbed”, ETRI, PI: Eylem Ekici, Arora portion: \$20,000, June 2008

PI: “Equipment Grant: A SunSPOT Mini-array for the Kansei Wireless Sensor Network Testbed at Ohio State”, December 2007, cash value: \$5,500

PI: “Equipment Grant: 1800 XSMS for OSU Wireless Sensor Network Testbed”, Air Force Research Labs, June 2007, cash value: \$360,000

PI: “Through the Looking Glass: On Human Mobility and Equipment Health”, Microsoft Research SensorMap RFP Award, April 2007 - September 2008, \$71,000

Co-PI : “Defending against Physical Attacks in Sensor Networks”, Army Research Office, PI: Dong Xuan, March 2007-November 2009, \$160,000

Co-PI: “Equipment Support for Large-Scale Sensor Network Testing”, Wright Center of Innovation in Advanced Data Management (WCI-ADMA) Subcontract WCI04-010-OSU-0-SC01, PI: Stuart Zweben, November 1, 2005 – July 31 2009, \$1,000,000; Arora share \$226,845

PI: “ExScal Technology Transition”, Defense Advanced Research Projects Agency (DARPA-IXO), October 2005 – February 2006, \$100,000

Co-PI: “Collaborative Research: NeTS-NOSS: State-Based Specifications for Controlling and Configuring Sensor Networks,” National Science Foundation, September 2005–August 2008, PI: Ted Herman, \$750,000; OSU/Arora share \$345,000

PI: “Equipment Grant: 225 Stargates for Project Echelon”, Intel Corporation, June 2004, cash value: \$225,000

PI: “Project Echelon: A 10 Kilometer, 10,000 Node Sensor Network Experiment”, Defense Advanced Research Projects Agency (DARPA-IXO), November 2003 – February 2006 (FY2004 share: \$499,000, FY2005 share: \$400,000), \$899,000

PI: “HDCCSR: Scalable Dependability in Componentized Software via Self-Stabilization”, National Science Foundation, October 2003 – September 2007, \$480,435

PI: “Evolving and Testing Smart Sensor Networks using Windows Embedded XP”, Microsoft Research RFP Award, July 2003, \$25,000; supplemental award for “Hydroponic Greenhouse Testbed”, March 2004, \$13,000

PI: “Specification Based Customization of NEST Services”, Defense Advanced Research Projects Agency (DARPA-IXO), November 2002 – October 2003. Jointly funded with

“Services and Algorithm for NEST Systems”, PI: Nancy Lynch (MIT). OSU share: \$48,500.

PI: “Self-stabilization in NEST”, Defense Advanced Research Projects Agency (DARPA–ITO), June 2001 – February 2006; Co-PIs: Mohamed Gouda, Ted Herman, Mikhail Nesterenko, and Sandeep Kulkarni; \$2,427,000. OSU share: \$1,125,000. An additional \$1,458,120 has also been selected for optional funding

PI: “Continuous Self-Maintenance in .NET Services”, Microsoft Research RFP Award, December 2001 – December 2003, \$125,000

PI: “Dependability Components for Distributed and Network Systems”, National Science Foundation, April 1999 – August 2002, \$190,000

PI: “API for Self-Stabilizing Components”, Microsoft Research Grant, February 1999, \$25,000

PI: “Component-Based Dependable Networks”, Ameritech Faculty Fellowship, October 1998 - December 2000, \$30,000

PI: “Travel Grant: U.S. Attendance at the International Dagstuhl Seminar on Self-Stabilization”, National Science Foundation, June 1998 - May 1999, \$12,000

PI: “Securing Future Environments”, National Security Agency; Other PIs: Mukesh Singhal and Tom Page; July 1996 - July 1997, \$100,000

PI: “ATM Testbed for Multimedia and Distributed Computing”, National Science Foundation Equipment Infrastructure Award; Other PIs: Raj Jain, Dhabaleswar Panda, and Tom Page; February 1996 - January 1999, NSF share \$175,300, State of Ohio share \$100,000, OSU share \$124,700, Total \$400,000

PI: “Nonmasking Fault-tolerance in Distributed Systems”, Research Initiation Award, National Science Foundation, July 1993 - June 1996, \$90,000

PI: “Fault-tolerant Distributed Reset”, University Seed Grant, January - December 1993, \$20,000

Contracts (at Samraksh, partial list)

AFRL STTR (Phase 2), “Customizing Security for Diverse IoT Endpoints”, 9/1/2017–8/31/2019

AFRL STTR (Phase 1), “Customizing Security for Diverse IoT Endpoints”, 7/21/2016–3/15/2017

NSF SBIR (Phase 1) “Virtual Fences for Sustainable Protection”, 12/15/2016–8/31/2017

DoE (Phase 1), “Scalable perfSONAR Extensions using Software-Defined Measurements and Cloud-hosted Archival”, 11/1/2015–25/31/2017

DARPA Communications in Contested Environments (C2E), “A Framework for Application

Specific Networking Patterns in Open Systems”, 06/24/2014–7/30/2017

DoE STTR (Phase 2), “Programmable, Extensible and Secure System for Software-Defined Multi-Domain Performance Monitoring”, 4/23/2013–4/21/2015

DARPA Fixed Wireless at a Distance (Phase 2), “Scalable Networking Abstractions for Infrastructure Augmented Mobile Ad Hoc Networks”, 06/27/2013–2/27/2015

DARPA ADAPTable Sensor System (Phase 2a and 2b), “System Software for Multi Mode Computing on the Emerging New Architecture for Smart Phones”, 06/21/2013–07/31/2015

DARPA Fixed Wireless at a Distance (Phase 1) “Scaling of Dynamic Peer-to-Peer Networks through Application Specific Networking Patterns”, 8/1/2012–5/31/2013

DoE STTR (Phase 1), “Programmable, Extensible and Secure System for Software-Defined Multi-Domain Performance Monitoring”, 2/12/2012–11/19/2013

DARPA ADAPTable Sensor System (Phase 1), “Standardized Hardware Independent Framework for Active Sensing”, 7/22/2012–3/29/2013

DARPA SBIR (Phase 1 and Phase 2), “A Sensor System Platform for Enabling Highly Reusable Applications while Minimizing Power Consumption”, 3/2/2009–6/25/2012

ADD, Korea (Phase 1, Phase 2, Phase 3), “BumbleBee and Vesper Radar”, 11/1/2006–12/31/2011

Patents

“Weak Leader Election”, with W. Russell and Y.-M. Wang, US Patent 7139790, November 2006

“Pattern- and Model-based Power Line Monitoring”, with W. Russell and Y.-M. Wang, US Patent 7133729, November 2006

“Automation System for Controlling and Monitoring Devices and Sensors”, with P. Bahl, W. Russell, Y.-M. Wang, and J. Xu, US Patent 6961763, November 2005

“Device Adapter for Automation System”, with W. Russell and Y.-M. Wang, and J. Xu, US Patent 6535110, March 2003

Publications

Refereed Journal Articles

1. J.P. Bello, C. Silva, O. Nov, R.L. DuBois, A. Arora, J. Salamon, and C. Mydlarz, “SONYC: A system for the monitoring, analysis and mitigation of urban noise pollution”, *Communications of the ACM*, 62(2), pp. 68-77, February 2019

2. A. Ghosh, A. Chattopadhyay, A. Arora, and A. Kumar, "Measurement based As-You-Go deployment of two-connected wireless relay networks", *ACM Transactions on Sensor Networks (TOSN)*, 13 (3), pp. 1-23, 2017
3. V. Kulathumani, M. Nakagawa, and A. Arora, "EZ-AG: Structure-free data aggregation in MANETs using push-assisted self-repelling random walks", *Journal of Internet Services and Applications (JISA)*, 9 (5), pp. 1-14
4. V. Kulathumani, M. Nakagawa, and A. Arora, "Coverage characteristics of self-repelling random walks in mobile ad-hoc networks", *arXiv, arXiv preprint arXiv:1708.07049*, 9pp., 2017
5. V. Kulathumani, A. Arora, M. Sridharan, K. Parker and B. Lemon, "On the repair time scaling wall for MANETs", *IEEE Communications Letters*, vol. 20, no. 8, pp. 1623–26, August 2016
6. V. Kulathumani, A. Arora, M. Sridharan, K. Parker, and M. Nakagawa, "Census: fast, scalable and robust data aggregation in MANETs", *Journal of Wireless Networks*, pp. 1–18, February 2017
7. A. Ghosh, A. Chattopadhyay, A Arora, and A Kumar, "Measurement based as-you-go deployment of two-connected wireless relay networks", *Transactions on Sensor Networks*, vol. 13, no. 3, article 23, pp. 1–23, July 2017
8. M. Demirbas and A. Arora, "Specification-based design of self-stabilization", *IEEE Transactions on Parallel and Distributed Systems*, vol. 27, no. 1, pp. 263–270, 2016
9. V. Kulathumani, A. Arora, et al, Census: Fast, scalable and robust data aggregation in MANETs, *Journal of Wireless Networks*, pp. 1–18, 2015
10. J. Li, W. Zeng, and A. Arora, "The configuration space of duty-cycled CSMA-based wireless MACs", *Wireless Networks*, vol. 20, no. 8, pp. 2561–2579, November 2014
11. L. Jing, J. He, and A. Arora, "Thermonet: fine-grain assessment of building comfort and efficiency", *Procedia Computer Science*, vol. 10, pp. 349-356, 2012
12. T. Kwon, E. Ertin, and A. Arora, "Reproducing consistent wireless protocol performance across environments", *Ad Hoc Networks*. vol. 10, no. 4, pp. 696–708, 2012
13. L. Sang and A. Arora, "A shared-secret free security infrastructure for wireless networks", *IEEE Transactions on Autonomous and Adaptive Systems (TAAS)*, vol. 7, no. 2, pp. 23:1–23:21, 2012
14. V. Kulathumani, A. Arora, S. Ramagiri, "Pursuit Control over Wireless Sensor Networks using Distance Sensitivity Properties", *IEEE Transactions on Automatic Control*, vol. 56, no. 10, pp. 2473–2478, 2011
15. H. Zhang, L. Sang, and A. Arora, "Comparison of data-driven link estimation methods in low-power wireless networks", *IEEE Transactions on Mobile Computing*, vol. 9, no. 11, November 2010. *Spotlight Paper of Issue*
16. Lifeng Sang, Anish Arora, and Hongwei Zhang, On link asymmetry and one-way estimation in wireless sensor networks, *IEEE Transactions on Sensor Networks (TOSN)*, vol. 6, no. 2, 25 pages, 2010

