

## Ramesh Govindan

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## Education

- *Ph.D. in Computer Science* from the University of California at Berkeley, June 1992. Dissertation topic: Scheduling and I/O Mechanisms for Continuous Media. Advisor: David P. Anderson.
- *M.S. in Computer Science* from the University of California at Berkeley, November 1989.
- *B.Tech. in Computer Science and Engineering* from the Indian Institute of Technology, Madras, August 1987.

## Work Experience

**Nov 2006 to present** *Professor of Computer Science* at the University of Southern California, and Director of the Embedded Networking Laboratory. Research focused on networked embedded systems.

**July 2007 to June 2008** *Interim Department Chair* of the Computer Science Department.

**July 2002 to Nov 2006** *Associate Professor of Computer Science* at the University of Southern California, and Director of the Embedded Networking Laboratory. Research focused on networked embedded systems.

**September 2001 to June 2002** *Project Leader* at the International Computer Science Institute. Involved in several projects on sensor network routing, Internet topology discovery and Internet routing.

**November 1997 to August 2001** *Project Leader* at the USC/Information Sciences Institute. Involved in several DARPA and NSF sponsored projects. Managed a team of research staff members, programmers and graduate students.

**September 1994 to November 1997** *Computer Scientist* at the USC/Information Sciences Institute. Researcher on the Routing Arbiter project. Responsible for the design and implementation of the inter-domain Route Server, and for the analysis of Internet topology and route stability.

**September 1992 to June 1994** *Member of Technical Staff*, Applied Networks Division of Bell Communications Research, Morristown NJ. Participated in the design and implementation of a candidate next-generation Internet protocol. This involved significant standardization activity within the Internet Engineering Task Force.

## Publications

### Book Chapters

1. ZHAO, J., AND GOVINDAN, R. *Wireless Sensor Networks: A Systems Perspective*. Artech House Publishers, 2005, ch. Sensor Network Tomography
2. TANGMUNARUNKIT, H., GOVINDAN, R., AND SHENKER, S. *The Internet as a Large-Scale Complex System*. Oxford University Press, 2005, ch. Internet Topology: Discovery and Policy Impact
3. HEIDEMANN, J., AND GOVINDAN, R. *Handbook of Networked and Embedded Control Systems*. Birkauer, 2005, ch. Embedded Sensor Networks
4. GOVINDAN, R. *Wireless Sensor Networks*. Kluwer Publishers, 2003, ch. Data-Centric Storage in Sensor Networks
5. SILVA, F., HEIDEMANN, J., GOVINDAN, R., AND ESTRIN, D. *Frontiers of Distributed Sensor Networks*. CRC Press, 2004, ch. Directed Diffusion

### Refereed Journal Papers

1. PAPADOPOULOS, F., PSOUNIS, K., AND GOVINDAN, R. Performance Preserving Network Downscaling of Internet-like Networks. 2313–2326
2. CHINTALAPUDI, K., FU, T., PAEK, J., KOTHARI, N., RANGWALA, S., CAFFREY, J., GOVINDAN, R., JOHNSON, E., AND MASRI, S. Monitoring Civil Structures with a Wireless Sensor Network. vol. 10, IEEE Internet Computing
3. ZHANG, H., GOEL, A., AND GOVINDAN, R. Improving Lookup Latency in Distributed Hash Table Systems using Random Sampling. In *Proceedings of the ACM/IEEE Transactions on Networking* (October 2005), vol. 13
4. GANESAN, D., GREENSTEIN, B., ESTRIN, D., HEIDEMANN, J., AND GOVINDAN, R. Multi-resolution Storage and Search in Sensor Networks. *ACM Transactions on Storage* 1, 3 (August 2005), 277–315
5. ENACHESCU, M., GOEL, A., GOVINDAN, R., AND MOTWANI, R. Scale-Free Aggregation in Sensor Networks. *Theoretical Computer Science: Special Issue on Algorithmic Aspects of Wireless Sensor Networks* 344, 1 (November 2005), 15–29
6. BIAN, F., LI, X., GOVINDAN, R., AND SHENKER, S. Using Hierarchical Location Names for Scalable Routing and Rendezvous in Wireless Sensor Networks. *International Journal of Ad Hoc and Ubiquitous Computing, Special Issue on Wireless Sensor Networks* (2005)
7. ZHANG, H., GOEL, A., AND GOVINDAN, R. An Empirical Evaluation of Internet Latency Expansion. *SIGCOMM Comput. Commun. Rev.* 35, 1 (2005), 93–97
8. GUMMADI, R., LI, X., GOVINDAN, R., SHAHABI, C., AND HONG, W. Energy-Efficient Data Organization and Query Processing in Sensor Networks. *SIGBED Review* 2, 1 (January 2005)
9. ZHANG, H., GOEL, A., AND GOVINDAN, R. Using the Small-World Model to Improve Freenet Performance. *Computer Networks* 46, 4 (2004), 556–574
10. CHANG, H., GOVINDAN, R., JAMIN, S., SHENKER, S., AND WILLINGER, W. Towards Capturing Representative AS-level Internet Topologies. *Computer Networks* 44, 6 (2004), 737–755

