

VITA

Anish Arora

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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; fault-tolerant, secure and timely computing;
distributed systems and networks; embedded systems networking; 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 -
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

IEEE Fellow, 2008

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

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

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, Dhableswar 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

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. L. Sang, A. Arora, H. Zhang, “On link asymmetry and one-way estimation in wireless sensor networks”, *ACM Transactions on Sensor Networks (TOSN)*, to appear
2. 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 (TAAS)*, special issue on “Self-adaptive and Self-organizing Wireless Networking Systems”, to appear
3. 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
4. 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
5. 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

6. 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
7. H. Cao, E. Ertin, and A. Arora, “MiniMax equilibrium of networked differential games”, *ACM Transactions on Autonomous and Adaptive Systems (TAAS)*, 3(4), 2008
8. A. Ebnenasir, 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
9. 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
10. 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
11. 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
12. 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
13. H. Zhang and A. Arora, “Guaranteed fault containment and local stabilization in routing, *Computer Networks (Elsevier)*, 50(18), December 2006, pp. 3585–3607
14. 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
15. A. Arora and H. Zhang, “LSRP: Local stabilization in shortest path routing, *IEEE/ACM Transactions on Networking*, 14(3), June 2006, pp. 520–531
16. 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
17. 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
18. A. Arora, S. Kulkarni, and M. Demirbas, “Resettable vector clocks”, *Journal of Parallel and Distributed Computing (JPDC)*, 66(2), February 2006, pp. 221–237
19. 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
20. A. Arora and M. Nesterenko, “Unifying stabilization and termination in message-passing systems”, *Distributed Computing*, 17(3), March 2005, pp. 279–290

21. A. Arora and M. Theimer, “On modeling and tolerating incorrect software”, *Journal of High Speed Networks*, 14(2), 2005, pp. 109–134
22. 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
23. J. Hallstrom, N. Sridhar, P. Sivilotti, and A. Arora, “A container-based approach to object-oriented product lines”, *Journal of Object Technology*, April 2004
24. 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
25. 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
26. 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
27. V. Naik, A. Arora, S. Bapat, and M.G. Gouda, “Whisper: Local secret maintenance in sensor networks”, *IEEE Distributed Systems Online*, September 2003
28. 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
29. 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
30. 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
31. 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*
32. A. Arora and S. Kulkarni, “Component based design of multitolerance”, *IEEE Transactions on Software Engineering*, 24(1), 1998, pp. 63–78
33. A. Arora and S. Kulkarni, “Designing masking fault-tolerance via nonmasking fault-tolerance”, *IEEE Transactions on Software Engineering*, 24(6), 1998, pp. 435–450
34. S. Kulkarni and A. Arora, “Multitolerance in distributed reset”, *Chicago Journal of Theoretical Computer Science*, 4, 1998, 46pp

35. G. Varghese, A. Arora, and M. G. Gouda, “Self-stabilization by tree correction”, *Chicago Journal of Theoretical Computer Science*, 3, 1997, 32pp
36. S. Kulkarni and A. Arora, “Multitolerance in barrier computations”, *Information Processing Letters* 64, 1997, pp. 29–36
37. 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
38. A. Arora, “Efficient reconfiguration of trees: A case study in the methodical design of nonmasking fault-tolerance”, *Science of Computer Programming*, 1996, in press
39. 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
40. A. Arora and M. G. Gouda, “Distributed reset”, *IEEE Transactions on Computers*, 43(9), 1994, pp. 1026–1038. **MCC Best Paper Award**
41. 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**
42. A. Arora, P. Attie, M. Evangelist, and M. G. Gouda, “Convergence of iteration systems”, *Distributed Computing*, 7(1), 1993, pp. 43–53
43. A. Arora, S. Dolev, and M. G. Gouda, “Maintaining digital clocks in step”, *Parallel Processing Letters*, 1(1), 1991, pp. 11–18

