Prashant Shenoy

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Research Interests

Operating and Distributed systems, Sensor networks, Mobile and Multimedia systems, Sustainability

Education

August 1998	Doctor of Philosophy (Ph.D.), Department of Computer Sciences, The University of Texas of Austin. Dissertation title: *Symphony: An Integrated Multimedia File System* Advisor: *Prof. Harrick M. Vin*.
December 1994	Master of Science (M.S) in Computer Sciences The University of Texas of Austin.
July 1993	Bachelor of Technology (B.Tech), Department of Computer Science and Engineering The Indian Institute of Technology, Bombay, India.

Work Experience

- Fall 2011: Visiting Researcher, NICTA, Sydney, Australia
- 9/2009-present: Professor, Department of Computer Science, University of Massachusetts Amherst.
- 9/2004-8/2009: Associate Professor, Department of Computer Science, University of Massachusetts Amherst.
- 9/1998-8/2004: Assistant Professor, Department of Computer Science, University of Massachusetts Amherst.
- 8/1995-8/1998: Graduate Research Assistant, Department of Computer Sciences, University of Texas at Austin.
- 5/1995-8/1995: Summer Intern, AT&T Bell Laboratories, Murray Hill, NJ.
- 8/1994-5/1995: Teaching Assistant, Department of Computer Sciences, University of Texas at Austin.
- 5/1994-8/1994: Summer Intern, Microsoft Research, Redmond, WA.

Honors and Awards

- Elected as the Fellow of the IEEE, 2013
- Distinguished member of the ACM, 2009.
- Keynote Speaker, IEEE E6 Energy Workshop, 2012.
- Keynote speaker, TCS Excellence in Computer Science (TECS) Week, January 2012.

Apple EX1033
IPR2026-00316
U.S. Patent No. 11,664,123

- Best papers of *IEEE PerCom 2012* conference (one of three papers chosen for this honor).
- Best paper, *IEEE COMSNETS 2012* conference, India.
- Best paper, *ACM Sigcomm GreenNets 2011* workshop, Toronto, Canada.
- Our Memory Buddies paper adjudged one of the four best papers of ACM VEE 2009.
- Best paper, *Usenix 2007* annual technical conference.
- Best Paper, *ACM Multimedia 2005*, Singapore.
- Paper co-authored with a student won Best Student Paper, *IEEE Autonomic Computing conference (ICAC) 2005.*
- Best Paper, *IEEE Web Information Systems Engineering Conference*, 2002. Forwarded to a fast-track issue of *World Wide Web Journal*.
- Best Paper in Performance/Systems Category and Finalist for overall Best Paper, *World Wide Web Conference*, May 2002. Forwarded to a fast-track issue of *IEEE Transactions on Knowledge and Data Engineering*.
- Paper co-authored with a student was Best Student Paper Finalist, *ACM Multimedia 2005*.
- Lilly Foundation Teaching Fellowship, August 2001.
- IBM Faculty Partnership Award, June 2000, June 2001 and June 2003.
- National Science Foundation (NSF) CAREER Award, April 2000.
- Best Doctoral Dissertation of 1998-99, Department of Computer Sciences, University of Texas at Austin.
- MCD Graduate Fellowship, Department of Computer Sciences, University of Texas at Austin, 1993-95.
- Institute Medal recipient for being the top ranking graduating student, Department of Computer Science and Engineering, Indian Institute of Technology, Bombay, July, 1993.

Book Chapters

B1. Michael Zink and Prashant Shenoy, "Caching and Distribution Issues for Streaming Content Distribution Networks," X. Tang, J. Xu, and S T. Chanson (eds), Springer, 2005.

B2. Harrick Vin and Prashant Shenoy, "Storage Architectures for Digital Imagery," *Image Databases: Search and Retrieval of Digital Imagery*, V. Castelli and L. Bergman (eds), John Wiley, 2002.

B3. Prashant Shenoy and Harrick Vin, "Media Servers," *Readings in Multimedia Computing*, K Jeffay and H. Zhang (eds), Morgan Kaufman Publishers, August 2001.

Journal Publications

J1. B. Li, E. Mazur, Y. Diao, A. McGregor and P. Shenoy, "SCALLA: A Platform for Scalable One-Pass Analytics using MapReduce," *ACM Transactions on Database Systems (TODS)* 2013 (to appear).

J2. Peter Desnoyers, Timothy Wood, Prashant Shenoy, Rahul Singh, Sangameshwar Patil, and Harrick Vin, "Modellus: Automated Modeling of Complex Internet Data Center Applications," *ACM Transactions on the Web (TWEB)*, 6(2), 1-19, May 2012.

J3. T. Wood, K K Ramakrishnan, P. Shenoy, K Van der Merwe, "Enterprise Ready Virtual Cloud Pools: Vision, Oppurtunities and Challenges," *The Computer Journal, Oxford Univ. Press*, vol 55, number 8, pages 1-10, October 2012.

J4. Navin Sharma, David Irwin, Prashant Shenoy and Michael Zink, "MultiSense: Proportional-Share for Mechanically Steerable Sensor Networks," Multimedia Systems Journal (MMSJ), vol 18, pages 425-444, October 2012.

J5. Y. Nie, R. Cocci, Z. Cao, Y. Diao, and P. Shenoy "SPIRE: Efficient Data Interpretation and Compression over RFID Streams," *IEEE Trans. on Knowledge and Data Engineering (TKDE)*, vol 24, number 1, pages 141-155, 2012.

J6. Zhao Cao, Charles Sutton, Yanlei Diao, and Prashant Shenoy,"Distributed Inference and Query Processing for RFID Tracking and Monitoring" *PVLDB Journal*, vol 4, number 5, pages 326-337, March 2011.

J7. Xiaotao Liu, Mark D. Corner, Prashant Shenoy, "Ferret: An RFID-enabled pervasive multimedia application," Ad Hoc Networks, 9(4), 2011.

J8. Jeremy Gummeson, Deepak Ganesan, Prashant Shenoy and Mark Corner, "An Adaptive Link Layer for Heterogeneous Multi-radio Mobile Sensor Networks," *IEEE Journal on Selected Areas in Communications (JSAC), Special Issue on Simple Wireless Sensor Networking Solutions*, vol 28, no 7, pages 1094-1104 Sept 2010.

J9. Gaurav Mathur, Peter Desnoyers, Paul Chukiu, Deepak Ganesan and Prashant Shenoy, "Ultra Low Power Data Storage for Sensor Networks," *ACM Transaction on Sensor Networks (TOSN)*, 2009.

J10. David Yates, Erich Nahum, James F. Kurose, Prashant Shenoy, "Data Quality and Query Cost in Pervasive Sensing Systems", *Elsevier Pervasive and Mobile Computing Journal*, Special Issue of Selected Papers from IEEE Percom'08, 2009.