11. RADOSLAVOV, P., PAPADOPOULOS, C., GOVINDAN, R., AND ESTRIN, D. A Comparison of Application-Level and Router-Assisted Schemes for Reliable Multicast. *ACM/IEEE Transactions on Networking* 12, 4 (June 2004), 456–468
12. WOO, A., MADDEN, S., AND GOVINDAN, R. Networking Support for Query Processing in Sensor Networks. *Communications of the ACM* 47, 6 (2004), 47–52
13. GREENSTEIN, B., ESTRIN, D., GOVINDAN, R., RATNASAMY, S., AND SHENKER, S. DIFS: A Distributed Index for Features In Sensor Networks. *Ad-hoc Networks Journal* (2003)
14. CHINTALAPUDI, K., AND GOVINDAN, R. Localized Edge Detection in Sensor Fields. *Ad-hoc Networks Journal* (2003)
15. RATNASAMY, S., KARP, B., SHENKER, S., ESTRIN, D., GOVINDAN, R., YIN, L., AND YU, F. Data-Centric Storage in Sensornets with GHT, A Geographic Hash Table. *ACM MONET* 8, 4 (2003), 427–442
16. INTANAGONWIWAT, C., GOVINDAN, R., ESTRIN, D., HEIDEMANN, J., AND SILVA, F. Directed Diffusion for Wireless Sensor Networking. *ACM/IEEE Transactions on Networking* 11, 1 (February 2003), 2–16
17. ESTRIN, D., GOVINDAN, R., AND HEIDEMANN, J. Embedding the Internet. co-editors for a Special Issue
18. TANGMUNARUNKIT, H., DOYLE, J., GOVINDAN, R., JAMIN, S., WILLINGER, W., AND SHENKER, S. Does AS Size Determine AS Degree? *ACM Computer Communication Review* (October 2001), 7–8
19. WILLINGER, W., GOVINDAN, R., JAMIN, S., PAXSON, V., AND SHENKER, S. Scaling Phenomena in the Internet: Critically Examining Criticality. *Proceedings of the National Academy of Sciences* 99 (February 2002), 2573–2580
20. GANESAN, D., GOVINDAN, R., SHENKER, S., AND ESTRIN, D. Highly-Resilient Energy-Efficient Multipath Routing in Wireless Sensor Networks. *ACM Mobile Computing and Communication Review (MC2R)* 1, 2 (2002)
21. REDDY, A., GOVINDAN, R., AND ESTRIN, D. Large-Scale Fault Isolation. *IEEE Journal of Selected Areas in Communication Special Issue on Network Management* (February 2000)
22. VARADHAN, K., GOVINDAN, R., AND ESTRIN, D. Persistent Oscillations in Inter-Domain Routing. *Computer Networks* 32, 1 (January 2000), 1–16
23. GOVINDAN, R., ALAETTINOGLU, C., VARADHAN, K., AND ESTRIN, D. An Architecture for Stable, Analyzable Internet Routing. *IEEE Network Magazine* 13, 1 (January 1999), 29–35
24. GOVINDAN, R., ALATTINOGLU, C., VARADHAN, K., AND ESTRIN, D. Route Servers for Inter-Domain Routing. *Computer Networks and ISDN Systems* 30 (1998), 1157–1174
25. GOVINDAN, R. Time-Space Tradeoffs in Route-Server Implementation. *Journal of Internet-working: Research and Experience* 6, 2 (June 1995)
26. ANDERSON, D. P., OSAWA, Y., AND GOVINDAN, R. A File System for Continuous Media. In *ACM Transactions on Computer Systems* (November 1993), vol. 10, pp. 311–337
27. GOVINDAN, R., AND RANGAN, C. P. An Algorithm for a Maximum Location Problem. *Discrete Mathematics* 36 (1992), 203–205