17. H. Zhang, L. Sang, and A. 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, vol. 4, no. 3, July 2009
18. H. Zhang, A. Arora, and P. Sinha, "Link estimation and routing in sensor network backbones: Beacon-based or data-driven?", *IEEE Transactions on Mobile Computing (TOMC)*, 8(5), May 2009, pp. 653–667
19. V. Kulathumani, A. Arora, M. Sridharan, and M. Demirbas, "Trail: A distance-sensitive sensor network service for distributed object tracking", *ACM Transactions on Sensor Networks TOSN*, 5(2), 2009
20. M. Demirbas, A. Arora, and V. Kulathumani, "Glance: A lightweight querying service for wireless sensor networks", *Theoretical Computer Science*, 410(6-7), 2009, pp. 500–513
21. S. Bapat, W. Leal, T. Kwon, P. Wei, and A. Arora, "Chowkidar: Reliable and scalable health monitoring for wireless sensor network testbeds", *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, 4(1), 2009
22. H. Cao, E. Ertin, and A. Arora, "MiniMax equilibrium of networked differential games", *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, 3(4), 2008
23. A. Ebneenasir, S. Kulkarni, and A. Arora, "FTSyn: a framework for automatic synthesis of fault-tolerance", *International Journal on Software Tools for Technology Transfer (STTT)*, 10(5), 2008, pp. 455–477
24. S. Kumar, T.-H. Lai, and A. Arora, "Barrier coverage with wireless sensors," *Wireless Networks (WINET)* special issue, Springer-Verlag, 13(6), December 2007, pp. 817–834
25. H. Zhang, A. Arora, Y.-R. Choi, and M. Gouda, "Reliable bursty convergecast in wireless sensor networks", *Computer Communications (Elsevier)*, special issue on Sensor-Actuated Networks, 30(13), 26 September 2007, pp. 2560–2576
26. A. Arora, M. Gouda, J. Hallstrom, T. Herman, W. Leal, and N. Sridhar, "A state-based language for sensor-actuator networks", Special issue on wireless sensor network architecture, *ACM SIGBED Review*, 4(3), 2007, pp. 25–30
27. V. Naik, A. Arora, P. Sinha, and H. 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), 2007, pp. 777–789?
28. H. Zhang and A. Arora, "Guaranteed fault containment and local stabilization in routing", *Computer Networks (Elsevier)*, 50(18), December 2006, pp. 3585–3607
29. M. Demirbas, A. Arora, V. Mittal, and V. Kulathumani, "A fault-local self-stabilizing clustering service for wireless ad hoc networks", *IEEE Transactions on Parallel and Distributed Systems*, special issue on Localized Communication and Topology Protocols for Ad Hoc Networks, 17(4), September 2006, pp. 912–922
30. A. Arora and H. Zhang, "LSRP: Local stabilization in shortest path routing", *IEEE/ACM Transactions on Networking*, 14(3), June 2006, pp. 520–531

31. Y.-R. Choi, M. Gouda, H. Zhang, and A. Arora, “Stabilization of grid routing in sensor networks”, *AIAA Journal of Aerospace Computing, Information, and Communication*, 3, May 2006, pp. 214–233
32. A. Arora, E. Ertin, R. Ramnath, M. Nesterenko, and W. Leal, “Kansei: A high-fidelity sensing testbed”, *IEEE Internet Computing*, special issue on Large-Scale Sensor Networks, March 2006, pp. 18–31
33. A. Arora, S. Kulkarni, and M. Demirbas, “Resettable vector clocks”, *Journal of Parallel and Distributed Computing (JPDC)*, 66(2), February 2006, pp. 221–237
34. S. Kulkarni, M. Gouda, and A. Arora, “Security instantiation for ad hoc networks”, *Journal of Computer Communications*, special issue on Dependable Wireless Sensor Networks, 29(2), January 2006, pp. 200–215
35. A. Arora and M. Nesterenko, “Unifying stabilization and termination in message-passing systems”, *Distributed Computing*, 17(3), March 2005, pp. 279–290
36. A. Arora and M. Theimer, “On modeling and tolerating incorrect software”, *Journal of High Speed Networks*, 14(2), 2005, pp. 109–134
37. A. Arora, P. Dutta, S. Bapat, V. Kulathumani, H. Zhang, V. Naik, V. Mittal, H. Cao, M. Demirbas, M. Gouda, Y-R. Choi, T. Herman, S. S. Kulkarni, U. Arumugam, M. Nesterenko, A. Vora and M. Miyashita, “A Line in the sand: A wireless sensor network for target detection, classification, and tracking”, *Computer Networks (Elsevier)*, 46(5), December 2004, pp. 605–634
38. J. Hallstrom, N. Sridhar, P. Sivilotti, and A. Arora, “A container-based approach to object-oriented product lines”, *Journal of Object Technology*, April 2004
39. P. C. Attie, A. Arora, and E. A. Emerson, “Synthesis of fault-tolerant concurrent programs”, *ACM Transactions on Programming Languages and Systems (TOPLAS)*, 26(1), January 2004, pp. 125–185
40. H. Zhang and A. Arora, “GS³: Scalable self-configuration and self-healing in wireless networks”, *Computer Networks*, special issue on Wireless Sensor Networks, 43(4), November 2003, pp. 459–480
41. J. Hallstrom, W. Leal, and A. Arora, “Scalable evolution of highly available systems”, *IEICE/IEEE Transactions on Information and Systems*, joint special issue on Assurance Systems and Networks, E86-B(10), October 2003, pp. 2154–2166
42. V. Naik, A. Arora, S. Bapat, and M.G. Gouda, “Whisper: Local secret maintenance in sensor networks”, *IEEE Distributed Systems Online*, September 2003
43. M. Sun, L. Huang, S. Wang, A. Arora, and T.H. Lai, “Reliable MAC layer multicast in IEEE 802.11 wireless networks”, *Wiley Wireless Communications and Mobile Computing*, special issue on Research in Ad Hoc Networking, Smart Sensing, and Pervasive Computing, 2003
44. M. Nesterenko and A. Arora, “Stabilization-preserving atomicity refinement”, *Journal of Parallel and Distributed Computing*, special issue on Self-Stabilization, 2002, 62(5), pp. 766–791

45. W. Leal and A. Arora, “State-level and value-level simulations in data refinement”, *Information Processing Letters*, special issue on retirement of Professor Edsger W. Dijkstra, invited paper, 2001, 77(2-4), pp. 159–167
46. A. Arora and S. Kulkarni, “Detectors and correctors: A theory of fault-tolerance components”. **One of the top six papers at ICDCS’98**, invited to appear in *IEEE Transactions of Computers*
47. A. Arora and S. Kulkarni, “Component based design of multitolerance”, *IEEE Transactions on Software Engineering*, 24(1), 1998, pp. 63–78
48. A. Arora and S. Kulkarni, “Designing masking fault-tolerance via nonmasking fault-tolerance”, *IEEE Transactions on Software Engineering*, 24(6), 1998, pp. 435–450
49. S. Kulkarni and A. Arora, “Multitolerance in distributed reset”, *Chicago Journal of Theoretical Computer Science*, 4, 1998, 46pp
50. G. Varghese, A. Arora, and M. G. Gouda, “Self-stabilization by tree correction”, *Chicago Journal of Theoretical Computer Science*, 3, 1997, 32pp
51. S. Kulkarni and A. Arora, “Multitolerance in barrier computations”, *Information Processing Letters* 64, 1997, pp. 29–36
52. A. Arora, M. G. Gouda, and G. Varghese, “Constraint satisfaction as a basis for designing nonmasking fault-tolerant systems”, *Journal of High Speed Networks*, 5(3), 1996, pp. 293–306
53. A. Arora, “Efficient reconfiguration of trees: A case study in the methodical design of nonmasking fault-tolerance”, *Science of Computer Programming*, 1996, in press
54. A. Arora and A. Singhai, “Fault-tolerant reconfiguration of trees and rings in distributed systems”, *Journal of High Integrity Systems*, 1(4), 1995, pp. 375–384
55. A. Arora and M. G. Gouda, “Distributed reset”, *IEEE Transactions on Computers*, 43(9), 1994, pp. 1026–1038. **MCC Best Paper Award**
56. A. Arora and M. G. Gouda, “Closure and convergence: A foundation of fault-tolerant computing”, *IEEE Transactions on Software Engineering*, 19(11), 1993, 1015–1027. **Highest rated paper in Special Issue on Software Reliability**
57. A. Arora, P. Attie, M. Evangelist, and M. G. Gouda, “Convergence of iteration systems”, *Distributed Computing*, 7(1), 1993, pp. 43–53
58. A. Arora, S. Dolev, and M. G. Gouda, “Maintaining digital clocks in step”, *Parallel Processing Letters*, 1(1), 1991, pp. 11–18

Refereed Conferences

59. Sangeeta Kumari, Dhrubojyoti Roy, Mark , Juan Bello, and Anish Arora, “EdgeL3: Compressing L3-Net for Mote Scale Urban Noise Monitoring”, *1st Workshop on Parallel AI and Systems for the Edge (PAISE)*, May 2019

60. D. Roy, C. Morse, M. McGrath, J. He, and A. Arora, "Cross-environmentally robust intruder detection in radar motes", *Proceedings of 14th International Conference on Mobile Ad-hoc and Sensor Systems (MASS)*, 2017
61. Y. Qiao, K. Srinivasan, and A. Arora, "Channel Spoofer: Defeating channel variability and unpredictability", *Proceedings of the 13th International ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, 2017
62. Y. Qiao, O. Zhang, W. Zhou, K. Srinivasan, A. Arora, "PhyCloak: Obfuscating sensing from communication signals", *ACM Networked Systems Design and Implementation Conference (NSDI)*, 2016. **(Best Student Paper)**
63. Y. Qiao, O. Zhang, W. Zhou, K. Srinivasan, and A. Arora, "PhyCloak: Obfuscating Sensing from Communication Signals", *USENIX Annual Technical Conference, (invited paper)*, June 2016
64. J. He and A. Arora, "A regression-based radar-mote system for people counting", *Proceedings of IEEE International Conference on Pervasive Computing and Communications (PerCom)*, Budapest, 2014
65. T. Damoulas, J. He, R. Bernstein, C.P. Gomes, A. Arora, "String kernels for complex time-series: Counting targets from sensed movement", *22nd International Conference on Pattern Recognition (ICPR)*, pp. 4429-34, 2014
66. A. Ghosh, A. Chattopadhyay, A. Arora, and A. Kumar, "As-you-go deployment of a 2-connected wireless relay network for sensor-sink interconnection", *Proceedings of International Conference on Signal Processing and Communications (SPCOM)*, pp. 1-6, 2014
67. Y. Qiao, K. Srinivasan, and A. Arora, "Configuration Hopping: A secure communication protocol without explicit key exchange", *16th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, Springer vol. 8756, pp. 268-282, 2014
68. Y. Qiao, K. Srinivasan, and A. Arora, "Shape matters, not the size: a new approach to extract secrets from channel", *1st ACM Workshop on Hot Topics in Wireless*, New York, pp. 37-42, 2014
69. Y. Qiao, K. Srinivasan, A. Arora, "Puzzle: A shape-based secret sharing approach by exploiting channel reciprocity in frequency domain", *Proceedings of USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, pp. 1-14, 2014
70. W. Zeng, A. Arora, K. Srinivasan, "Low power counting via collaborative wireless communications", *Proceedings of the 12th International Conference on Information Processing in Sensor Networks (IPSN)*, 43-54, 2013. **(Best Paper Runner Up Award)**
71. L. Jing, J. He, and A. Arora, "Thermonet: fine-grain assessment of building comfort and efficiency", *Proceedings of 3rd International Conference on Ambient Systems, Networks and Technologies (ANT)*, 2012
72. L. Jing, W. Zeng, and A. Arora, "Achievable throughput in duty-cycled wireless networks", *IEEE 9th International Conference on Mobile Adhoc and Sensor Systems (MASS)*, pp. 290-298, 2012. **(Best Paper Award)**