J11. Ming Li, Deepak Ganesan and Prashant Shenoy, "PRESTO: Feedback-driven Data Management in Sensor Networks," *IEEE/ACM Transactions on Networking (TON)*, October 2009.

J12. Xiaotao Liu, Mark D. Corner, and Prashant Shenoy, "SEVA: Sensor Enhanced Video Annotation," *ACM Transactions on Multimedia Computing, Communications and Applications (ACM TOMCCAP)*, August 2009.

J13. Bhuvan Urgaonkar, Prashant Shenoy, and Timothy Roscoe. "Resource Overbooking and Application Profiling in a Shared Internet Hosting Platform," *ACM Transactions on Internet Technologies (TOIT)*, 2008.

J14. Xiaotao Liu, Prashant Shenoy, and Mark D. Corner, "Chameleon: Application Level Power Management," *IEEE Transactions on Mobile Computing*, 7(8):995-1010, August 2008.

J15. Bhuvan Urgaonkar and Prashant Shenoy "Cataclysm: Scalable Overload Policing for Internet Applications," *Elsevier Journal of Network and Computer Applications (JNCA)*, vol 31, pages 891-920, July 2008.

J16. B. Wang, J. Kurose, P. Shenoy and D. Towsley, "Multimedia Streaming via TCP: An Analytic Performance Study," *ACM Transactions on Multimedia Computing, Communications and Applications (TOMCCAP)*, 4(2), April 2008.

J17. A. Chandra and P. Shenoy. "Hierarchical Scheduling for Symmetric Multiprocessors," *IEEE Trans. On Parallel and Distributed Systems (TPDS)*, 19(3), pp 418-431, March 2008.

J18. Bhuvan Urgaonkar, Prashant Shenoy, Abhishek Chandra, Pawan Goyal, and Timothy Wood, "Agile Dynamic Provisioning of Multi-tier Internet Applications", *ACM Transactions on Adaptive and Autonomous Systems (TAAS)*, Vol. 3, No. 1, pages 1-39, March 2008.

J19. B. Urgaonkar, A. Rosenberg and P. Shenoy, "Application Placement on a Cluster of Servers", *International Journal of Foundations of Computer Science*, Vol. 18, No. 5, pages 1023-1041, October 2007

J20. Z. Ge, P. Ji and P. Shenoy, "Design and Analysis of a Demand Adaptive and Locality Aware Streaming Media Server Cluster" *ACM/Springer Multimedia Systems Journal*, 13(3), pages 235-249, September 2007

J21. B. Urgaonkar, G. Pacifici, P. Shenoy, M. Spreitzer and A. Tantawi, "Analytic Modeling of Multi-tier Internet Applications," *ACM Transactions on the Web (TWEB)*, 1(1):1–25, May 2007.

J22. H. Li, K. Ramamritham, P. Shenoy, R. Grupen, J. Sweeney, "Resource Management for Real-time Tasks in Mobile Robotics," Special Issue on Dynamic Resource Management in Distributed Real-Time Systems, *Journal of Systems and Software*, 80:962-971, May 2007

J23. X. Liu, J. Lan, P. Shenoy and K. Ramamritham, "Consistency Maintenance in Dynamic Overlay Networks," *Computer Networks*, Special Issue on Overlay Distribution Structures and their Applications, 50(6), pp 859-876, April 2006.

J24. A. Chandra, P. Pradhan, R. Tewari, S. Sahu and P. Shenoy, "An Observation-based Approach Towards Self-managing Web Servers" *Computer Communications*, 2006.

J25. Y. Guo, Z. Ge, B. Urgaonkar, P. Shenoy and D. Towsley, "Dynamic Cache Reconfiguration Strategies for Cluster-based Streaming Proxies," *Computer Communications*, 29(8), pp 1174-1188, May 2006.

J26. J. Arnold, B.N. Levine, R. Manmatha, F. Lee, P. Shenoy, M.-C. Tsai, T.K. Ibrahim, D. OBrien, D.A. Walsh, "Information Sharing in Out-of-Hospital Disaster Response: The future role of information technology", *Journal of Pre-Hospital and Disaster Medicine*, 19(2):201-207, Sept 2004.

J27. Sheetal Shah, Krithi Ramamritham and Prashant Shenoy, "Resilient and Coherency Preserving Dissemination of Dynamic Data Using Cooperating Peers," *IEEE Trans. on Knowledge and Data Engineering, Special Issue on Peer-to-Peer Data Management*, 16(7):799-812 July 2004.

J28. Aameek Singh, Abhishek Trivedi, Krithi Ramamritham and Prashant Shenoy, "PTC : Proxies that Transcode and Cache in Heterogeneous Web Client Environments," *World Wide Web Journal, Special Issue on WISE 2002 papers*, 7(1):2-28 2004.

J29. Bhuvan Urgaonkar and Prashant Shenoy, "Sharc: Managing CPU and Network Bandwidth in Shared Clusters," *IEEE Trans. on Parallel and Distributed Systems (TPDS)*, 15(1):2-17, January 2004.

J30. P Shenoy, P Goyal, S Rao and H Vin, "Design Considerations for the Symphony Integrated File System", *ACM/Springer Multimedia Systems Journal*, volume 9, no 4, November 2003

J31. M. Bradshaw, B. Wang, S. Sen, L. Gao, J. Kurose, P. Shenoy, and D. Towsley, "Periodic Broadcast and Patching Services: Implementation, Measurement and Analysis in an Internet Streaming Media Testbed," *ACM/Springer Multimedia Systems Journal, Special Issue on Multimedia Distribution,* 9(1), pages 78-93, July 2003.

J32. Prashant Shenoy, Pawan Goyal, Sriram Rao and Harick Vin, "Design Considerations for the Symphony Integrated Multimedia File System," *ACM/Springer Multimedia Systems Journal*, 9(4), pages 337- 352, October 2003.

J33. Venkata Duvvuri, Prashant Shenoy and Renu Tewari, "Adaptive Leases: A Strong Consistency Mechanism for the World Wide Web," *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 15(5), pages 1266-1276, September 2003.

J34. Anoop Ninan, Purushottam Kulkarni, Prashant Shenoy, Krithi Ramamritham and Renu Tewari, "Scalable Consistency Maintenance in Content Distribution Networks using Cooperative Leases," *IEEE Transactions of Knowledge and Data Engineering*, 15(4), pages 813-828, July/August 2003.

J35. Pavan Deolasee, Amol Katkar, Ankur Panchbudhe, Krithi Ramamritham and Prashant Shenoy "Adaptive Push-Pull of Dynamic Web Data," *IEEE Transactions on Computers*, 51(6) pages 652-668, June 2002.

J36. Mohammad S. Raunak, Prashant Shenoy, Pawan Goyal, Krithi Ramamritham and Puru Kulkarni, "Implications of Proxy Caching for Provisioning Servers and Networks," *IEEE Journal on Selected Areas in Communications (JSAC)*, Special Issue on Internet Proxy Services, 20(7), pages 1276-1289, September 2002.