## Refereed Conference and Workshop Papers

1. PAK, J., AND GOVINDAN, R. Rate-Controlled Reliable Transport for Sensor Networks. In *Proceedings of the ACM Sensys (2007)*
2. SHARMA, A., GOLUBCHIK, L., AND GOVINDAN, R. On the Prevalence of Sensor Faults in Real World Deployments. In *Proceedings of the IEEE Communications Society Conference on Sensor, Mesh, and Ad-Hoc Communications and Networks (San Diego, California, June 2007)*
3. BIAN, F., RANGWALA, S., AND GOVINDAN, R. Quasi-static Centralized Rate Allocation for Sensor Networks. In *Proceedings of the IEEE Communications Society Conference on Sensor, Mesh, and Ad-Hoc Communications and Networks (San Diego, California, June 2007)*
4. KOTHARI, N., GUMMADI, R., MILLSTEIN, T., AND GOVINDAN, R. Reliable and Efficient Programming Abstractions for Wireless Sensor Networks. In *Proceedings of the SIGPLAN Conference on Programming Language Design and Implementation (2007)*
5. GUMMADI, R., KOTHARI, N., MILLSTEIN, T., AND GOVINDAN, R. Declarative Failure Recovery for Sensor Networks. In *Proceedings of the Sixth International Conference on Aspect-Oriented Software Development (AOSD) (March 2007)*
6. LI, X., BIAN, F., CROVELLA, M., DIOT, C., GOVINDAN, R., IANNACCONE, G., AND LAKHINA, A. Detection and Identification of Network Anomalies Using Sketch Subspaces. In *Proceedings of ACM Internet Measurement Conference 2006 (Rio de Janeiro, Brazil, October 2006)*
7. GNAWALI, O., GREENSTEIN, B., JANG, K.-Y., JOKI, A., PAK, J., VIEIRA, M., ESTRIN, D., GOVINDAN, R., AND KOHLER, E. The TENET Architecture for Tiered Sensor Networks. In *Proceedings of the ACM Sensys (Boulder, Colorado, November 2006)*
8. KIM, Y.-J., GOVINDAN, R., KARP, B., AND SHENKER, S. Lazy Cross-Link Removal for Geographic Routing. In *Proceedings of the ACM Sensys (Boulder, Colorado, USA, November 2006)*
9. RANGWALA, S., GUMMADI, R., GOVINDAN, R., AND PSOUNIS, K. Interference-Aware Fair Rate Control in Wireless Sensor Networks. In *Proceedings of ACM SIGCOMM Symposium on Network Architectures and Protocols (Pisa, Italy, September 2006)*
10. PAK, J., JANG, O. G. K.-Y., NISHIMURA, D., GOVINDAN, R., CAFFREY, J., WAHBEH, M., AND MASRI, S. A Programmable Wireless Sensing System for Structural Monitoring. In *4th World Conference on Structural Control and Monitoring(4WCSCM) (San Diego, CA, July 2006)*
11. LI, X., BIAN, F., ZHANG, H., DIOT, C., GOVINDAN, R., HONG, W., AND IANNACCONE, G. MIND: A Distributed Multidimensional Indexing for Network Diagnosis. In *Proceedings of the IEEE Infocom (Barcelona, Spain, April 2006)*
12. CHINTALAPUDI, K., PAK, J., GNAWALI, O., FU, T., DANTU, K., CAFFREY, J., GOVINDAN, R., AND JOHNSON, E. Structural Damage Detection and Localization Using NetSHM. In *Proceedings of Fifth International Conference on Information Processing in Sensor Networks: Special track on Sensor Platform Tools and Design Methods for Networked Embedded Systems (IPSN/SPOTS'06) (Nashville, TN, April 2006)*
13. BIAN, F., KEMPE, D., AND GOVINDAN, R. Utility-based sensor selection. In *The Fifth International Symposium on Information Processing in Sensor Networks (April 2006)*