73. M. Sridharan, W. Zeng, W. Leal, X. Ju, R. Ramnath, H. Zhang, and A. Arora, "From Kansei to KanseiGenie: Architecture of federated, programmable wireless sensor fabrics", *6th International Conference on Testbeds and Infrastructures for the Development of Networks and Communities (TridentCom)*, May 2012
74. X. Ju, H. Zhang, W. Zeng, M. Sridharan, J. Li, A. Arora, R. Ramnath and Y. Xin, "LENS: resource specification for wireless sensor network experimentation infrastructures", *Proceedings of the 6th ACM International Workshop on Wireless Network Testbeds, Experimental Evaluation and CHaracterization (WiNTECH)*, pp. 43–50, 2011
75. T. Kwon, E. Ertin and A. Arora, "Performance repeatability of low power wireless sensor network protocols: A multi-testbed study", *14th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWIM)*, pp. 393–400, 2011
76. I. Ramzy and A. Arora, "Using zero knowledge to share a little knowledge: Bootstrapping trust in device networks", *Proceedings of the 13th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, pp. 371–385, 2011
77. A. Arora and L. Sang, "Symmetric dialog codes for confidential communications without shared secrets", *International Conference on Signal Processing and Communications (SPCOM)*, pp. 1–5, 2010
78. L. Jing, W. Zeng, and A. Arora, "Chameleon: On the energy efficiency of exploiting multiple frequencies in wireless sensor networks", *Proceedings of Broadnets*, pp. 138–157, 2010
79. W. Zeng, A. Arora, and N. Shroff, "Maximizing energy efficiency for convergecast via joint duty cycle and route optimization", *The IEEE 28th Conference on Computer Communications (INFOCOM Miniconference)*, April 2010
80. H. Zhang, L. Sang, A. 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)*, June 2009
81. L. Sang and A. Arora, "A wireless security framework without shared secrets, 11th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), pp. 609-623, November 2009
82. A. Arora and L. Sang, "Dialog codes for secure wireless communications", *Proceedings of the 4th ACM/IEEE Symposium on Information Processing in Sensor Networks (IPSN)*, San Francisco, pp. 13–24, April 2009
83. A. Arora and L. Sang, "A zero knowledge alternative for bootstrapping trust", *Proceedings of the International Workshop on Collaborative Trusted Sensing*, Baltimore, Maryland, May 2009
84. L. Sang and A. Arora, "Capabilities of low-power wireless jammers", (mini-conference paper) *Proceedings of the 27th IEEE International Conference on Computer Communications (INFOCOM)*, Brazil, April 2009

85. H. Zhang, L. Sang, and A. Arora, "Comparison of data-driven link estimation methods in low-power wireless networks," *Proceedings of the 6th IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, 2009
86. K. Parker, S. Bapat, and Anish Arora, "The BmbleBee mote-scale radar", *Proceedings of the 34th Annual GOMACTech Conference*, Orlando, March 2009
87. J. Li and A. Arora, "Duty cycle stabilization in semi-mobile wireless networks", *Proceedings of the 10th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS08)*, Detroit, November 2008
88. M. Demirbas and A. Arora, "An application of specification-based design of self-stabilization to tracking in wireless sensor networks", *Proceedings of the 10th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS08)*, Detroit, November 2008, pp. 203-217
89. H. Zhang, L. Sang, and A. Arora, "On biased link sampling in datadriven link estimation and routing in lowpower wireless networks", *Invited Paper The Fourth International ICST/CREATE-NET/ACM Wireless Internet Conference (WICON 2008)*, Hawaii, November 2008
90. H. Cao, A. Arora and Kenneth Parker, "Feature calibration in sensor networks", *Proceedings of the 2008 IEEE International Symposium on Parallel and Distributed Processing with Applications (ISPA-08): Workshop on Adaptation in Wireless Sensor Networks (AWSN-08)*, Sydney, Australia, December 2008, pp. 952-957
91. V. Kulathumani and A. Arora, "Aspects of distance sensitive design of wireless sensor networks" (invited) *Proceedings of 2nd IEEE International Conference on Self-Adaptive and Self-Organizing Systems: Workshop on Spatial Computing*, October 2008, 8 pp.
92. L. Sang and A. Arora, "Spatial signatures for lightweight security in wireless sensor networks", *Proceedings of the 27th IEEE International Conference on Computer Communications Miniconference (INFOCOM)*, 6 pages, 2008
93. L. Sang and Anish Arora, "Spatial signatures for lightweight security in wireless sensor networks", (mini-conference paper), *Proceedings of the 27th IEEE International Conference on Computer Communications (INFOCOM)*, Joint Conference of the IEEE Computer and Communications Societies, Phoenix, April 2008, pp. 2137–2145
94. B. Bonakdarpour, S. Kulkarni and A. Arora, "Disassembling real-time fault-tolerant programs", *Proceedings of the Eighth ACM International Conference on Embedded Systems Software (EMSOFT)*, 2008, pp. 169–178
95. A. Dalton, W. McCartney, K. Dastidar, J.Hallstrom, N. Sridhar, T. Herman, W. Leal, A. Arora, and M. Gouda, "DESALa: An implementation of the Dynamic Embedded Sensor-Actuator Language", *Proceedings of the 17th International Conference on Computer Communications and Networks (ICCCN)*, Virgin Islands, August 2008
96. V. Kulathumani, M. Sridharan, R. Ramnath, A. Arora, "Weave: An architecture for Tailoring Urban Sensing Applications across Multiple Sensor Fabrics", *Proceedings of the International Workshop on Mobile Device and Urban Sensing (MODUS)*, April 2008

97. M. Sridharan, S. Bapat, R. Ramnath, and A. Arora, "Implementing an autonomic architecture for fault-tolerance in a wireless sensor network testbed for at-scale experimentation", *Proceedings of the 23rd ACM Symposium on Autonomic Computing (SAC)*, March 2008, pp. 1670–1676
98. A. Arora, "User programmability of embedded sensor networks", *Proceedings of the Government Microcircuit Applications and Critical Technology Conference (GOMACTech)*, (Invited Paper), March 2008, 4 pages
99. S. Bapat and A. Arora, "Message efficient termination detection in wireless sensor networks", *Proceedings of the First IEEE INFOCOM Workshop on Automated Network Management (ANM)*, 2008
100. V. Kulathumani and A. Arora, "Distance sensitive snapshots in wireless sensor networks", *Proceedings of the International Conference on Principles of Distributed Systems (OPODIS)*, Springer-Verlag LNCS 4878, 2007
101. H. Cao and A. Arora, "Stabilization in dynamic systems with varying equilibrium", *Proceedings of the 9th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, Springer-Verlag LNCS 4838, 2007, pp. 67–81
102. L. Sang, A. Arora, and H. Zhang, "On exploiting asymmetric wireless links via one-way estimation", *Proceedings of the 8th ACM international symposium on Mobile on Mobile Ad hoc Networking and Computing (MOBIHOC)*, 2007, pp. 11-21
103. S. Bapat, W. Leal, T. Kwon, P. Wei, and A. Arora, "Chowkidar: A health monitor for wireless sensor network testbeds", *Proceedings of the Third International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities (TridentCom)*, May 2007
104. A. Arora, M. Gouda, J. Hallstrom, T. Herman, B. Leal, and N. Sridhar, "A state-based language for sensor-actuator networks", *Proceedings of the International Workshop on Wireless Sensor Network Architecture*, April 2007
105. V. Kulathumani, A. Arora, M. Demirbas, and M. Sridharan, "Trail: A distance sensitive network protocol for distributed object tracking", *Proceedings of the Fourth European conference on Wireless Sensor Networks (EWSN)*, January 2007, pp. 83–100
106. M. Demirbas, A. Arora, and V. Kulathumani, "Glance: A Lightweight Querying Service for Wireless Sensor Networks", *Proceedings of the Tenth International Conference on Principles of Distributed Systems (OPODIS)*, December 2006, pp. 242–257
107. H. Cao, K. Parker, and A. Arora, "O-MAC: A receiver-centric power management protocol", *Proceedings of the 14th International Conference on Network Protocols (ICNP)*, November 2006, pp. 311-320
108. W. Leal, S. Bapat, T. Kwon, P. Wei, and A. Arora, "Stabilizing health monitoring for wireless sensor networks", *Proceedings of the Eighth International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, November 2006
109. S. Bapat and A. Arora, "Stabilizing reconfiguration in wireless sensor networks", *Proceedings of the IEEE International Conference on Sensor Networks, Ubiquitous and Trustworthy Computing*, (invited paper), June 2006