J37. Prashant Shenoy, Pawan Goyal and Harrick M. Vin, "Architectural Considerations for Next Generation File Systems", *ACM/Springer Multimedia Systems Journal*, 8(4), pages 270-283, July 2002

J38. Prashant Shenoy and Harrick M. Vin, "Cello: A Disk Scheduling Framework for Next Generation Operating Systems," *Real Time Systems Journal: Special Issue on Flexible Scheduling of Real-Time Systems*, 22(1) pages 9-47, January 2002.

J39. Prashant J. Shenoy and Harrick M. Vin, "Failure Recovery Algorithms for Multimedia Servers," *ACM/Springer Multimedia Systems Journal*, 8(1) pages 1-19, January 2000.

J40. Prashant J. Shenoy and Harrick M. Vin, "Efficient Striping Techniques for Variable Bit-rate Continuous Media File Servers," *Performance Evaluation Journal*, 38:(3), pages 175-200, December 1999.

J41. Prashant J. Shenoy and Harrick M. Vin, "Efficient Support for Interactive Operations in Multi-resolution Video Servers," *ACM/Springer Multimedia Systems Journal*, 7(3), pages 241–251, July 1999.

J42. Prashant J. Shenoy, Pawan Goyal, and Harrick M. Vin, "Issues in Multimedia Server Design," *ACM Computing Surveys (Special Issue : Symposium on Multimedia Systems)*, 27(4), pages 636–639, December 1995.

Refereed Conference and Workshop Publications

C1. Upendra Sharma, Prashant Shenoy and Don Towsley, "Provisioning Multi-tier Cloud Applications Using Statistical Bounds on Sojourn Time," Proceedings of the 9th ACM Conference on Autonomic Computing, San Jose, CA, September 2012.

C2. Sean Barker, Aditya Mishra, David Irwin, Emmanuel Cecchet, Prashant Shenoy, and Jeannie Albrecht, "Smart: An Open Data Set and Tools for Enabling Research in Sustainable Homes," Proceedings of the 2012 Workshop on Data Mining Applications in Sustainability (SustKDD 2012), Beijing, China, August 2012

C3. Aditya Mishra, David Irwin, Prashant Shenoy, Jim Kurose, and Ting Zhu, "SmartCharge: Cutting the Electricity Bill in Smart Homes with Energy Storage," Proceedings of the Third International ACM Conference on Future Energy Systems (e-Energy), Madrid, Spain, May 2012.

C4. T. Guo, U. Sharma, S. Sahu, T. Wood, P. Shenoy, "Seagull: Intelligent Cloud Bursting for Enterprise Applications," Proceedings of USENIX Annual Technical Conference, Boston, MA, June 2012.

C5. S. Barker, T. Wood, P. Shenoy, and R. Sitaraman, "An Empirical Study of Memory Sharing in Virtual Machines," Proceedings of the 2012 USENIX Annual Technical Conference (USENIX ATC), Boston, MA, June 2012.

C6. R. Singh, P. Shenoy, K. K. Ramakrishnan, R. Kelkar and H. Vin, "eTransform: Transforming Enterprise Data Centers by Automated Consolidation," Proceedings of the 32nd International Conference on Distributed Computing Systems (ICDCS), Macau, China, June 2012.

C7. A. Mishra, D. Irwin, P. Shenoy, J. Kurose, and T. Zhu, "SmartCharge: Cutting the Electricity Bill in Smart Homes with Energy Storage," Proceedings of the Third International Conference on Future Energy Systems (e-Energy), Madrid, Spain, May 2012.

C8. S. Barker, Y. Chi, H J. Moon, H. Hacigumus, P. Shenoy, "Cut Me Some Slack: Latency-aware Live Migration for Databases," Proceedings of Emerging Database Technologies conference (EDBT), April 2012.

C9. Sean Barker, Aditya Mishra, David Irwin, Prashant Shenoy, and Jeannie Albrecht, "SmartCap: Flattening Peak Electricity Demand in Smart Homes *Proceedings of the IEEE International Conference on Pervasive Computing and Communications (PerCom)*, Lugano, Switzerland, March, 2012 *(Best papers of PerCom'12)*.

C10. Andres Molina-Markham, George Danezis, Kevin Fu, Prashant Shenoy and David Irwin, "Designing Privacy-preserving Smart Meters with Low-cost Microcontrollers," *Proceedings of Financial Cryptography and Data Security*, Bonaire, March 2012

C11. Vaishali Sadaphal, Maitreya Natu, Harrick Vin, and Prashant Shenoy, "Varanus: More-With-Less Fault Localization in Data Centers," Proceedings of IEEE COMSNETS conference, Bangalore India, January 2012 *(Best paper award).*

C12. Vimal Mathew, Ramesh Sitaraman and Prashant Shenoy, "Energy-Aware Load Balancing in Content Delivery Networks," *Proceedings of IEEE Infocom*, Orlando, FL, March 2012

C13. Rahul Singh, Prashant Shenoy, Maitreya Natu, Vaishali Sadaphal and Harrick Vin, "Predico: A System for What-if Analysis in Complex Data Center Applications," *Proceedings of the 12th ACM/IFIP/USENIX International Middleware Conferenc*e, Lisboa, Portugal, December 2011.

C14. Timothy Wood, Andres Lagar-Cavilla, K. K. Ramakrishnan, Prashant Shenoy, Jacobus Van der Merwe, "PipeCloud: Using Causality to Overcome Speed-of-Light Delays in Cloud-Based Disaster Recovery," *Proceedings of 2nd ACM Symposium on Cloud Computing (SOCC)*, October 2011.

C15. David Irwin, Anthony Wu, Sean Barker, Aditya Mishra, Jeannie Albrecht, and Prashant Shenoy, "Exploiting Home Automation Protocols for Load Monitoring in Smart Buildings," *Proceedings of the Third ACM Workshop on Embedded Sensing Systems for Energy-efficiency in Buildings (BuildSys), Seattle, WA*, November 2011.

C16. Ting Zhu, Aditya Mishra, David Irwin, Navin Sharma, Prashant Shenoy, and Don Towsley, "The Case For Efficient Renewable Energy Management for Smart Homes," *Proceedings of the Third ACM Workshop on Embedded Sensing Systems for Energy-efficiency in Buildings (BuildSys), Seattle,WA*, November 2011.

C17. Navin Sharma, Pranshu Sharma, David Irwin, and Prashant Shenoy, "Predicting Solar Generation from Weather Forecasts Using Machine Learning," *Proceedings of the Second IEEE International Conference on Smart Grid Communications (SmartGridComm)*, Brussels, Belgium, October, 2011.

C18. David Irwin, Navin Sharma, and Prashant Shenoy, "Towards Continuous Policy-driven Demand Response in Data Centers," *Proceedings of the ACM SIGCOMM Workshop on Energy and IT: from Green Networking to Smarter Systems (GreenNet)*, Toronto, Canada, August 2011 *(Best Paper Award)*.