14. KIM, Y. J., GOVINDAN, R., KARP, B., AND SHENKER, S. On the Pitfalls of Geographic Routing. In *Proc. of the 3rd International Workshop on DIALM-Principles of Mobile Computing* (Cologne, Germany, September 2005)
15. CHINTALAPUDI, K., FU, T. S., JOHNSON, E., AND GOVINDAN, R. Structural Damage Detection and Localization Using Wireless Sensor Networks with Low Power Consumption. In *Proc. 5th International Workshop on Structural Health Monitoring* (September 12 2005)
16. CHINTALAPUDI, K., PAEK, J., KOTHARI, N., RANGWALA, S., GOVINDAN, R., AND JOHNSON, E. Embedded Sensing of Structures: A Reality Check. In *The 11th IEEE International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA2005)* (Hong Kong, August 2005)
17. CHINTALAPUDI, K., JOHNSON, E. A., AND GOVINDAN, R. Structural Damage Detection using Wireless Sensor-Actuator Networks. In *Proc. of the 13th Mediterranean Conference on Control and Automation* (Cyprus, June 2005), pp. 27–29
18. GUMMADI, R., GNAWALI, O., AND GOVINDAN, R. Macro-programming Wireless Sensor Networks using Kairos. In *International Conference on Distributed Computing in Sensor Systems (DCOSS)* (June 2005)
19. GNAWALI, O., POLYAKOV, M., BOSE, P., AND GOVINDAN, R. Data Centric, Position-Based Routing In Space Networks. In *Proceedings of the 26th IEEE Aerospace Conference* (Big Sky, MT, March 2005)
20. LI, X., BIAN, F., ZHANG, H., DIOT, C., GOVINDAN, R., HONG, W., AND IANNACCONE, G. Advanced Indexing Techniques for Wide-Area Network Monitoring. In *1st IEEE International Workshop on Networking Meets Databases (NetDB)* (2005)
21. KIM, Y.-J., GOVINDAN, R., KARP, B., AND SHENKER, S. Geographic Routing Made Practical. In *Proceedings of the USENIX Symposium on Networked Systems Design and Implementation* (Boston, MA, May 2005), pp. 217–230
22. GUMMADI, R., AND GOVINDAN, R. Practical Routing-Layer Support for Scalable Multihoming. In *Proceedings of IEEE Infocom - The Conference on Computer Communications* (2005)
23. PAEK, J., CHINTALAPUDI, K., CAFFREY, J., GOVINDAN, R., AND MASRI, S. A Wireless Sensor Network for Structural Health Monitoring: Performance and Experience. In *The Second IEEE Workshop on Embedded Networked Sensors (EmNetS-II)* (Sydney, Australia, May 2005)
24. PAPADOPOULOS, F., PSOUNIS, K., AND GOVINDAN, R. Performance Preserving Network Downscaling. In *Proc. 38th Annual Simulation Symposium* (San Diego, CA, April 2005), pp. 285–294
25. GUMMADI, R., KOTHARI, N., KIM, Y.-J., GOVINDAN, R., KARP, B., AND SHENKER, S. Reduced State Routing in the Internet. In *Proceedings of Hotnets-III* (2004)
26. GNAWALI, O., YARVIS, M., HEIDEMANN, J., AND GOVINDAN, R. Interaction of Retransmission, Blacklisting, and Routing Metrics for Reliability in Sensor Network Routing. In *Proceedings of The First International Conference on Sensor and Ad Hoc Communications and Networks (SECON)* (Santa Clara, CA, October 2004), pp. 34–43
27. XU, N., RANGWALA, S., CHINTALAPUDI, K., GANESAN, D., BROAD, A., GOVINDAN, R., AND ESTRIN, D. A Wireless Sensor Network for Structural Monitoring. In *Proceedings of the ACM Sensys* (Baltimore, MD, November 2004), pp. 13–24