110. H. Zhang, A. Arora, and P. Sinha, "Learn on the Fly: Data-driven link estimation and routing in sensor network backbones", *Proceedings of the 25th IEEE International Conference on Computer Communications (INFOCOM)*, 2006
111. V. Naik, E. Ertin, H. Zhang, and A. Arora, "Wireless testbed bonsai", *Proceedings of the Second International Workshop On Wireless Network Measurement (WiNMee)*, Boston, USA, April 2006
112. H. Cao, E. Ertin, V. Krishnan, M. Sridharan, and A. Arora, "Differential Games in Large Scale Sensor Actuator Networks", *Proceedings of the 4th Symposium on Information Processing in Sensor Networks (IPSN)*, 2006
113. E. Ertin, A. Arora, R. Ramnath, M. Nesterenko, "Kansei: A testbed for sensing at scale", *Proceedings of the 4th Symposium on Information Processing in Sensor Networks (IPSN/SPOTS track)*, 2006
114. P. Dutta, A. Arora, and S. Bibyk, "Towards radar-enabled sensor networks", *Proceedings of the 4th Symposium on Information Processing in Sensor Networks (IPSN/SPOTS track)*, 2006
115. S. Bapat, V. Kulathumani, and A. Arora, "Analyzing the yield of ExScal, a large-scale wireless sensor network experiment", *Proceedings of the 13th IEEE International Conference on Network Protocols (ICNP)*, November 2005, pp. 53–62
116. S. Bapat, V. Kulathumani, and A. Arora, "Reliable estimation of influence fields for classification and tracking in unreliable sensor networks", *Proceedings of the 24th IEEE Symposium on Reliable Distributed Systems (SRDS)*, October 2005, pp. 60–72
117. V. Naik, A. Arora, P. Sinha, and H. Zhang, "Sprinkler: A reliable and energy efficient data dissemination service for wireless embedded devices", *Proceedings of the 26th IEEE Real-Time Systems Symposium (RTSS)*, 2005
118. S. Kumar, T.-H. Lai, and A. Arora, "Barrier coverage with wireless sensors," *Proceedings of the 11th Annual International Conference on Mobile Computing and Networking (ACM MobiCom)*, Cologne, Germany, 2005, pp. 284–298
119. A. Arora, et al (30 authors), "ExScal: Elements of an extreme scale wireless sensor network", *Proceedings of the 11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)*, 2005, pp. 102–108
120. V. Kulathumani, P. Shankar, Y. Kim, A. Arora, and R. Yedavalli, "Reliable control system design despite byzantine actuators", *Proceedings of the 5th ASME International Conference on Multibody Systems, Nonlinear Dynamics and Controls (MSNDC)*, 2005
121. Y. Kim, A. Arora, V. Kulathumani, U. Arumugam, and S. Kulkarni, "On the effect of faults in vibration control of fairing structures", *Proceedings of the 5th ASME International Conference on Multibody Systems, Nonlinear Dynamics and Controls (MSNDC)*, 2005
122. H. Zhang, A. Arora, Y.-R. Choi, and M. Gouda, "Reliable bursty convergecast in wireless sensor networks", *Proceedings of the 6th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, May 2005, pp. 277–286

123. P. Dutta, M. Grimmer, A. Arora, S. Bibyk, and D. Culler, "Design of a wireless sensor network platform for detecting rare, random, and ephemeral events", *Proceedings of the 3rd Symposium on Information Processing in Sensor Networks (IPSN/SPOTS track)*, 2005, pp. 497–502
124. M. Demirbas, A. Arora, T. Nolte, and N. Lynch, "A hierarchy-based fault-local stabilizing algorithm for tracking in sensor networks", *Proceedings of the 8th International Conference on Principles of Distributed Systems (OPODIS)*, 2004
125. M. Demirbas, A. Arora, V. Mittal, and V. Kulathumani, "Design and analysis of a fast local clustering service for wireless sensor networks", *Proceedings of the Broadband Wireless Networking Symposium (Broadnets)*, invited paper, 2004
126. M. Demirbas and A. Arora, "FLOC: A fast local clustering service for wireless sensor networks", *Proceedings of the ICDSN Workshop on Dependability Issues in Wireless Ad Hoc Networks and Sensor Networks (DIWANS'04)*, Florence, Italy, 2004
127. M. G. Gouda, Y-R. Choi, and A. Arora, "Sentries and sleepers in sensor networks", *Proceedings of the 8th International Conference on Principles of Distributed Systems (OPODIS)*, 2004.
128. H. Zhang, A. Arora, and Z. Liu, "A stability-oriented approach to improving BGP convergence", *Proceedings of the 23rd IEEE Symposium on Reliable Distributed Systems (SRDS)*, 2004, pp. 90–99
129. W. Leal and A. Arora, "Scalable stabilization via composition", *Proceedings of the 24th International Conference on Distributed Computing Systems, (ICDCS'04)*, Tokyo, 2004
130. S. Kulkarni, M. Gouda, and A. Arora, "Security instantiation for mobile networks", *Proceedings of the ICDSN Workshop on Dependability Issues in Wireless Ad Hoc Networks and Sensor Networks (DIWANS'04)*, Florence, Italy, 2004
131. A. Arora and H. Zhang, "LSRP: Local stabilization in shortest path routing", *Proceedings of IEEE-IFIP International Conference on Dependable Systems and Networks (ICDSN'2003)*, San Francisco, 2003, pp. 139–148.
132. Y. Kim, T. Lai, and A. Arora, "A QoS-aware scheduling algorithm for Bluetooth scatter-nets", *Proceedings of the International Conference on Parallel Processing (ICPP'03)*
133. Y. Choi, M. Gouda, M. Kim, and A. Arora, "The mote connectivity protocol", *Proceedings of the 12th International Conference on Computer Communications and Networks (ICCCN'03)*
134. M. Demirbas, A. Arora, and M. Gouda, "A pursuer-evader game for sensor networks", *Proceedings of the Sixth Symposium on Self-Stabilizing Systems (SSS'2002)*, San Francisco, 2003, pp. 1–16
135. V. Naik, A. Arora, S. Bapat, and M. Gouda, "Whisper: A local secret maintenance protocol", *Proceedings of the ICDSN Workshop on Principles of Dependable Systems (PoDSy'2003)*, San Francisco, 2003, pp W.121–126. **Best Paper Award**
136. M. Demirbas and A. Arora, "Convergence refinement", *Proceedings of the 22nd International Conference on Distributed Computer Systems (ICDCS'2002)*, Vienna, Austria, 2002, 589–597. **Best Paper Award**

137. M. Nesterenko and A. Arora, “Local tolerance to unbounded byzantine faults”, *Proceedings of the 21st IEEE Symposium on Reliable Distributed Systems (SRDS’2002)*, Suita, Japan, 2002, 22–29
138. H. Zhang and A. Arora, “GS3: Scalable self-configuration and self-healing in wireless networks”, *Proceedings of the 21th ACM Symposium on Principles of Distributed Computing (PODC’2002)*, Monterey, 2002, 58–67
139. M. Nesterenko and A. Arora, “Dining philosophers that tolerate malicious crashes”, *Proceedings of the 22nd International Conference on Distributed Computer Systems (ICDCS’2002)*, Vienna, Austria, 2002, 191–198
140. M.-T. Sun, L. Huang, A. Arora, and T.-H. Lai, “Reliable MAC layer multicast in IEEE 802.11 wireless networks”, *Proceedings of the International Conference on Parallel Processing (ICPP’2002)*, Vancouver, Canada, 2002, 527–536
141. A. Arora, R. Jagannathan, and Y.-M. Wang, “Model-based fault detection in powerline networking”, (short paper) *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS’2002)*, Fort Lauderdale, 2002, 6pp
142. M. Gouda, C.-H. Huang, and A. Arora, “On the security and vulnerability of PING”, *Proceedings of the Fifth International Workshop on Self-Stabilizing Systems*, Lecture Notes in Computer Science, Springer-Verlag, v. 2194, Lisbon, Portugal, 2001, 124–135
143. S. Kulkarni, A. Arora, and A. Chippada, “Polynomial time synthesis of byzantine agreement”, *Proceedings of the IEEE Symposium on Reliable Distributed Systems (SRDS’2001)* New Orleans, 2001, 130–139
144. A. Arora, M. Demirbas, and S. Kulkarni, “Graybox stabilization”, *Proceedings of the International Conference on Dependable Systems and Networks (ICDSN’2001)*, Göteborg, Sweden, 2001, 389–398
145. A. Arora, R. Jagannathan, and Y.-M. Wang, “Model-based design of dependability in distributed systems”, *Proceedings of the Workshop on Concurrency in Distributed Systems*, Newcastle, UK, 2001, 61–68
146. A. Arora and M. Nesterenko, “Unifying stabilization and termination in message-passing systems”, *Proceedings of the 21st International Conference on Distributed Computer Systems (ICDCS’2001)*, Phoenix, 2001, 99–106
147. A. Arora, S. Kulkarni, and M. Demirbas, “Resettable vector clocks”, *Proceedings of the 19th ACM Symposium on Principles of Distributed Computing (PODC’2000)*, Portland, 2000, 269–278
148. S. Kulkarni and A. Arora, “Automating the addition of fault-tolerance”, *Proceedings of the Formal Techniques in Real-time and Fault-tolerant Systems (FTRTFTS’2000)* Pune, India, 2000, 82–93
149. Y.-M. Wang, W. Russell, A. Arora, J. Xu, and R. Jagannathan, “Towards dependable home networking: An experience report”, *Proceedings of the International Conference on Dependable Systems and Networks (ICDSN’2000)*, New York, 2000, 10 pages

150. Y.-M. Wang, W. Russell, and A. Arora, “A toolkit for building dependable and extensible home networking applications”, *Proceedings of the Fourth USENIX Windows Systems Symposium USENIX-WIN’2000*, Seattle, 2000, 101–112
151. M. Nesterenko and A. Arora, “Stabilization-preserving atomicity refinement”, *Proceedings of the 13th International Symposium on Distributed Computing (DISC’99)* Bratislava, Slovak Republic, 1999, 254–268
152. A. Arora, P. C. Attie, and E. A. Emerson, “Synthesis of fault-tolerant concurrent programs”, *Proceedings of the Principles of Distributed Computing (PODC’98)* 1998, 173–182
153. A. Arora and S. Kulkarni, “A theory of detectors and correctors”, *Proceedings of the International Conference on Distributed Computer Systems (ICDCS’98)*, 1998, 436–443
154. S. Kulkarni and A. Arora, “Low-cost fault-tolerances in barrier synchronization”, *Proceedings of the International Conference on Parallel Processing (ICPP’98)*, 1998, 132–139
155. S. Kulkarni and A. Arora, “Multitolerant repetitive byzantine agreement”, *Proceedings of the Foundations of Software Technology and Theoretical Computer Science (FSTTCS’97)*, Calcutta, India, 1997, 169–183
156. S. Kulkarni and A. Arora, “Once-and-forall management protocol (OFMP)”, *Proceedings of the Fifth International Conference on Computer Networks (ICNP’97)*, Atlanta, 1997, 87–94
157. A. Arora and M. G. Gouda, “Delay insensitive stabilization”, *Proceedings of the Third Workshop on Self-Stabilizing Systems*, Santa Barbara, Carleton University Press, 1997, 95–109
158. S. Kulkarni and A. Arora, “Compositional design of multitolerant repetitive byzantine agreement”, *Proceedings of the Third Workshop on Self-Stabilizing Systems*, Santa Barbara, Carleton University Press, 1997, 1–15
159. A. Arora and D. Poduska, “A timing-based schema for stabilizing information exchange in networks”, *Proceedings of the Third International Conference on Computer Networks*, Tokyo, Japan, 1995. **Highest rated paper in ICNP’95**
160. G. Varghese, A. Arora, and M. G. Gouda, “Self-stabilization by tree correction”, *Proceedings of the Second Workshop on Self-Stabilizing Systems*, Las Vegas, 1995
161. A. Arora and M. G. Gouda, “Load balancing: An exercise in constrained convergence”, *Proceedings of the Ninth International Workshop on Distributed Algorithms*, Le Mont Saint Michel, France, 1995, 183–197
162. A. Arora and S. Kulkarni, “Designing masking fault-tolerance via nonmasking fault-tolerance”, *Proceedings of the Fourteenth Symposium on Reliable Distributed Systems*, Bad Neuenahr, Germany, 1995, 174–185
163. A. Arora, M. G. Gouda, and G. Varghese, “Constraint-satisfaction as a basis for designing nonmasking fault-tolerance (extended abstract)”, *Proceedings of the Fourteenth International Conference on Distributed Computing Systems*, Poznan, Poland, 1994, 424–431
164. A. Arora, “Efficient reconfiguration of trees: A case study in the methodical design of nonmasking fault-tolerance”, *Proceedings of the Third International Symposium on Formal Techniques in Real Time and Fault-Tolerance*, Lubeck, Germany, 1994, 110–127