C19. Emmanuel Cecchet, Veena Udayabhanu, Timothy Wood and Prashant Shenoy, "BenchLab: An Open Testbed for Realistic Benchmarking of Web Applications," *Proceedings of 2nd USENIX Conference on Web Application Development (WebApps '11)*, June 15-16, 2011, Portland, OR.

C20. Zhao Cao, Charles Sutton, Yanlei Diao, and Prashant Shenoy, "Distributed Inference and Query Processing for RFID Tracking and Monitoring.," *Proceedings of VLDB 2011*, Seattle, WA, August 2011

C21. Boduo Li, Ed Mazur, Yanlei Diao, Andrew McGregor, and Prashant Shenoy, "A Platform for Scalable On-pass Analytics using MapReduce," *Proceedings of ACM Sigmod, Athens*, Greece, June 2011

C22. Upendra Sharma, Prashant Shenoy, Sambit Sahu, Anees Shaikh, Kingfisher: Cost-aware Elasticity in the Cloud *Proceedings of IEEE Infocom 2011, Shanghai*, China, April 2011 (short version). Full version in the *Proceedings of the 31st IEEE ICDCS*, Minneapolis, MN, June 2011

C23. Timothy Wood, Rahul Singh, Arun Venkataramani, Prashant Shenoy and Emmanuel Cecchet, "ZZ and the Art of Practical BFT Execution," *Proceedings of EuroSys 2011*, Salzburg, Austria, April 10 - 13, 2011

C24. Boduo Li, Ed Mazur, Yanlei Diao, and Prashant Shenoy., "Towards Scalable One-Pass Analytics Using MapReduce," *Proceedings of DataCloud 2011- Workshop on Data-intensive Computing in the Clouds*, Anchorage, Alaska, May 2011

C25. Emmanuel Cecchet, Rahul Singh, Upendra Sharma, Prashant Shenoy, "Dolly: Virtualization-driven Database Provisioning for the Cloud" *Proc of the ACM International Conference on Virtual Execution Environments (VEE 2011)*, Newport Beach, CA, March 9-11, 2011.

C26. Timothy Wood, K.K. Ramakrishnan, Prashant Shenoy, Jacobus Van der Merwe, "CloudNet: Dynamic Pooling of Cloud Resources by Live WAN Migration of Virtual Machines," *Proc of the ACM International Conference on Virtual Execution Environments (VEE 2011)*, Newport Beach, CA, March 9-11, 2011.

C27. Navin Sharma, Sean Barker, David Irwin, and Prashant Shenoy, "Blink: Managing Server Clusters on Intermittent Power," *Proceedings of the Sixteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Newport Beach, California, March, 2011.

C28. Navin Sharma, David Irwin, Prashant Shenoy and Michael Zink, "MultiSense: Fine-grained Multiplexing for Steerable Camera Sensor Networks," *Proceedings of ACM Multimedia Systems Conference (MMSys 2011)*, San Jose, CA, U

C29. Andres Molina-Markham, Prashant Shenoy, Kevin Fu, Emmanuel Cecchet, David Irwin, "Private Memoirs of a Smart Meter," *Proc. of 2nd ACM Workshop On Embedded Sensing Systems For Energy-Efficiency In Buildings (BuildSys 2010)*, Zurich, Switzerland, November 2, 2010

C30. Anand Seetharam, Manikandan Somasundaram, Jim Kurose, Don Towsley and Prashant Shenoy, "Shipping to Streaming: Is this shift green?" *Proc. of First ACM SIGCOMM Workshop on Green Networking*, New Delhi, India August 2010

C31. D. Agrawal, B. Li, Z. Cao, D. Ganesan, Y. Diao and P. Shenoy, "Exploiting the Interplay Between Memory and Flash Storage In Embedded Sensor Devices," *Proceedings of the 16th IEEE Conference on Embedded and Real-time Computing Systems (RTCSA)*, Macau, China, Aug 2010

C32. Timothy Wood, Emmanuel Cecchet, K.K. Ramakrishnan, Prashant Shenoy, Jacobus van der Merwe, and Arun Venkataramani, " Disaster Recovery as a Cloud Service: Economic Benefits & Deployment Challenges," *Proceedings of the 2nd Workshop on Hot Topics in Cloud Computing (HotCloud 2010)*, June 22, 2010

C33. Rahul Singh, Upendra Sharma, Emmanuel Cecchet and Prashant Shenoy, "Autonomic Mix-Aware Provisioning for Non-Stationary Data Center Workloads," *Proceedings of the 7th IEEE International Conference on Autonomic Computing and Communications (ICAC)*, Washington, DC, USA, June 7-11, 2010.

C34. Navin Sharma, Jeremy Gummeson, David Irwin, and Prashant Shenoy, "Cloudy Computing: Leveraging Weather Forecasts in Energy Harvesting Sensor Systems," *Proceedings of the Seventh IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON)*, Boston, MA, June 2010

C35. Sean Barker and Prashant Shenoy, "Empirical Evaluation of Latency-sensitive Application Performance in the Cloud," *Proceedings of MMSys 2010 - the first ACM Multimedia Systems Conference*, Scottsdale, AZ, February 2010

C36. T. Wood, G. Tarasuk-Levin, P. Shenoy, P. Desnoyers, E. Cecchet, and M. Corner, "Memory Buddies: Exploiting Page Sharing for Smart Colocation in Virtualized Data Centers," *Proceedings of the ACM Conference on Virtual Execution Environments (VEE 2009)*, Washington DC, March 2009.

C37. Thanh Tran, Charles Sutton, Richard Cocci, Yanming Nie, Yanlei Diao and Prashant Shenoy, "Probabilistic Inference over RFID Streams in Mobile Environments," *Proceedings of the 25th International Conference on Data Engineering (ICDE)*, April 2009, Shanghai, China (to appear)

C38. Timothy Wood, Ludmila Cherkasova, Kivan Ozonat, and Prashant Shenoy, Profiling and Modeling Resource Usage of Virtualized Applications *Proceedings of the 9th ACM/Usenix conference on Middleware*, Lueven Belgium, December 2008. (18% acceptance rate).

C39. A. Nemmaluri, M. Corner, and P. Shenoy, "Sherlock: Automatically Locating Objects for Humans," *Proceedings of ACM Mobisys, Breckenridge, CO*, June 2008. (18% acceptance rate)

C40. R. Cocci, T. Tran, Y. Diao, and P. Shenoy, "Efficient Data Interpretation and Compression over RFID Streams," *Proceedings of the IEEE 24th Intl. Conference on Data Engineering (ICDE)*, April 2008, Cancun, Mexico (short paper). (31% acceptance rate)

C41. David Yates, Erich Nahum, James F. Kurose, and Prashant Shenoy, "Data Quality and Query Cost in Wireless Sensor Networks," *Proceedings of the IEEE Intl. Conference on Pervasive Computing and Communications (PerCom 2008)*, Kowloon, Hong Kong, March 2008. Invited to a fast-track special issue of Pervasive and Mobile Computing journal (11.9% acceptance rate).