28. ZHANG, H., GOEL, A., GOVINDAN, R., MASON, K., AND ROY, B. V. Making Eigenvector-Based Reputation Systems Robust to Collusions. In *Proceedings of the Third Workshop on Algorithms and Models for the Web Graph* (Rome, Italy, October 2004), pp. 92–104
29. CAFFREY, J., GOVINDAN, R., JOHNSON, E., KRISHNAMACHARI, B., MASRI, S., SUKHATME, G., CHINTALAPUDI, K., DANTU, K., RANGWALA, S., SRIDHARAN, A., XU, N., AND ZUNIGA, M. Networked Sensing for Structural Health Monitoring. In *Proceedings of the 4th International Workshop on Structural Control* (Columbia University, NY, June 2004), DESTech Publishers, Lancaster, PA, pp. 57–66
30. ENACHESCU, M., GOEL, A., GOVINDAN, R., AND MOTWANI, R. Scale-Free Aggregation in Sensor Networks. In *Proceedings of First International Workshop on Algorithmic Aspects of Wireless Sensor Networks* (2004), pp. 71–84
31. CHANG, D.-F., GOVINDAN, R., AND HEIDEMANN, J. Exploring the Ability of Locating BGP Missing Routes from Multiple Looking Glasses. In *First ACM Workshop on Network Troubleshooting* (Portland, OR, September 2004), pp. 301–306
32. CHINTALAPUDI, K., DHARIWAL, A., GOVINDAN, R., AND SUKHATME, G. Localization Using Ranging and Sectoring. In *Proceedings of the IEEE Infocom* (Hong Kong, March 2004)
33. PATTEM, S., KRISHNAMACHARI, B., AND GOVINDAN, R. The Impact of Spatial Correlation on Routing with Compression in Wireless Sensor Networks. In *Proceedings of the Third International Symposium on Information Processing in Sensor Networks* (Berkeley, CA, April 2004), pp. 28–35. Best Paper Award
34. SEADA, K., HELMY, A., AND GOVINDAN, R. On The Effect of Localization Errors on Geographic Face Routing on Sensor Networks. In *Proceedings of the Third International Symposium on Information Processing in Sensor Networks* (Berkeley, CA, April 2004), pp. 71–80
35. CHANG, D.-F., GOVINDAN, R., AND HEIDEMANN, J. The Temporal and Topological Characteristics of BGP Path Changes. In *Proceedings of the IEEE International Conference on Network Protocols* (Atlanta, GA, November 2003), pp. 190–201
36. ZHAO, J., AND GOVINDAN, R. Understanding Packet Delivery Performance In Dense Wireless Sensor Networks. In *Proceedings of the ACM Sensys* (Los Angeles, CA, November 2003). Best Student Paper Award
37. LI, X., KIM, Y. J., GOVINDAN, R., AND HONG, W. Multi-dimensional Range Queries in Sensor Networks. In *Proceedings of the ACM Sensys* (Los Angeles, CA, November 2003)
38. DUTTA, D., GOEL, A., GOVINDAN, R., AND ZHANG, H. The Design of A Distributed Rating Scheme for Peer-to-peer Systems. In *Proceedings of the Workshop on the Economics of Peer-to-Peer Systems* (Berkeley, CA, 2003)
39. NARAYAN, H., GOVINDAN, R., AND VARGHESE, G. On the Impact of Routing and Address Allocation on the Structure and Implementation of Routing Tables. In *Proceedings of ACM SIGCOMM Symposium on Network Architectures and Protocols* (Karlsruhe, Germany, August 2003), pp. 125–136
40. ZHANG, H., GOEL, A., AND GOVINDAN, R. Incrementally Improving the Lookup Latency of Distributed Hash Table Systems. In *Proceedings of ACM SIGMETRICS* (Atlanta, GA, June 2003), pp. 114–125
41. CHINTALAPUDI, K., AND GOVINDAN, R. Localized Edge Detection in Wireless Sensor Networks. In *Proceedings of the IEEE ICC Workshop on Sensor Network Protocols and Applications* (Anchorage, AK, April 2003), pp. 1–11