165. A. Arora and A. Singhai, “Fault-tolerant reconfiguration of trees and rings in networks”, *Proceedings of the Second International Conference on Network Protocols*, Boston, 1994, 221–228
166. A. Arora and M. G. Gouda, “Closure and convergence: A formulation of fault-tolerant computing”, *Proceedings of the Twenty-Second International Symposium on Fault-Tolerant Computing*, Boston, 1992, 396–403
167. A. Arora, S. Dolev, and M. G. Gouda, “Maintaining digital clocks in step (extended abstract)”, *Proceedings of the Fifth International Workshop on Distributed Algorithms*, Delphi, Greece, 1991, 71–79
168. A. Arora, M. G. Gouda, and T. Herman, “Composite routing protocols”, *Proceedings of the Second IEEE Symposium on Parallel and Distributed Processing*, Dallas, 1990, 70–78
169. A. Arora and M. G. Gouda, “Distributed reset”, *Proceedings of the Tenth Conference on Foundations of Software Technology and Theoretical Computer Science, Lecture Notes in Computer Science 472*, Springer-Verlag, 1990, 316–331
170. A. Arora, P. Attie, M. Evangelist, and M. G. Gouda, “Convergence of iteration systems (extended abstract)”, *Proceedings of Concur’90: Theories of Concurrency, Lecture Notes in Computer Science 458*, Springer-Verlag, 1990, 70–82

Short Conference Papers

171. J. He, D. Roy, M. McGrath, and A. Arora, “Mote-scale human-animal classification via micropower radar”, in *Proceedings of the 12th ACM Conference on Embedded Network Sensor Systems (SENSYS)*, pp. 328–329, 2014
172. J. Li, J. He, and A. Arora, “ThermoNet: Fine-grain building comfort-efficiency assessment”, *Proceedings of the Third ACM Workshop on Embedded Sensing Systems for Energy-Efficiency in Buildings (BuildSys)*, pp. 43–44, 2011.
173. K. Parker, S. Bapat, A. Arora, Y.-M. Kim, “Displacement-based people detection using coherent pulsed doppler radars”, *Proceedings of the Tenth International Conference on Ubiquitous Computing*, Seoul, South Korea September 2008
174. H. Zhang, L. Sang, and A. Arora, “Unraveling the subtleties of link estimation and routing in wireless sensor networks”, *Proceedings of the ACM Annual Conference of the Special Interest Group on Data Communications (SIGCOMM)*, 2 pages, 2008
175. M. Sridharan, R. Ramnath, E. Ertin, and A. Arora, “Mobility centric campus area sensor network for locality specific applications”, *Proceedings of the 4th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, November 2006, pp. 371–372
176. H. Zhang and A. Arora, “Brief Announcement: Continuous containment and local stabilization in path-vector routing”, *Proceedings of 24th ACM SIGACT-SIGOPS Symposium on Principles of Distributed Computing (PODC)*, 1 page, 2005
177. A. Arora, et al (30 authors), “Project ExScal (short abstract)”, *Proceedings of the 2nd IEEE DCOSS 2005 Special Session on “Distributed Sensor Systems in the Real World”*, invited paper, 2 pages, 2005

178. S. Kumar, A. Arora, and T.-H. Lai, "On the lifetime analysis of always-on wireless sensor network applications", *Proceedings of the 2nd IEEE International Conference of Mobile and Ad Hoc Sensor Systems (MASS)*, 3 pages, 2005
179. A. Arora, P. Sinha, E. Ertin, V. Naik, H. Zhang, M. Sridharan, and S. Bapat, "ExScal backbone network architecture", *Proceedings of the 3rd International Conference on Mobile Systems, Applications, and Services, (MOBISYS'05)*, 2 pages, 2005
180. E. Ertin, A. Arora, and S. Bapat, "Hybrid Sensor Network Experiment with OSU Kansei Testbed", *Proceedings of the Fourth International Conference on Information Processing in Sensor Networks (IPSN)*, Los Angeles, 1 page, April 2005

Edited Volumes

181. Special Issue of Distributed Computing on Stabilization, Springer Verlag Journal, 20(1), 2007
182. DCOSS'2007: Proceedings of the Third IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), Proceedings Springer, 2007
183. ICDCS'2005: 25th International Conference on Distributed Computing Systems, IEEE Computer Society Press, 2005
184. SENSYS'2004: 2nd Conference on Embedded Networked Sensor Systems, ACM, 2004
185. WSS'99: Fourth Workshop on Self-Stabilizing Systems, IEEE Computer Society Press, 111 pp., 1999

Book Articles

186. M. Sridharan, W. Zeng, W. Leal, X. Ju, R. Ramnath, H. Zhang, and A. Arora, "KanseiGenie: Software infrastructure for resource management and programmability of wireless sensor network fabrics". In *Next Generation Network Architecture* (Krishna Moorthy Sivalingam et al editors), Springer, 2010
187. S. Bapat and A. Arora, "Security in Ad-hoc and Sensor Networks", Security in Ad Hoc and Sensor Networks (edited by Raheem Beyah, Janise McNair, and Cherita Corbett), pp. 385-400, 2010
188. S. Bapat and A. Arora, "Stabilizing reconfiguration in wireless sensor networks", Security in Ad Hoc and Sensor Networks, ed. R. Beyah, J. McNair, C. Corbett, World Scientific Press, 2009
189. S. Kumar, A. Arora, and T.-H. Lai, "Maximizing the lifetime of an always-on wireless sensor network application: A case study", *Wireless Sensor Networks and Applications*, edited by Yingshu Li, My Thai, and Weili Wu, Springer Book Series on "Network Theory and Applications", 2008
190. H. Zhang, A. Arora, P. Sinha, L. 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, May 2007

191. M. Demirbas, A. Arora, and M. Gouda, "Pursuer-evader tracking in sensor networks", *Sensor Network Operations*, Chapter 9, IEEE Press, May 2006
192. M. Demirbas, A. Arora, and M. Gouda, "Pursuer-evader tracking in sensor networks", *Sensor Network Operations*, IEEE Press, 2006
193. M. G. Gouda, Y-R. Choi, and A. Arora, "Antireplay protocols for sensor networks", *Handbook on Theoretical and Algorithmic Aspects of Sensor, Ad Hoc Wireless, and Peer-to-Peer Networks*, edited by Jie Wu, CRC Press, 2004
194. A. Arora, R.Jagannathan, and Y.-M. Wang, "Model-based design of dependability in distributed systems", *Concurrency in Distributed Systems*, edited by Paul Ezhilchelvan and Alexander Romanovsky, Kluwer Academic Publishers, 2002, 23–40
195. A. Arora, "Compositional design and mechanical synthesis of dependability", invited for *Mechanization of Inference*, edited by N. Tennent, Oxford University Press, to appear
196. A. Arora, "The many facets of system stabilization", invited for *Encyclopedia of Distributed Computing*, edited by Partha Dasgupta and Joseph E. Urban, Kluwer Academic Publishers, to appear
197. A. Arora, M. G. Gouda and G. Varghese, "Constraint-satisfaction as a basis for designing nonmasking fault-tolerance", invited for *Specification of Parallel Algorithms*, edited by G. E. Blelloch, K. M. Chandy, and S. Jagannathan, DIMACS Series in Discrete Mathematics and Theoretical Computer Science, Volume 18, American Mathematical Society, 1994, 341-356

Reviews

198. A. Arora, "Comments on Apt and Olderog's 'Verification of Sequential and Concurrent Programs' ", invited book review, *ACM SIGACT News*, 29(3), 1998, 46-48
199. A. Arora and P. Attie, "Honoree Dijkstra says students should continually challenge", report on *Symposium on Frontiers in Computing – A tribute to Edsger W. Dijkstra*, *IEEE Computer*, December 1990, 100-101

Patents

- A. Arora, W. Russell, Y.M Wang and J.Xu, "Device Adapter for Automation Systems", Issued 2003, Patent No. US patent 6535110
- A.Arora, P.Bahl, W.Russell, Y.M Wang and J.Xu, "Automation System for Controlling and Monitoring Device and Sensors", Issued 2005, Patent No. US patent 6961763
- A. Arora, W. Russell and Y.M Wang, "Weak Leader Election", Issued 2006, Patent No. US Patent 7139790
- A. Arora, W. Russell and Y.M Wang, "Pattern and Model-based Power Line Monitoring", Issued 2007, Patent No. US Patent 7133729

Research Consultation

Microsoft Research, Seattle, 1999-

- Dependable, extensible home networking
- Model-based diagnosis and Gray-box fault-tolerance
- Framework for continuous self-maintenance of internet services

Telcordia/Bellcore, Morristown, 1998-1999

- Framework for robust composable services
- Fault-tolerance in multi-level caching for integrated telephony networks

Sankhya Vahini, 2000-2001

- Technical Advisory Board

Invited Presentations

“Machine Learning with Limited Signals at Mote-Scale”

- Microsoft Research, Bangalore, India, June 2018

“Cybersecurity Issues in the Internet of Things”

- Sahyadiri Conclave, (An interaction with Nobel Laureates), India, 2018

“Social Sensing Services for Smart Communities”

- Sahyadiri Conclave, (An interaction with Nobel Laureates), India, 2018

“Transitioning IoT Edge Networks to Smart Communities”

- Indian Institute of Technology, Delhi, India, 2017

“Just the Definition, Ma’am: On Zero Knowledge for Common Languages”