C42. D. Yates, E. Nahum, J. Kurose and P. Shenoy, "Data Quality and Query Cost in Wireless Sensor Networks (short version)," *Proceedings of the Third IEEE Intl. Workshop on Sensor Networks and Systems for Pervasive Computing (PerSens 2007)*, White Plains, NY 2007 (28.9% acceptance rate).

C43. M. Li, T. Yan, D. Ganesan, E. Lyons, P. Shenoy, A. Venkataramani and M. Zink, "Multi-user Data Sharing in Radar Sensor Networks," *Proceedings of the 5th ACM Conference on Embedded Networked Sensor Systems (Sensys 2007),* Sydney, Australia, Nov 2007 (16.8% acceptance rate).

C44. K K. Ramakrishnan, P. Shenoy and Jacobus van der Merwe, "Live Data Center Migration across WANs: A Robust Cooperative Context-aware Approach," *Proceedings of the ACM SIGCOMM Workshop on Internet Network Management (INM)*, Kyoto, Japan, August 2007 (30% acceptance rate).

C45. Peter J. Desnoyers and Prashant Shenoy, "Hyperion: High Volume Stream Archival for Retrospective Querying," *Proceedings of the 2007 USENIX Annual Technical Conference, Santa Clara CA*, June 17-22 2007 (**Best Paper Award**, 19% acceptance rate).

C46. T. Wood, P. Shenoy, A. Venkataramani and M. Yousif, "Black-box and Gray-box Strategies for Virtual Machine Migration," *Proceedings of the Fourth Symposium on Networked Systems Design and Implementation (NSDI)*, Cambridge, MA, April 2007 (23.8% acceptance rate).

C47. P. Kulkarni, D. Ganesan and P. Shenoy, "Approximate Initialization of Camera Sensor Networks," *Proceedings of the 4th European Conference on Wireless Sensor Networks (EWSN 2007)*, Delft, Netherlands, January, 2007 (13.4% acceptance rate).

C48. Y. Diao, D. Ganesan, G. Mathur and P. Shenoy, "Re-thinking Data Management for Storage-centric Sensor Networks," *Proceedings of the Third Biennial Conference on Innovative Data Systems Research (CIDR)*, Asilomar, CA, January 2007 (45% acceptance rate).

C49. X. Liu, G. Niv, K. K. Ramakrishnan, P. Shenoy and J. Van der Merwe, "The Case for Semantic Aware Remote Replication," *Proc. 2nd International Workshop on Storage Security and Survivability (StorageSS 2006)*, Alexandria, VA, October 2006.

C50. X. Liu, P. Kulkarni, P. Shenoy and D. Ganesan, "Snapshot: A Self-Calibration Protocol for Camera Sensor Networks," *Proc. IEEE Workshop on Broadband Advanced Sensor Networks (BASENETS 2006)*, San Jose, CA, October 2006.

C51. G. Mathur, P. Desnoyers, D. Ganesan and P. Shenoy, "CAPSULE: An Energy-Optimized Object Storage System for Memory-Constrained Sensor Devices," *Proceedings of the Fourth ACM Conference on Embedded Networked Sensor Systems (SenSys), Boulder, CO*, November 2006 (19% acceptance rate).

C52. Xiaotao Liu, Mark Corner and Prashant Shenoy, "Ferret: RFID Localization for Pervasive Multimedia," *Proceedings of the Eight International Conference on Ubiquitous Computing (Ubicomp)*, Orange County, CA, September 2006 (13% acceptance rate).

C53. V. Sundaram, T. Wood and P. Shenoy, "Efficient Data Migration for Load Balancing in Self-managing Storage Systems," *Proceedings of the Third IEEE Intl. Conference on Autonomic Computing, Dublin*, June 2006 (21% acceptance rate).

C54. M. Li, D. Ganesan and P. Shenoy, "PRESTO: Feedback-driven Data Management in Sensor Networks," *Proceedings of the Third Symposium on Networked Systems Design and Implementation (NSDI)*, San Jose, CA, May 2006 (25.4% acceptance rate).

C55. G. Mathur, P. Desnoyers, D. Ganesan, P. Shenoy, "Ultra-Low Power Storage for Sensor Networks," *Proceedings of the IEEE/ACM Conference on Information Processing in Sensor Networks - SPOTS Track*, Nashville, TN, April 2006 (25.8% acceptance rate).

C56. X. Liu, M. Corner and P. Shenoy, "SEVA: Sensor Enhanced Video Annotation," *Proceedings of ACM Multimedia*, Singapore, November 2005 (**Best Paper Award**, 16% acceptance rate).

C57. P. Kulkarni, P. Shenoy and D. Ganesan, "SensEye: A Multi-tier Camera Sensor Network," *Proceedings of ACM Multimedia*, Singapore, November 2005 (**Best Student Paper Finalist**, 16% acceptance rate).

C58. X. Liu, P. Shenoy and M. Corner, "Chameloen: Application Controlled Power Management with Performance Isolation," *Proceedings of ACM Multimedia*, Singapore, November 2005 (16% acceptance rate).

C59. P. Desnoyers, D. Ganesan and P. Shenoy, "TSAR: A Two Tier Sensor Storage Architecture Using Interval Skip Graphs," *Proceedings of ACM SenSys*, San Diego, CA, November 2005 (17% acceptance rate).

C60. P. Desnoyers, D. Ganesan, H. Li and P. Shenoy, "PRESTO: A Predictive Storage Architecture for Sensor Networks," *Proceedings of Tenth Workshop on Hot Topics in Operating Systems (HotOS-X)*, Santa Fe, NM, June 2005 (19.8% acceptance rate).

C61. P. Kulkarni, D. Ganesan, and P. Shenoy, "The Case for Multi-tier Camera Sensor Networks," *Proceedings of ACM Nossdav*, Skamania, WA, June 2005 (37% acceptance rate).

C62. M. Bradshaw, J. Kurose, P. Shenoy and D. Towsley, "Online Scheduling in Modular Multimedia Systems with Stream Reuse," *Proceedings of ACM Nossdav*, Skamania, WA, June 2005 (37% acceptance rate).

C63. B. Urgaonkar, P. Shenoy, A. Chandra and P. Goyal, "Dynamic Provisioning for Multi-tier Internet Applications," *Proceedings of the 2nd IEEE Intl. Conference on Autonomic Computing (ICAC-05)*, Seattle, WA, June 2005 (**Best student paper award**, 16% acceptance rate).

C64. B. Urgaonkar, G. Pacifici, P. Shenoy, M. Spreitzer and A Tantawi, "An Analytical Model for Multi-tier Internet Services and Its Applications," *Proceedings of the ACM Sigmetrics Conference*, Banff, Canada, June 2005 (13% acceptance rate).