Refereed Conferences

44. 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, April 2009, pp. 13–24
45. 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
46. 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
47. 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
48. K. Parker, S. Bapat, and Anish Arora, “The bumbleBee mote-scale radar”, *Proceedings of the 34th Annual GOMACTech Conference*, Orlando, March 2009
49. 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

50. 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
51. 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
52. 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
53. 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.
54. 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
55. 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
56. 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
57. 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
58. 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
59. 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
60. 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
61. 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

62. 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
63. 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
64. 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 (Trident-Com)*, May 2007
65. 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
66. 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
67. 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
68. 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
69. 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
70. 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
71. 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
72. 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
73. 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
74. 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

75. 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
76. 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
77. 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
78. 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
79. 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
80. 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
81. 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
82. 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
83. 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
84. 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
85. 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
86. 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
87. 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

88. 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.
89. 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
90. W. Leal and A. Arora, “Scalable stabilization via composition”, *Proceedings of the 24th International Conference on Distributed Computing Systems, (ICDCS’04)*, Tokyo, 2004
91. 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
92. 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.
93. 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)*
94. 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)*
95. 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
96. 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**
97. 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**
98. 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
99. 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
100. 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
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105. 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
106. 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
107. 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
108. 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
109. 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
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113. 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
114. 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
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119. 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
120. 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**
121. 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
122. 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
123. 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
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125. 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
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128. 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
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131. 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

132. 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
133. 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
134. 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
135. 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
136. 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
137. 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
138. 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
139. 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
140. 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

141. Special Issue of Distributed Computing on Stabilization, Springer Verlag Journal, 20(1), 2007

142. DCOSS'2007: Proceedings of the Third IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS), Proceedings Springer, 2007
143. ICDCS'2005: 25th International Conference on Distributed Computing Systems, IEEE Computer Society Press, 2005
144. SENSYS'2004: 2nd Conference on Embedded Networked Sensor Systems, ACM, 2004
145. WSS'99: Fourth Workshop on Self-Stabilizing Systems, IEEE Computer Society Press, 111 pp., 1999

Book Articles

146. S. Bapat and A. Arora, "Stabilizing reconfiguration in wireless sensor networks", in *Security in Ad Hoc and Sensor Networks*, ed. R. Beyah, J. McNair, C. Corbett, World Scientific Press, 2009
147. 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
148. M. Demirbas, A. Arora, and M. Gouda, "Pursuer-evader tracking in sensor networks", *Sensor Network Operations*, Chapter 9, IEEE Press, May 2006
149. 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", 2006, to appear
150. M. Demirbas, A. Arora, and M. Gouda, "Pursuer-evader tracking in sensor networks", *Sensor Network Operations*, IEEE Press, 2005
151. 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
152. 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
153. A. Arora, "Compositional design and mechanical synthesis of dependability", invited for *Mechanization of Inference*, edited by N. Tennent, Oxford University Press, to appear
154. 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
155. 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

156. 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
157. 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

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

“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

“KanseiGENIE: GENI-fying and 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 Assoc. Professor at Michigan State)
 Bill Leal (2001, Graduate School Fellow, now a Research Scientist at Ohio University)
 Murat Demirbas (2004, Post Doc at MIT, now an Asst. Professor at SUNY, Buffalo)
 Hongwei Zhang (2006, Asst. Professor at Wayne State, Detroit)
 Vinayak Naik (2006, CENS, UCLA)
 Sandip Bapat (2006, Lead Software Developer for The Samraksh Company)
 Vinod Krishnan Kulathumani (2008, University of West Virginia)
 Hui Cao (2008, Senior Engineer, Qualcomm)
 Mukundan Sridharan (expected 2010)
 Lifeng Sang (expected 2010)
 Wenjie Zeng
 Jing Li

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

Ph.D. Candidacy Committee Member: 25 students

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

M.S. Thesis Students: 8

Judge, OSU Undergraduate Honors Project Competition: 1999

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

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

International Symposium on Self-Stabilizing Systems, 2001–

Program 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

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

Workshops General Chair

20th IEEE Symposium on Reliable Distributed Systems, 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

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

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)

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