- 19th International Symposium on Stabilization, Safety, and Security of Distributed Systems, Workshop on Elegance in Computing: The Legacy of Mohamed Gouda, Boston, 2017

“Cybersecurity of Internet of Things (IoT)”

- Association of General Accountants Annual Meeting, Columbus Chapter, 2017

“Taming the Environment in Sensor Systems: A Case for Robust Design”

- *Keynote Speaker*, Eleventh International Conference on Distributed Computing in Sensor Systems (DCOSS), Washington DC, May 2016

“Obfuscation of Sensing from Radio Communications”

- *Distinguished Lecturer*, Department of Computer Science, Norfolk State University,

April 2017

“Obfuscation of Sensing from Radio Communications”

- *Keynote Speaker*, Translational Data Analytics Fall Forum, October 2016

“Mote-Scale Learning”

- Ninth International Conference on Wireless Communication and Sensor Networks, Allahabad, India, 2013

“Architecture of Scalable Mobile Computing”

- Sixth Science Conclave, (An interaction with Nobel Laureates), India, 2013

“Extreme Scale MANETs”

- *Keynote Speaker*, 8th International Conference on Wireless Communication and Sensor Networks (WCSN), Thailand, 2012
- Fifth Science Conclave, (An interaction with Nobel Laureates), India, 2012

“Rethinking Security for a World of Networked Devices”

- *Keynote Speaker*, 13th International Conference on Distributed Computing and Networking (ICDCN), 2012

“ThermoNet: Fine-Grain Assessment of Building Comfort and Efficiency”

- OSU Department of Integrated Systems Engineering, 2011

“Wireless Sensor Kits in Education”

- Fourth Science Conclave, (An interaction with Nobel Laureates), India, 2011

“Physical Layer Security in Wireless Sensor Networks”

- Seventh IEEE Conference on Wireless Communication & Sensor Networks (WCSN), 2011

“Science by the People, for the People, of the People”

- Second Science Conclave (An interaction with Nobel Laureates), India, 2009

“Rethinking Security in Wireless Sensor Networks with Physical Information ”

- *Keynote Speaker*, Fifth IEEE Conference on Wireless Communication and Sensor Networks (WCSN), India, December 2009

“End to End WSN application design”

- Fifth IEEE Conference on Wireless Communication and Sensor Networks (WCSN), India, December 2009

“Exploiting Rich Information in WSNs: A Case for Low Power Radar”

- Fifth IEEE Conference on Wireless Communication and Sensor Networks (WCSN),

India, December 2009

“PeopleNet: Sensing by the People, for the People, and of the People”

- IBM India R&D Labs, April 2009
- Motorola R&D India Labs, April 2009
- Microsoft Research India, March 2009

“Wireless Security without Shared Secrets”,

- CSE Department, Indian Institute of Science, Bangalore, April 2009

“Low Power Signal Processing: High Relative Resolution for the Price of Low Absolute Resolution”,

- Joint IISc-DRDO Seminar, Bangalore, April 2009
- Indian Institute of Information Technology, Allahabad, January 2009

“PIR Wireless Sensor Networks”,

- Joint IISc-DRDO Seminar, Bangalore, April 2009 (with Vinayak Naik)

“Unattended Ground Sensors versus Wireless Sensor Networks”,

- DRDO, Bangalore, India, April 2009

“HCI in Wireless Sensor-Actuator Network Computing”,

- Second IEEE International Conference on Intelligent Human Computer Interaction (IHCI 2010), IIT, Allahabad, January 2009 (Invited Speaker)

“KanseiGENIE: GENI-fying and Federating Autonomous Wireless Sensor Network Systems”,

- 3rd NSF GENI Engineering Conference, October 2008

“Primitives for Physical Trust”,

- 10th International Symposium on Stabilization, Safety, and Security of Distributed Systems, Detroit (**Keynote Speech**), November 2008
- IEEE Communication Theory Workshop, US Virgin Islands (**Invited Talk**), May 2008

“Sensing By the People, For the People, and Of the People”

- International Workshop on Mobile Device and Urban Sensing, St. Louis, (**Keynote Speech**), April 2008

“Lessons from an Extreme Scale Wireless Sensor Network Expedition”,

“Codesign of a Tracking Application and its Networking Support”,

- Indian Institute of Science, Bangalore, November 2007

“Disruptive Technology Elements of Sensor Networks”,

- Los Alamos National Labs, Los Alamos, September 2007
- “On Sensorset 2.0: Getting Sensornet 1.0 Right”,
 - Microsoft Research Faculty Summit, Redmond, Washington, July 2007
- “ A Little Geometry Goes a Long Way: On Scalable Snapshots”,
 - Dagstuhl on Geometry in Sensor Networks, Wadern, Germany, April 2007
- “ExScal: A Perspective on Large Scale Wireless Sensor Networks”, December 2006
 - Second Intl. Conf. on Wireless Communication and Sensor Networks (WCSN), Allahabad, India (**Keynote Speech**), December 2006
- “A Personal Perspective on Large Scale Wireless Sensor Networks”,
 - Motorola Labs, December 2006
- “Geometry-based Distance Sensitivity in Network-Assisted Object Tracking”,
 - NSF Workshop on Geometric Approaches to Ad Hoc and Sensor Networks, Santa Barbara, June 2006
- “The State of the Art in Wireless Sensor Network Applications” and “Research Issues in Large Scale Wireless Sensor Networks”,
 - ETRI, Daejeon, Korea, May 2006
 - Samsung SAIT, Seoul, Korea, May 2006
 - Kookmin University, Seoul, Korea March 2006
- “ExScal: A Perspective on Large Scale Wireless Sensor Networks”,
 - Seventh International Conference on Mobile Data Management (MDM’06), Nara, Japan, (**Keynote Speech**), May 2006
- “Experimentation in Large Scale Wireless Sensor Networks”,
 - Osaka University, May 2006
- “On Spatial Scaling in Sensor Networks”,
 - University of Notre Dame, January 2006
- “Games in Dense Sensor Cells”,
 - Nokia Follow-on Workshop in Large Scale Sensor Networks, San Diego, October 2005
- “Lessons from an ”Extreme Scale” Expedition”,
 - Netted Sensors Community Workshop, Mitre, McLean VA, October 2005
- “ExScal: Elements of an Extreme Scale Wireless Sensor Network”,

- Microsoft Research, Redmond, July 2005
- “Project ExScal: Some Issues in the Extreme Scaling of Sensor Networks”,
 - National Taiwan University, Workshop on Wireless Sensor Networks, Taipei, Taiwan, March 2005
 - Kent State University, Akron, March 2005
- “Lessons from an Extreme Scale WSN Experiment”,
 - Nokia Workshop on Large Scale Wireless Sensor Networks and their Applications, Kuusamo, Finland, February 2005
- “Some Lessons in Self-Stabilization from Experiments in Sensor Networking”,
 - BIRS-PIMS Seminar on Self-Stabilization, Banff, Canada, October 2004
- “Experiments in Sensor Network Applications: Kansei Testbed, ”,
 - NSF HDCCSR Workshop, College Park, Maryland, June 2004
- “Cross Layer issues in sensor network: A Line in The Sand, ”,
 - Naval Research Lab Workshop on Cross Layer Issues, Washington DC, June 2004
- “Exemplars of Algorithmic Techniques for Large-Scale Sensor Networks”,
 - NSF NeTS (Sensor Networks Program) Informational Workshop, LA, February 2004
- “On Local Healing in Large Scale Networks”,
 - MIT, August 2003
- “Taking Stabilization to the Masses: Problems, Opportunities & Progress”,
 - Seventh Symposium on Self-Stabilizing, June 2003. **Keynote address**
- “On Local Healing in Large Scale Sensor Networks”,
 - University of California at Berkeley NEST Retreat, Berkeley, June 2003
 - Mini-Workshop on Fundamentals of Sensor Webs (FuSe), UC at Berkeley, May 2003
- “Self-stabilization in Network Services”
 - Carnegie Mellon University, February 2003
- “Scalable Fault-Tolerance and Security in Sensor Network Platforms”
 - Electrical Engineering, The Ohio State University, January 2003
- “On Modeling and Tolerating Incorrect Software”
 - CIRM Seminar on Self-Stabilization, Luminy, France, October 2002
- “Deconstructing Self-Stabilization”

- CIRM Seminar on Self-Stabilization, Luminy, France, October 2002
- “Protection of Network Embedded Systems via Fault-Tolerance”,
 - NSF-OSTP Technical Workshop on Critical Infrastructure Protection, Panel on Network Embedded Systems, September 2002
- “Stabilization and Self-Healing”
 - DARPA Self-Healing Workshop, Washington DC, July 2001
- “Adaptive Tolerance of Unanticipated Faults: Stabilization Revisited”
 - DARPA FAST Workshop, Washington DC, July 2001
- “Specification-based Dependability”
 - Vanderbilt University, Nashville, April 2001
- “Stabilization in Device Networks: An Experience Report and a Manifesto”
 - Dagstuhl Seminar on Self-Stabilization, Wadern, Germany, October 2000
- “Model-based Fault-tolerance”
 - Logic Seminar, Microsoft Research, Redmond, August 2000
- “Value-level versus State-level Reasoning in Data Type Refinement”,
 - Edsger W. Dijkstra Symposium, University of Texas at Austin, May 2000
- “Fault-tolerance in Component Based Systems”,
 - Mini-Symposium on Soft. Engg. with Components, Rice University, March 2000
- “Gray-Box Components”
 - NASA, Ames, November 1999
 - EPFL, Lausanne, Switzerland, July 1999
- “Dependability Components and Component Implementation”
 - Microsoft Research, Seattle, February 1999
 - University of Texas at Austin, January 1999
- “Dependability via Components”
 - **Distinguished Seminar**, Kansas State University, November 1998
 - Computer Engineering Seminar Series, OSU, November 1998
- “Components for Fault-tolerance: Theory and Application”

- Dagstuhl Seminar on Self-Stabilization, Wadern, Germany, September 1998
- IBM T. J. Watson Research Center, Hawthorne, July 1998
- Bell Labs, Holmdel, July 1998
- Bellcore, Morristown, June 1998
- University of Cincinnati, March 1998
- University of Houston, February 1998

“Engineering Fault-tolerant Network Systems”

- Lucent Technologies, Columbus, April 1997

“Multitolerant Computing: Foundation and Design”

- Purdue University, West Lafayette, December 1996
- Brown University, Providence, October 1996
- SUNY, Albany, October 1996
- University of Iowa, Iowa City, May 1996

“Compositional Design and Mechanical Synthesis of Dependability”

- Interdisciplinary Seminar on Mechanization of Inference, OSU, November 1996

“Designing Multitolerance”