C65. B. Urgaonkar and P. Shenoy, "Cataclysm: Handling Extreme Overloads in Internet Applications," *Proceedings of the Fourteenth International World Wide Web Conference (WWW 2005)*, Chiba, Japan, May 2005 (12% acceptance rate).

C66. H Li, P Shenoy and K Ramamritham, "Scheduling Messages with Deadlines in Multi-hop Real-time Sensor Networks," *Proceedings of the Eleventh IEEE Real-time and Embedded Technology and Applications Symposium (RTAS)*, San Francisco, CA, March 2005 (33% acceptance rate).

C67. M. Bradshaw, J. Kurose, L. Page, P. Shenoy and D. Towsley, "A Reconfigurable on-the-Fly Resource-aware Streaming Pipeline Scheduler," *Proceedings of the 12th Multimedia Computing and Networking Conference (MMCN)*, San Jose, CA, January 2005 (22% acceptance rate).

C68. Bhuvan Urgaonkar, Arnold Rosenberg and Prashant Shenoy, "Application Placement on a Cluster of Servers," *Proceedings of the 17th Intl. Conference of Parallel and Distributed Computing Systems*, San Francisco, CA, September 2004 (33.5% acceptance rate).

C69. Bing Wang, Jim Kurose, Prashant Shenoy and Don Towsley, "Multimedia Streaming via TCP: An Analytic Performance Study," *Proceedings of ACM Sigmetrics*, New York, NY, June 2004 (short paper). Full version appears in the *Proceedings of ACM Multimedia, New York, NY*, October 2004 (16.6% acceptance rate).

C70. John Sweeney, Rod Grupen and Prashant Shenoy, "Active QoS Flow Maintenance in Controlled Mobile Networks," *Proceedings of the Fourth IEEE International Symposium on Robotics and Automation (ISRA)*, Queretaro, Mexico, August 2004.

C71. Bhuvan Urgaonkar and Prashant Shenoy, "Cataclysm: Handling Extreme Overloads in Internet Services (brief announcement)" *Proceedings of ACM Principles of Distributed Computing (PODC)*, St Johns, New Foundland, Canada, July 2004 (23% acceptance rate).

C72. Xiaotao Liu, Prashant Shenoy and Weibo Gong, "A Time Series-based Approach for Power Management in Mobile Processors and Disks," *Proceedings of the 14th ACM Workshop on Network and Operating System Support for Audio and Video (NOSSDAV)*, Kinsale, Ireland, pages 74-81, June 2004 (25.2% acceptance rate).

C73. Xiaolan Zhang, Michael K. Bradshaw, Yang Guo, Bing Wang, Jim Kurose, Prashant Shenoy, Don Towsley, "AMPS: A Flexible, Scalable Proxy Testbed for Implementing Streaming Services," *Proceedings of the 14th ACM Workshop on Network and Operating System Support for Audio and Video (NOSSDAV)*, Kinsale, Ireland, pages 116-121, June 2004 (25.2% acceptance rate).

C74. Huan Li, Prashant Shenoy and Krithi Ramamritham, "Scheduling Communication in Real-Time Sensor Applications," *Proceedings of the Tenth IEEE Real-Time/Embedded Technology and Applications Symposium (RTAS04)*, Toronto, Canada, May 2004 (30.2% acceptance rate).

C75. Peter Radkov, Li Yin, Pawan Goyal, Prasenjit Sarkar and Prashant Shenoy "A Performance Comparison of NFS and iSCSI for IP-Networked Storage," *Proceedings of the Usenix Conference on File and Storage Technologies (FAST 04)*, San Francisco, CA, March 2004 (20.6% acceptance rate).

C76. Yang Guo, Zihui Ge, Bhuvan Urgaonkar, Prashant Shenoy, Don Towsley, "Dynamic Cache Reconfiguration Strategies for Cluster-Based Streaming Proxies," *Proceedings of the Eighth International Workshop on Web Content Caching and Distribution (WCW 2003), Hawthorne, NY*, September 2003 (32% acceptance rate).

C77. Abhishek Chandra, Pawan Goyal and Prashant Shenoy, "Quantifying the Benefits of Resource Multiplexing in On-Demand Data Centers," *Proceedings of the First ACM Workshop on Algorithms and*

Architectures for Self-Managing Systems (Self-Manage 2003), San Diego, CA, June 2003 *(acceptance rate: 27%)*.

C78. Jiang Lan, Xiatao Liu, Prashant Shenoy and Krithi Ramamritham, "Consistency Maintenance in Peer-to-Peer File Sharing Networks," *Proceedings of IEEE Workshop on Internet Applications (WIAPP), San Jose, CA*, pages 90-94, June 2003 *(acceptance rate: 20%)*.

C79. Vijay Sundaram and Prashant Shenoy, "A Practical Learning-based Approach for Dynamic Storage Bandwidth Allocation," *Proceedings of ACM/IEEE Intl Workshop on Quality of Service (IWQoS), Monterey, CA*, Springer LNCS volume 2707, pages 479-497, June 2003 *(acceptance rate: 30%)*.

C80. Abhishek Chandra, Weibo Gong and Prashant Shenoy, "Dynamic Resource Allocation for Shared Data Centers Using Online Measurements," *Proceedings of ACM Sigmetrics 2003*, San Diego, CA, pages 300-301, June 2003 *(acceptance rate: 18%)*. A longer version version appeared in the *Proceedings of ACM/IEEE Intl Workshop on Quality of Service (IWQoS), Monterey, CA*, Springer LNCS, volume 2707, pages 381-400, June 2003 *(acceptance rate: 30%)*.

C81. Huan Li, John Sweeney, Krithi Ramamritham, Roderic Grupen and Prashant Shenoy, "Real-Time Support for Mobile Robotics," *Proceedings of the Ninth IEEE Real-Time/Embedded Technology and Applications Symposium (RTAS03), Toronto, Canada*, pages 10-18, May 2003 *(acceptance rate: 38%)*.

C82. Purushottam Kulkarni, Weibo Gong and Prashant Shenoy, "Scalable Techniques for Memory-efficient CDN Simulations," *Proceedings of the Twelfth World Wide Web Conference (WWW-03), Budapest, Hungary*, pages 609-618, May 2003 *(acceptance rate: 12.8%)*.

C83. Purushottam Kulkarni, Prashant Shenoy and Krithi Ramamritham, "Handling Client Mobility and Intermittent Connectivity in Mobile Web Accesses," *Proceedings of the ACM Conference on Mobile Data Management (MDM 2003), Melbourne, Australia*, Springer LNCS vol 2574, pages 401-407, January 2003 *(acceptance rate: 41%)*.