42. ZHAO, J., AND GOVINDAN, R. Computing Aggregates for Monitoring Wireless Sensor Networks. In *Proceedings of the International Workshop on Sensor Net Protocols and Applications* (Anchorage, AK, April 2003)
43. SHENKER, S., RATNASAMY, S., KARP, B., GOVINDAN, R., AND ESTRIN, D. Data-Centric Storage in Sensornets. In *Proc. ACM SIGCOMM Workshop on Hot Topics In Networks* (Princeton, NJ, 2002)
44. RATNASAMY, S., KARP, B., YIN, L., YU, F., ESTRIN, D., GOVINDAN, R., AND SHENKER, S. GHT: A Geographic Hash Table for Data-Centric Storage. In *Proceedings of the ACM Workshop on Sensor Networks and Applications* (Atlanta, Georgia, USA, September 2002), ACM, pp. 78–87
45. TANGMUNARUNKIT, H., GOVINDAN, R., JAMIN, S., AND WILLINGER, S. S. W. Network Topology Generators: Degree-Based vs. Structural. In *Proceedings of ACM SIGCOMM* (Pittsburgh, PA, 2002), pp. 188–195
46. MAO, Z., GOVINDAN, R., VARGHESE, G., AND KATZ, R. Route Flap Dampening Exacerbates Internet Routing Convergence. In *Proceedings of the ACM SIGCOMM Conference on Network Architectures and Protocols* (Pittsburgh, PA, 2002), pp. 221–233
47. CHANG, D.-F., GOVINDAN, R., AND HEIDEMANN, J. An Empirical Study of Router Response to Large Routing Table Load. In *Proceedings of the 2nd Internet Measurement Workshop (IMW 2002)* (2002)
48. ZHANG, H., GOEL, A., AND GOVINDAN, R. Using the Small World Model to Improve Freenet Performance. In *Proceedings of IEEE INFOCOM* (June 2002)
49. GOVINDAN, R., AND PAXSON, V. Estimating Router ICMP Generation Times. In *Proceedings of the Workshop on Passive and Active Measurements (PAM2002)* (March 2002)
50. ZHAO, Y., GOVINDAN, R., AND ESTRIN, D. Residual Energy Scans for Monitoring Wireless Sensor Networks. In *Proceedings of the IEEE Wireless Communications and Networking Conference* (March 2002)
51. HEIDEMANN, J., SILVA, F., INTANAGONWIWAT, C., GOVINDAN, R., ESTRIN, D., AND GANESAN, D. Building Efficient Wireless Sensor Networks with Low-Level Naming. In *Proceedings of the Symposium on Operating Systems Principles* (Chateau Lake Louise, Banff, Alberta, Canada, October 2001), ACM, pp. 146–159
52. HEIDEMANN, J., BULUSU, N., ELSON, J., INTANAGONWIWAT, C., CHAN LAN, K., XU, Y., YE, W., ESTRIN, D., AND GOVINDAN, R. Effects of Detail in Wireless Network Simulation. In *Proceedings of the SCS Conference on Communication Networks and Distributed Systems Modeling and Simulation* (Phoenix, Arizona, USA, January 2001), USC/Information Sciences Institute, Society for Computer Simulation, pp. 3–11
53. TANGMUNARUNKIT, H., GOVINDAN, R., AND SHENKER, S. Internet Path Inflation Due to Policy Routing. In *Proc. of SPIE ITCOM* (Denver, CO, 2001), pp. 188–195
54. TANGMUNARUNKIT, H., GOVINDAN, R., SHENKER, S., AND ESTRIN, D. The Impact of Policy on Internet Paths. In *Proceedings of the IEEE Infocom* (Anchorage, AK, April 2001)
55. RADOSLAVOV, P., GOVINDAN, R., AND ESTRIN, D. Topology-Informed Internet Replica Placement. In *Proceedings of the Sixth International Workshop on Web Caching and Content Distribution* (Boston, MA, June 2001)