- Osaka University, Japan, November 1995
- Nara Institute of Science and Technology, Japan, November 1995
- Florida International University, Miami, November 1995

“Designing Masking Tolerance from Nonmasking Tolerance”

- Laboratoire du Recherche d’Informatique, Paris, September 1995
- Wayne State University, Detroit, October 1995

“Constraint Satisfaction as a Basis for Designing Nonmasking Tolerance”

- University of Washington, St. Louis, May 1994
- Dimacs Workshop on Specification of Parallel Algorithms, Princeton, May 1994

“A Foundation of Fault-Tolerant Computing”

- University of Virginia, Fairfax, September 1994
- Carnegie-Mellon University, Pittsburgh, May 1992
- The Ohio State University, Columbus, April 1992
- University of Delaware, Newark, April 1992
- AT&T Bell Laboratories, Murray Hill, March 1992
- Bell Communications Research Labs, Morristown, March 1992
- The University of Maryland, Baltimore County, February 1992
- The University of Texas, Dallas, February 1992
- Technische Universiteit Eindhoven, The Netherlands, January 1991
- Indian Institute of Technology, New Delhi, December 1991
- Indian Institute of Technology, Kanpur, December 1991

“Distributed Reset”

- UT-Austin Research Review, April 91
- Indian Institute of Technology, New Delhi, December 1990
- Indian Institute of Science, Bangalore, December 1990

“Convergence of Iteration Systems”

- Indian Institute of Technology, New Delhi, December 1989

Unpublished Workshop Presentations

“SONYC Wireless Sensor Network for Acoustic Classification”

- SONYC Annual Meeting, NYU, New York, March 2019

“Deep Machine Learning with Motes”

- Microsoft Research, Bangalore, India, June 2018

“Connectivity Challenges for Delivering Community Services (for Safety and Mobility)”

- NSF Connected Rural Communities Workshop, Charlottesville, Virginia, 2017

“Smart Columbus: Community Services for All?”

- Midwest Big Data Hub All Hands Meeting, Omaha, Nebraska, 2017

“Smart Community Operating System and Connectivity for Delivering Community Services to Urban Underserved”

- NSF CPS Workshop on Challenges and Opportunities for Bringing Smart Services to Underserved Urban Communities in Washington, DC, 2017

“WSNs for Disaster Management”

- NSF Workshop on Big Data in Disaster Management, Arlington, VA, 2013

“Wireless Sensor Networks for Protecting Wildlife and Human”

- Third Indo-US Workshop on Pervasive Comm. and Computing Collaboration, 2013
 - Second Indo-US Workshop on Pervasive Comm. and Computing Collaboration, 2012
- “Repurposable, Rapidly Deployed Wireless Sensor Networks” vspace*1.5mm
- NSF/CCC Workshop on Computing for Disaster Management, 2012
- “New Concepts in Wildlife and Human Protection using Virtual Fences, Activity Region Monitors, and Forest Probes”
- Workshop on Application of Wireless Sensor Networks for Protection of Forests and Wildlife, Safety of Mines and Health Care, Thailand, 2012
- “NSF-DIT Initiative for Wildlife and Human Protection using Virtual Fences, Activity Region Monitors, and Forest Probes”
- Workshop on Application of Wireless Sensor Networks for Protection of Forests and Wildlife, 2011
 - Workshop Safety of Mines and Health Care (WCSN) India, 2011
- “GENI and Science Education Kits”
- NSF Workshop on Distributed Systems Education, 2012
 - GENI Engineering Conference (GEC-10), 2011
- “Experiences in Building Wireless Sensor Networks for Surveillance”
- NSF IUCRC Planning Meeting, May 2010
- “Virtualization Support for Rapidly Deployed Sensor Network Fabrics for Surveillance”
- NSF IUCRC Kickoff Meeting, May 2010
- “KanseiGENIE: GENI-fying & Federating Autonomous Wireless Sensor Network Systems”
- GEC-5, Seattle, July 2009
 - BBN, June 2009
- “Trust in Wireless Sensor Network Fabrics”,
- AFRL-SAIC AMSA Program Kickoff, July 2009
- “KanseiGENIE: GENI-fying & Federating Autonomous Wireless Sensor Network Systems”,
- 3rd NSF GENI Engineering Conference, October 2008
- “Kansei: A full-featured WSN testbed”,
- Embedded Command and Control (DARPA/NAVAir) Workshop, Lihue, Hawaii, August 2007
- “Towards Closing the Loop in ExScal: Pursuer-Evader Hybrid Tracking Demonstration & Experiments”
- DARPA NEST Workshop, Richmond Field Station, Berkeley, August 2005
- “The First ExScal Demonstration & Experiments”

- DARPA NEST Workshop, Tampa, December 2004
- “ExScal Report”
 - DARPA NEST Workshop, Charleston, July 2004
- “Minitask Report on Robust NEST Systems”
 - DARPA NEST Workshop, Santa Fe, December 2003
- “Minitask Report on Robust Messaging Services”
 - DARPA NEST Workshop, Santa Fe, December 2003
- “ Report on a *LineInTheSand*”
 - DARPA NEST Workshop, Santa Fe, December 2003
- “ Overview of *Project Echelon*”
 - DARPA NEST Workshop, Santa Fe, December 2003
- ‘Experiences and Lessons Learned in *ALineInTheSand*’
 - DARPA NEST Extreme Scale Planning Workshop, Washington D.C., Nov 2003
- “Tradeoff, Algorithmic and Validation Issues in Scaling Robustness in Sensor Networks”
 - DARPA NEST Planning Meeting, MIT, Boston, September 2003
- “*ALineInTheSand*”
 - MacDill AirForce Base DARPA NEST Field Experiment, Tampa, August 2003
- “On Tradeoffs in Scalable, Dependable NEST services”
 - DARPA NEST Workshop, San Francisco, July 2003
- “On Scalable, Dependable NEST services for Tracking”
 - DARPA NEST Workshop, San Diego, January 2003
- “On Effects of Faults in Vibration Control of Fairing Structures”
 - DARPA NEST Workshop, San Diego, January 2003
- “Experiments on Effect of Faults in NEST Control Applications and Services”
 - Beoing NEST Workshop, St. Louis, August 2002
- “Local Self-Stabilizing (in Spite of Byzantine Faults)”
 - DARPA NEST Workshop, Bar Harbor, July 2002
- “Self-Stabilizing Tracking and Biconnectivity in the Berkeley NEST Platform”
 - DARPA NEST Workshop, Bar Harbor, July 2002
- “Self-Stabilization Implementation and Synthesis Frameworks for NEST”

- DARPA NEST Workshop, Napa Valley, February 2002
- “Self-Stabilizing Routing in Wireless Embedded Systems” (with Mikhail Nesterenko)
 - Workshop on Reliability in Embedded Systems, New Orleans, November 2001, 16–22
- “Revisiting Locality” (with Mikhail Nesterenko)
 - Workshop on Self-Stabilizing System, Lisbon, Portugal, October 2001
- “Self-Stabilization in the Berkeley and Boeing NEST Platforms”
 - DARPA NEST Workshop, Huntington Beach, September 2001
- “Self-Stabilization in Network Embedded Software Technology (NEST)”
 - DARPA NEST Workshop, Napa Valley, May 2001

Educational Activities

Undergraduate-level Teaching

Introduction to Network Security; Computer Networks; Introduction to Operating Systems; Operating Systems Laboratory

Graduate-level Teaching

Introduction to Wireless Sensor Networks; Introduction to Distributed Computing; Fault Tolerant Distributed and Networked Systems; Research Seminar in Distributed Computing and Networks; Advanced Operating Systems; Advanced Operating Systems Laboratory

Ph.D. Students:

Sandeep Kulkarni (1999, OSU Presidential Fellow, now Professor at Michigan State)
 Bill Leal (2001, Graduate School Fellow, The Samraksh Company)
 Murat Demirbas (2004, Assoc. Professor at University of Buffalo)
 Hongwei Zhang (2006, Assoc. Professor at Iowa State University)
 Vinayak Naik (2006, Assoc. Professor at Indian Institute of Information Technology, Delhi)
 Sandip Bapat (2006, Principal Engineer, Samsung)
 Vinod Krishnan Kulathumani (2008, University of West Virginia)
 Hui Cao (2008, Senior Engineer, Qualcomm)
 Mukundan Sridharan (2011, The Samraksh Company)
 Lifeng Sang (2010, Director of Infrastructure Security, AirBnB)
 Wenjie Zeng (2012, Senior Software Engineer, Google Inc.)
 Jing Li (2012, Siemens Corp.)
 Taewoo Kwon (2014)
 Jin He (2015, Amazon)
 Ingy Youssef Ramzy (2016, State of Ohio Cybersecurity Fellow)
 Yue Qiao (2017, OSU Presidential Fellow, Google Inc.)

Ph.D. Dissertation Committee Member: 19 students

Ph.D. External Reviewer: Young-Ri Choi, University of Texas at Austin, USA
 Huiqing Wang, Nanyang Technical University, Singapore

Michael Siegel, Christian-Albrechts University, Kiel, Germany
Neeraj Mittal, University of Texas at Austin
Ofer Harmoni, Ben Gurion University, Israel
U. Raviteja, Indian Institute of Science, Bangalore
Preetam Suman, Indian Inst. of Inf. Technology, Allahabad
Anupam Aggarwal, Indian Inst. of Inf. Technology, Allahabad
Vijay Semwal, Indian Inst. of Inf. Technology, Allahabad
Manjusha Pandey, Indian Inst. of Inf. Technology, , Allahabad

Ph.D. Candidacy Committee Member: 30 students

M.S. Comprehensive/Ph.D. Qualifying Examiner: Au, Wi, and Sp 1993-95, 98, 00-01

M.S. Thesis Students: 11

Judge, OSU Undergraduate Honors Project Competition: 1999

Judge, OSU Hackathon: 2012

Professional Activities

Editorship

ACM Transactions on Sensor Networking, *Editor*, 2004–2009

Real Time Systems, *Editor*, 2003–

Wiley Encyclopedia of Computer Science and Engineering, *Editor*, 2002

IEICE Transactions on Communication and IEEE Transactions on Information and Systems, *Guest Editor*, 2003

Distributed Computing, Springer-Verlag, *Guest Editor*, 1999–2007

New Generation Computing, Springer-Verlag, 1997–

Steering Committee Member

IEEE International Conference on Wireless Communication and Sensor Networks (WCSN), 2010–2012

ACM Conference on Embedded Networked Sensor Systems (SenSys), 2004–2008

International Symposium on Self-Stabilizing Systems, 2001–

Program Chair

Workshop on Unlocking the Power of Edge Computing, ASPLOS 2019 Conference, Providence, RI, 2019 (co-chair)