C84. Prashant Shenoy and Peter Radkov, "Proxy-assisted Power-friendly Streaming to Mobile Devices," *Proceedings of the 2003 Multimedia Computing and Networking (MMCN) Conference, Santa Clara, CA*, pages 177-191, January 2003 *(acceptance rate: 42%)*.

C85. Bhuvan Urgaonkar, Prashant Shenoy and Timothy Roscoe, "Resource Overbooking and Application Profiling in Shared Hosting Platforms," *Proceedings of the Fifth Symposium on Operating Systems Design and Implementation (OSDI), Boston, MA*, pages 239-254, December 2002 *(acceptance rate:18%)*.

C86. Shetal Shah, Krithi Ramamritham and Prashant Shenoy, "Maintaining Coherency of Dynamic Data in Cooperating Repositories," *Proceedings of the 28th Conference on Very Large Data Bases (VLDB), Hong Kong*, pages 526-537, August 2002 *(acceptance rate: 15%)*

C87. Aameek Singh, Abhishek Trivedi, Krithi Ramamritham and Prashant Shenoy, "PTC : Proxies that Transcode and Cache in Heterogeneous Web Client Environments," *Proceedings of the Third IEEE International Conference on Web Information Systems Engineering, Singapore*, pages 11-20, December 2002 (**Award Paper**, 27% acceptance rate).

C88. Prashant Shenoy, Saif Hasan, Purushottam Kulkarni and Krithi Ramamritham, "Middleware versus Native OS Support: Architectural Considerations for Supporting Multimedia Applications," *Proceedings of the IEEE Real-time Technology and Applications Symposium (RTAS'02), San Jose, CA*, pages 23-34, September 2002 *(acceptance rate: 30%)*.

C89. Anoop Ninan, Purushottam Kulkarni, Prashant Shenoy, Krithi Ramamritham and Renu Tewari, "Cooperative Leases: Scalable Consistency Maintenance in Content Distribution Networks," *Proceedings of the Eleventh World Wide Web Conference (WWW 2002), Honolulu, Hawaii*, pages 1-12, May 2002 (**Award Paper**, 16% acceptance rate).

C90. Prashant Pradhan, Renu Tewari, Sambit Sahu, Abhishek Chandra, and Prashant Shenoy, "An Observation-based Approach Towards Self-managing Web Servers," *Proceedings of ACM/IEEE Intl Workshop on Quality of Service (IWQoS), Miami Beach, FL*, pages 13-22, May 2002 *(acceptance rate: 18%)*.

C91. Zihui Ge, Ping Ji and Prashant Shenoy, "A Demand Adaptive and Locality Aware (DALA) Streaming Media Cluster Architecture," *Proceedings of ACM Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV), Miami Beach, FL*, pages 139-146, May 2002 *(acceptance rate: 31%)*.

C92. Manish Bhide, Krithi Ramamritham and Prashant Shenoy, "Maintaining Stock Portfolios Up-to-date on the Web," *Proceedings of the 12th IEEE Workshop on Research Issues in Data Engineering (RIDE '02), San Jose, CA*, pages 60-68, February 2002 *(acceptance rate: 24%)*.

C93. Anuj Maheshwari, Aashish Sharma, Krithi Ramamritham and Prashant Shenoy, "TranSquid: Transcoding and Caching Proxy for Heterogeneous E-Commerce Environments," *Proceedings of the 12th IEEE Workshop on Research Issues in Data Engineering (RIDE '02), San Jose, CA*, pages 50-59, February 2002 *(acceptance rate: 24%)*.

C94. Vijay Sundaram and Prashant Shenoy, "Bandwidth Allocation in a Self-Managing Multimedia File Server," *Proceedings of the Ninth ACM Conference on Multimedia, Ottawa, Canada*, pages 291-301, October 2001 *(acceptance rate: 15%)*.

C95. M. Bradshaw, B. Wang, S. Sen, L. Gao, J. Kurose, P. Shenoy, and D. Towsley, "Periodic Broadcast and Patching Services: Implementation, Measurement and Analysis in an Internet Streaming Media Testbed," *Proceedings of the Ninth ACM Conference on Multimedia, Ottawa, Canada*, pages 280-290, October 2001 *(acceptance rate: 15%)*.

C96. Timothy Roscoe and Prashant Shenoy, "New Resource Control Issues in Shared Clusters," *Proceedings of the Eight International Workshop on Interactive Distributed Multimedia Systems (IDMS'01), Lancaster, UK*, Springer LNCS vol 2158, pages 2-9, September 2001.

C97. Deepak Karuppiah, Zhigang Zhu, Prashant Shenoy and Ed Riseman, "A Fault-tolerant Distributed Vision System for Object Tracking in a Smart Room," *Proceedings of the IEEE Workshop on Computer Vision Systems (ICVS'01), Vancouver, Canada*, Springer LNCS vol 2095, pages 201-219, July 2001.

C98. Abhishek Chandra, Micah Adler and Prashant Shenoy, "Deadline Fair Scheduling: Bridging the Theory and Practice of Proportionate-Fair Scheduling in Multiprocessor Servers," *Proceedings of IEEE Real-time Technology and Applications Symposium (RTAS'01), Taipei, Taiwan*, pages 3-14, June 2001 *(acceptance rate: 31%)*.

C99. Pavan Deolasee, Amol Katkar, Ankur Panchbudhe, Krithi Ramamritham and Prashant Shenoy, "Adaptive Push-Pull of Dynamic Web Data: Better Resiliency, Scalability and Coherency," *Proceedings of the Tenth World Wide Web Conference (WWW-10), Hong Kong*, pages 265-274, May 2001 *(acceptance rate: 19%)*.

C100. Bhuvan Urgaonkar, Anoop Ninan, Mohammad Raunak, Prashant Shenoy and Krithi Ramamritham, "Maintaining Mutual Consistency for Cached Web Objects," *Proceedings of the 21st International Conference on Distributed Computing Systems (ICDCS-21), Phoenix, AZ*, pages 371-380, April 2001 *(acceptance rate: 31%)*.

C101. Krithi Ramamritham, Pavan Deolasee, Amol Katkar, Ankur Panchbudhe and Prashant Shenoy, "Dissemination of Dynamic Data on the Internet," *Proceedings of DNIS 2000: International Workshop on Databases in Networked Information Systems, University of Aizu, Japan*, December 2000 *(invited paper)*.

C102. Vijay Sundaram, Abhishek Chandra, Pawan Goyal, Prashant Shenoy, Jasleen Sahni and Harrick Vin, "Application Performance in the QLinux Multimedia Operating System," *Proceedings of the Eighth ACM Conference on Multimedia, Los Angeles*, CA, pages 127-136, November 2000 *(acceptance rate: 17%)*.

C103. Abhishek Chandra, Micah Adler, Pawan Goyal and Prashant Shenoy "Surplus Fair Scheduling: A Proportional-Share CPU Scheduling Algorithm for Symmetric Multiprocessors," *Proceedings of the Fourth Symposium on Operating System Design and Implementation (OSDI 2000), San Diego, CA*, pages 45-59, October 2000 *(acceptance rate: 21%)*.