56. RADOSLAVOV, P., PAPADOPOULOS, C., AND GOVINDAN, R. A Comparison Between Application-Level and Router-Assisted Hierarchical Schemes for Reliable Multicast. In *Proceedings of the IEEE Infocom* (Anchorage, AK, April 2001)
57. REDDY, A., GOVINDAN, R., AND ESTRIN, D. Fault Isolation in Multicast Trees. In *Proceedings of the ACM SIGCOMM Symposium on Network Architectures and Protocols* (Stockholm, Sweden, August 2000), pp. 29–40
58. INTANAGONWIWAT, C., GOVINDAN, R., AND ESTRIN, D. Directed Diffusion: A Scalable and Robust Communication Paradigm for Sensor Networks. In *Proceedings of the ACM/IEEE Conference on Mobile Computing and Networking* (Boston, MA, USA, August 2000), ACM, pp. 56–67
59. GOVINDAN, R., AND TANGMUNARUNKIT, H. Heuristics for Internet Map Discovery. In *Proceedings of the IEEE Infocom* (Tel-Aviv, Israel, March 2000)
60. GOVINDAN, R., FABER, T., HEIDEMANN, J., AND ESTRIN, D. Ad-Hoc Smart Environments. In *Proceedings of the DARPA/NIST Smart Spaces Workshop* (Atlanta, GA, June 1999)
61. YU, H., ESTRIN, D., AND GOVINDAN, R. A Hierarchical Proxy Architecture for Internet Scale Event Services. In *Proceedings of the 2nd International Workshop on Internet-Scale Event Notification* (Stanford, CA, June 1999)
62. ESTRIN, D., GOVINDAN, R., HEIDEMANN, J., AND KUMAR, S. Scalable Coordination in Sensor Networks. In *Proceedings of ACM/IEEE International Conference on Mobile Computing and Networking (Mobicom 1999)* (1999)
63. GOVINDAN, R., AND REDDY, A. An Analysis of Inter-Domain Topology and Route Stability. In *Proceedings of the IEEE Infocom* (Kobe, Japan, 1997)
64. FRANCIS, P., AND GOVINDAN, R. Flexible Routing and Addressing in a Next-Generation Internet Protocol. In *Proceedings of the ACM SIGCOMM Symposium on Network Architectures and Protocols* (London, England, September 1994), pp. 116–125
65. GOVINDAN, R., AND ANDERSON, D. P. Scheduling and IPC Mechanisms for Continuous Media. In *Proceedings of the Symposium on Operating Systems Principles* (Asilomar, CA, October 1991), pp. 68–80
66. ANDERSON, D. P., OSAWA, Y., AND GOVINDAN, R. Real-time Disk Storage and Retrieval of Digital Audio and Video. In *Proceedings of the USENIX Conference* (San Antonio, TX, June 1991)
67. ANDERSON, D. P., GOVINDAN, R., AND HOMSY, G. Abstractions for Continuous Media in a Network Window System. In *Proceedings of the International Conference on Multimedia Information Systems* (January 1991)
68. ANDERSON, D. P., TZOU, S.-Y., WAHBE, R., GOVINDAN, R., AND ANDREWS, M. Support for Continuous Media in the DASH System. In *Proceedings of the 10th International Conference on Distributed Computing Systems* (Paris, France, May 1990)

## **Standards Documents**

1. ESTRIN, D., GOVINDAN, R., HANDLEY, M., KUMAR, S., RADOSLAVOV, P., AND THALER, D. The Multicast Address-Set Claim Protocol (MASC). Internet Request For Comments, RFC 2909, 2000

2. MEYER, D., VILLAMIZAR, C., ALAETTINOGLU, C., AND GOVINDAN, R. Distributed Routing Policy System. Internet Request for Comments, RFC 2769, January 2000
3. ALAETTINOGLU, C., VILLAMIZAR, C., AND GOVINDAN, R. RPS IANA Issues. Internet Request for Comments, RFC 2754, January 2000
4. VILLAMIZAR, C., CHANDRA, R., AND GOVINDAN, R. BGP Route Flap Dampening. Internet Request for Comments, RFC 2439, November 1998
5. HEINANEN, J., AND GOVINDAN, R. NBMA Address Resolution Protocol (NARP). Internet Request for Comments, RFC 1735, December 1995

## **Recent Invited Talks**

1. Programming Sensor Networks: A Tale of Two Perspectives. Invited Speaker at Rescom 2007, French Summer School, June 2007
2. The Quest for a General-Purpose Sensing System. Invited Keynote at Emnets 2007, June 2007
3. Networked Wireless Sensor/Actuator Systems. Talk at First USC/Tsinghua Workshop, June 2007
4. Data-Driven Sensing and Fault Modeling. Talk at ICCS 2007, June 2007
5. Towards General-Purpose Multi-User Reactive Observing Systems. Panelist: Wireless Sensor Networks: Bridging the Physical and Cyber Spaces, May 2007
6. Programming Sensor Networks: A Tale of Two Perspectives. Invited Speaker at ETH Zurich, March 2007
7. The Evolution of Geographic Routing for Wireless Networks. Distinguished Lecture Speaker at the Johns Hopkins University, December 2006
8. Software for Wireless Structural Sensing. Keynote speaker at the 4th World Conference on Structural Control and Monitoring, July 2006
9. Monitoring Civil Structures with a Network of Wireless Sensors. Invited speaker at the Seismological Society of America Meeting, special session on Next Generation Earthquake Monitoring, May 2006
10. Geographic Routing for Wired and Wireless Networks. University of California, Santa Barbara, May 2005
11. Tenet: An Architecture for Tiered Embedded Networks. Center for Networked Embedded Systems, joint talk with Eddie Kohler, May 2005
12. An Architecture for Next Generation Networked Sensor Systems. Stanford University, March 2005
13. Geographic Routing for Wired and Wireless Networks. Hewlett-Packard Laboratories, November 2004
14. The Second Generation of Networked Sensor Systems. Invited talk at the NSF NeTS-NOSS Informational Meeting, October 2004
15. Embedded Networked Systems: Platforms, Software, Applications. Invited talk at 4th International Workshop on Structural Control, June 2004