Workshop on Unlocking the Power of Edge Computing, NSF CPS PI Meeting, Arlington, VA, 2018 (co-chair)

14th IEEE International Conference on Mobile and Adhoc Sensor Systems, MASS, Orlando,

Florida, 2017 (co-chair)

Workshop on Challenges and Opportunities for Bringing Smart Services to Underserved Urban Communities, Arlington, VA, 2017 (co-chair)

3rd COMSNET Workshop on Networked Healthcare Technology, netHealth, Bangalore, India, 2013 (co-chair)

25th International Conference on Distributed Computing Systems, Columbus, Ohio, 2005

2nd ACM Conference on Embedded Networked Sensor Systems (SenSys), Washington DC, 2004 (co-chair)

BIRS-PIMS Seminar on Self-Stabilization, Banff, Canada, 2004 (co-chair)

1st International Workshop on Assurance in Distributed Systems and Networks, Rhode Island, 2002 (co-chair)

CIRM Seminar on Self-Stabilization, Luminy, France, 2002 (co-chair)

Dagstuhl Seminar on Self-Stabilization, Saarbrücken, Germany, 2000 (co-chair)

4th International Workshop on Self-Stabilizing Systems, Austin, 1999

Dagstuhl Seminar on Self-Stabilization, Saarbrücken, Germany, 1998 (co-chair)

Program Vice-Chair

IEEE International Conference on Network Protocols (Area Chair), 2014

11th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Lyon, 2009

Third IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), Santa Fe, June 2007

24th International Conference on Distributed Computing Systems, Tokyo, 2004

23rd International Conference on Distributed Computing Systems, Providence, 2003

19th International Conference on Distributed Computing Systems, Austin, 1999

18th International Conference on Distributed Computing Systems, Amsterdam, 1998

General Chair

8th International Conference on Mobile Ad-hoc and Sensor Networks (MSN), Chengdu, China, 2012

16th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Paderborn, Germany, 2014

20th IEEE Symposium on Reliable Distributed Systems Workshops, New Orleans, 2001

Panels Chair

8th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Dallas, 2007

Awards Committee Member

17th Symposium on Reliable Distributed Systems, West Lafayette, 1998
15th International Conference on Distributed Computer Systems, Vancouver, 1995

Program Committee Member

IoT Connectivity and Infrastructures Track MMSys, 2017
14th International Conference on Embedded Wireless Systems & Networks (EWSN), 2017
13th International Conference on Embedded Wireless Systems & Networks (EWSN), 2016
12th International Conference on Embedded Wireless Systems & Networks (EWSN), 2015
The 11th International Conference on Emerging Networking EXperiments and Technologies (CoNEXT), 2015
33rd IEEE Real-Time Systems Symposium (RTSS), 2012
Mobile Sensor Networks (MSN), 2012
32nd IEEE Real-Time Systems Symposium (RTSS), 2011
WCSN: International Conference on Wireless Communication and Sensor Networks, 2011
13th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), 2011
8th ACM Conference on Embedded Networked Sensor Systems (SenSys), San Diego, 2010
12th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), New York, 2010
9th Intl. Conf. on Information Processing in Sensor Networks (IPSN), St. Louis, 2010
10th Intl. Conf. on Principles of Distributed Systems (OPODIS), 2010
9th Intl. Conf. on Information Processing in Sensor Networks (IPSN), St. Louis, 2010
IEEE International Conference on Communications (ICC-CISS), Dresden, 2009
10th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Detroit, 2008
28th International Conference on Distributed Computing Systems (ICDCS), Beijing, 2008
5th Workshop on Embedded Networked Sensors (HotEmNets), Charlottesville, 2008
7th Intl. Conf. on Information Processing in Sensor Networks (IPSN), St. Louis, 2008
26th ACM Symposium on Principles of Distributed Computing (PODC), Portland, 2007
9th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Paris, 2007
27th International Conference on Distributed Computing Systems (ICDCS), Toronto, 2007
26th Symposium on Reliable and Distributed Systems (SRDS), 2007
IEEE Real-time Systems Symposium (RTSS), 2007
8th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Dallas, 2007
6th Intl. Conf. on Principles of Distributed Systems (OPODIS), 2006
14th International Conference on Network Protocols (ICNP), Santa Barbara, 2006
4th ACM Conference on Embedded Networked Sensor Systems (SenSys), Boulder, 2006

5th Intl. Conf. on Information Processing in Sensor Networks (IPSN), Nashville, 2006
2nd International Workshop on Wireless Measurement (WinMee), Boston, 2006
5th Intl. Conf. on Principles of Distributed Systems (OPODIS), Boston, 2005
13th International Conference on Network Protocols (ICNP), Toronto, 2005
3rd ACM Conference on Embedded Networked Sensor Systems (SenSys), San Diego, 2005
IEEE Real-time Systems Symposium (RTSS), 2005
High Assurance and Systems Engineering (HASE) 2005
24th Symposium on Reliable and Distributed Systems, Florida (SRDS), 2005
2nd IEEE Workshop on Embedded Networked Sensors (EmNetS-II), Australia, 2004
3rd Intl. Workshop on Assurance in Distributed Systems and Networks (ADSN), Tokyo, 2004
2nd ACM Intl. Workshop on Wireless Sensor Networks and Applications (WSNA), San Diego, 2003
2003 International Workshop on Dependable Embedded Systems, Florence, Italy
1st ACM Conference on Embedded Networked Sensor Systems, Los Angeles, 2003
2003 ACM Workshop on Survivable and Self-Regenerative Systems, Fairfax, VA, 2003
6th International Symposium on Self-Stabilizing Systems, San Francisco, 2003
1st Intl. Workshop on Assurance in Distributed Systems and Networks, Vienna 2002
5th International Workshop on Self-Stabilizing Systems, Lisbon, Portugal, 2001
20th IEEE Symposium on Reliable Distributed Systems, New Orleans, 2001
21st International Conference on Distributed Computing Systems, Phoenix, 2001
Workshop on Concurrency in Dependable Computing, Newcastle, UK, 2001
19th ACM Symposium on Principles of Distributed Computing, Portland, 2000
6th Intl. Sym. on Formal Tech. in Real-time and Fault-tolerant Systems, India, 2000
8th International Conference on Network Protocols, Osaka, Japan, 2000
19th IEEE Symposium on Reliable Distributed Systems, Nuernberg, 2000
7th International Conference on Network Protocols, Toronto, 1999
International Symposium on Autonomous Decentralized Systems, Tokyo, 1999
6th International Conference on Network Protocols, Austin, 1998
17th IEEE Symposium on Reliable Distributed Systems, W. Lafayette, 1998
International Conference on Parallel Processing, Minneapolis, 1998
10th Intl. Conf. on Soft. Engg. and Know. Engg., San Francisco, 1998
5th International Conference on Network Protocols, Atlanta, 1997
3rd Workshop on Self-Stabilizing Systems, Santa Barbara, 1997
15th International Conference on Distributed Computer Systems, 1995
12th IEEE Symposium on Reliable Distributed Systems, 1993

Tutorials Committee Member

37th Annual IEEE/IFIP International Conference on Dependable Systems and Networks, Edinburgh, 2007

Session Chair

8th International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS), Dallas, 2007

21st International Conference on Distributed Computing Systems, Phoenix, 2001

19th International Conference on Distributed Computing Systems, Austin, 1999

18th International Conference on Distributed Computing Systems, Amsterdam, 1998

The 1995 International Conference on Network Protocols, Tokyo

15th International Conference on Distributed Computer Systems, Vancouver, 1995

14th International Conference on Distributed Computing Systems, Poznan, 1994

Publicity Co-Chair

20th International Conference on Distributed Computer Systems, Taipei, Taiwan, 2000

The 1996 International Conference on Network Protocols, Columbus

Organizer

First OSU-LANL IRWIN Workshop, September 2008

MCC Workshop on Self-Stabilizing Systems, Austin, 1989

Referee

ACM Transactions on Networking; Acta Informatica; Computer Networks; Distributed Computing; IEEE Computer; IEEE Transactions on Computers; IEEE Transactions on Networking; IEEE Transactions on Parallel and Distributed Systems; IEEE Transactions on Software Engineering; Information Processing Letters; Information and Software Technology; Journal of Computer and Software Engineering; Journal of Computers and Electrical Engineering; Journal of Parallel and Distributed Computing; Journal of VLSI Design; Science of Computer Programming; Software Testing, Verification, and Reliability; Software Practice and Experience; and many conferences

Review Panel Member and Proposal Reviewer

National Science Foundation; US-Israeli Science Foundation; Israeli Science Foundation; Government of the Hong Kong Special Administrative Innovation and Technology Commission; Qatar National Research Foundation

Book Reviewer

Prentice Hall, McGraw-Hill, Kluwer, Irwin, John Wiley, BrooksCole

Member

ACM, special interest in Algorithms and Computation Theory
IEEE, special interest in Fault-Tolerant Computing

University Activities (partial list)

OSU Representative, Smart Columbus Operating System Charter Team, 2019-
Member, TDAI Director Search Committee, 2019-
Member, OSU Cybersecurity Working Group, 2018-
Member, OSU CHRP Oversight Committee, 2019-
Member, Smart Campus (SMART@OSU) Faculty Engagement Group, 2018-
Member, Smart Campus (SMART@OSU) Strategy Committee, 2018-
Member, OSU IoT Conference Planning Committee, 2017-
Member, Chair Search Procedural Committee, Department of Computer Science and Engineering, 2017
Member, Smart and Connected Columbus Advisory Committees on Integrated Data Environment, Smart Street Lighting, Transit and Pedestrian Safety, 2016-
Member, OSU Smart Transportation Core Committee , 2015-
Member, State of Ohio Cyber Range Committee, Cybersecurity Testbed Subcommittee, 2015-
Member, Institute for Sensing Systems Executive Committee, 2008-
Member, Institute for Sensing Systems Planning Committee, 2006-2008
Member, College of Engineering Strategic Planning Committee, 2005-2006
Member, College of Engineering Honors and Awards Committee, 2003-2008
Member, College of Engineering Sabbatical Committee, 2002-2006
Member, University Research Computing Advisory Committee (RCAC), 2002-2003
Member, CSE Chair Search Committee, 2002-2008
Elected Member, CSE Advisory Committee, 1995-1997; 2001-2005
Member, CIS-EE Networking Eminent Scholar Award and Search Committees, 2001-2002, 2005-2006; Chair, 2003
Coordinator, CIS Distinguished Lecture Series, 1996-1999
Chair, CIS Ad hoc Committee on Ph.D. Program, 1995-1996
Coordinator, CIS Seminar Series, 1993-1999