16. A Wireless Seismic Sensing Array. Workshop on Field Testing at the Four Seasons Building, The Pacific Earthquake Engineering Research Center, September 2003
17. Data-Centric Storage. Research Review: Center for Embedded Networked Systems, November 2003
18. Sensing Structures. IPAM Reunion Meeting, Lake Arrowhead, September 2003
19. Efficient Information Access in Large-Scale Sensor Networks. EU-NSF Workshop, Chania, Crete, June 2003
20. Wireless Sensor Networks: Cutting Through the Hype. Stanford University, April 2003
21. Internet Topology Modeling – Past, Present and Future. UCSD Colloquium, December 2002
22. Wireless Sensor Networks: Cutting Through the Hype. AT&T Labs Research, October 2002
23. Network Topology Generators: Degree-Based vs. Structural. ACM SIGCOMM, August 2002
24. Estimating Router ICMP Generation Times. Passive and Active Measurement Workshop, February 2002
25. Network Topology Generators: Degree-Based vs. Structural. DIMACS, February 2002
26. Estimating Router ICMP Generation Times. Internet Statistics, Measurements and Analysis Workshop, December 2001
27. Explaining Power-Law Degree Distributions. IEEE Computer Communications Workshop, October 2001

## **Professional Service**

### **Journal Editorships**

- Associate Editor, ACM Computing Surveys: 2006–2008.
- Associate Editor, ACM Transactions on Sensor Networks: 2003–2008.
- Associate Editor, Elsevier Ad-hoc Networks Journal: 2003–2007.
- Associate Editor, ACM/IEEE Transactions on Networking: 2001–2004.
- Area Editor, ACM SIGCOMM Computer Communications Review: 2000–2004.

### **Special Issue Editorships**

- *Wireless Sensor Networks*, Computer Networks Journal, 2003.
- *Embedding the Internet*, Communications of the ACM, 2000.

### **Conference Steering Committees**

- ACM Symposium on Networked Embedded Systems, 2004–present.
- IEEE Workshop on Networking Meets Databases, 2005–present.

### **Conference Organization**

- Program co-chair, ACM SIGCOMM Conference on Network Architectures and Protocols, Philadelphia, PA, August 2005.
- Program co-chair, IEEE Workshop on Networking Meets Databases, Kyoto, Japan, April 2005.
- Program co-chair, the Second ACM Symposium on Networked Embedded Systems, Baltimore, MD, November 2004.
- Program co-chair, NSF Informational Workshop on Networked Sensor Systems, February 2004.
- Program co-chair, the Second ACM Workshop on Wireless Sensor Networks and Applications, San Diego, CA, June 2003.
- Program co-chair, mini-workshop on “Internet Routing and Topology” at the Institute for Pure and Applied Mathematics, June 2002.

### **Conference Program Committees**

- Usenix Symposium on Networked Systems Design and Implementation, 2008.
- Second ACM Workshop on Wireless Network Testbeds, 2008.
- Usenix Symposium on Networked Systems Design and Implementation, 2005.
- ACM SIGCOMM Conference on Network Architectures and Protocols 2001, 2003, 2004.
- ACM Workshop on Hot Topics in Networking, 2004.
- ACM Symposium on Networked Embedded Systems 2003.
- IEEE International Conference on Distributed Computer Systems, 2003.
- ACM SIGMETRICS Symposium on Performance Evaluation 2003.
- ACM Mobicom Conference on Protocols for Wireless and Mobile Systems 2002.
- ACM Mobihoc Symposium on Mobile and Ad Hoc Networks 2002.
- ACM Internet Measurement Workshop 2002.
- IEEE Infocom 2001.
- IEEE Global Internet Symposium 2000.

### **Awards and Honors**

- Best paper in the Information Processing track, IEEE Symposium on Information Processing in Sensor Networks, April 2008.
- Okawa Foundation Research Grant, October 2004.
- Best Student Paper, 2nd IEEE Symposium on Information Processing in Sensor Networks, April 2004.
- Best Student Paper, 1st ACM Symposium on Networked Embedded Systems, November 2003.
- President of India Gold Medalist, Indian Institute of Technology, Madras, 1987.