C104. Prashant Shenoy, "The Case for Reexamining Integrated File System Design," *Proceedings of the Tenth International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV'00), Chapel Hill, NC*, pages 51-54, June 2000 *(acceptance rate: 41%)*.

C105. Mohammad S. Raunak, Prashant Shenoy, Pawan Goyal and Krithi Ramamritham, "Implications of Proxy Caching for Provisioning Servers and Networks," *Proceedings of ACM SIGMETRICS'2000 Conference, Santa Clara, CA*, pages 66-77, June 2000 *(acceptance rate: 17%)*.

C106. Venkata Duvvuri, Prashant Shenoy and Renu Tewari, "Adaptive Leases: A Strong Consistency Mechanism for the World Wide Web," *Proceedings of IEEE INFOCOM'2000, Tel Aviv, Israel*, pages 834-843, March 2000 *(acceptance rate: 27%)*.

C107. Jim Gray and Prashant Shenoy, "Rules of Thumb in Data Engineering", *Proceedings of the 16th IEEE International Conference on Data Engineering (ICDE'2000), San Diego CA*, pages 3-12, March 2000 *(invited paper)*.

C108. Prashant Shenoy, Pawan Goyal and Harrick M. Vin, "Architectural Considerations for Next Generation File Systems," *Proceedings of the Seventh ACM Conference on Multimedia, Orlando, FL*, pages 457-467, October 1999 *(acceptance rate: 18%)*.

C109. Sambit Sahu, Prashant Shenoy and Donald Towsley, "Design Considerations for Integrated Proxy Servers," *Proceedings of the Ninth IEEE International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV'99), Basking Ridge, NJ*, pages 247–250, June 1999 *(acceptance rate: 36%)*.

C110. Prashant J. Shenoy and Harrick M. Vin, "Cello: A Disk Scheduling Framework for Next Generation Operating Systems," *Proceedings of the ACM SIGMETRICS Conference, Madison, WI*, pages 44–55, June 1998 *(acceptance rate: 17%)*.

C111. Prashant J. Shenoy, Pawan Goyal, Sriram S. Rao and Harrick M. Vin, "Symphony: An Integrated Multimedia File System," *Proceedings of the SPIE/ACM Conference on Multimedia Computing and Networking (MMCN'98), San Jose, CA*, pages 124–138, January 1998.

C112. Prashant J. Shenoy and Harrick M. Vin, "Efficient Striping Techniques for Multimedia File Servers," *Proceedings of the Seventh IEEE International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV'97), St. Louis, MO*, pages 25–36, May 1997 *(acceptance rate: 25%)*.

C113. Banu Özden, Rajeev Rastogi, Prashant J. Shenoy, and Avi Silberschatz, "Fault-tolerant Architectures for Continuous Media Servers," *Proceedings of the ACM SIGMOD Conference, Montreal, Canada*, pages 79–90, June 1996 *(acceptance rate: 16%)*.

C114. Pawan Goyal, Harrick M. Vin, Chia Shen and Prashant J. Shenoy, "A Reliable, Adaptive Network Protocol for Video Transport," *Proceedings of IEEE INFOCOM'96, San Francisco, CA*, pages 1080–1091, March 1996 *(acceptance rate: 29.8%)*.

C115. Prashant J. Shenoy and Harrick M. Vin, "Efficient Support for Scan Operations in Video Servers," *Proceedings of the Third ACM Conference on Multimedia, San Francisco, CA*, pages 131–140, November 1995 *(acceptance rate: 22%)*

C116. Harrick M. Vin, Prashant J. Shenoy and Sriram Rao, "Efficient Failure Recovery in Multi-Disk Multimedia Servers," *Proceedings of the Twenty-Fifth Fault Tolerant Computing Symposium (FTCS), Pasadena, CA*, pages 12–21, June 1995 *(acceptance rate: 18.9%)*.

C117. Harrick M. Vin, Prashant J. Shenoy and Sriram Rao, "Analyzing the Performance of Asynchronous Disk Arrays for Multimedia Retrieval," *Proceedings of the First ISMM International Conference on Distributed Multimedia Systems and Applications, Honolulu, Hawaii*, Pages 14–17, August 1994.

Patents

- Fault tolerant Architectures for Continuous Media Servers Ozden, R. Rastogi, P Shenoy and A. Silberschatz US Patent no 6,079,028, June 2000.

Graduate Students

Ph.D Advisees:

1. Upendra Sharma (Ph.D, Fall 2012), *Research Staff Member, IBM T. J. Watson Research Center.*
   Thesis Title: Elastic Resource Management in Cloud Computing Platforms.

2. Timothy Wood (Ph.D, Fall 2011), *Assistant Professor, George Washington University.*
   Thesis Title: Improving Data Center Resource Management, Deployment and Availability With Virtualization.

3. Peter Desnoyers (Ph.D., Fall 2007), *Assistant Professor, Northeastern University.*
   Thesis Title: Distributed Sensing Networks: Archiving, Indexing, and Analysis

4. Purushottam Kulkarni (Ph.D., Fall 2006; co-advised) *Assistant Professor, Indian Institute of Technology Bombay, India*
   Thesis title: Design Issues in Multi-tier Heterogeneous Sensor Networks

5. Huan Li, (Ph.D., Summer 2006; co-advised), *Associate Professor, Beihang University , Beijing China*
   Thesis title: Resource Management for Distributed Real-Time Sensor Systems
6. Xiaotao Liu (Ph.D., Summer 2006; co-advised), *Senior Research Scientist, EMC*
   Thesis title: System Support for Pervasive Multimedia Systems
7. Vijay Sundaram (Ph.D., Fall 2005), *Software Engineer, Windows Division, Microsoft*
   Thesis: Self-managing Techniques for Storage Resource Management
8. Bhuvan Urgaonkar (Ph.D., Summer 2005) *Assistant Professor, Pennsylvania State University*
   Thesis title: Dynamic Resource Management in Internet Hosting Platforms
9. Abhishek Chandra (Ph.D.,Fall 2004) *Assistant Professor, University of Minnesota*,
   Thesis title: Resource Allocation for Self-Managing Servers

M.S Advisees:

1. Sippakorn Tansutthiwess, (M.S (ECE), Fall 2012), Employer: Amazon
2. Veena Udayabhanu, (M.S., Spring 2012), Employer: Microsoft
3. Aditya Nemmuluri, (M.S., Spring 2008; co-advised), Employer: Cisco Corporation
4. Rick Cocci, (M.S., Spring 2008; co-advised), Employer: State Street Corporation
5. Srinath Gaddam (M.S., Summer 2004), Employer: EMC
6. Peter Radkov (M.S., Summer 03), Employer: Sirma Corporation, Bulgaria
7. Jiang Lan (M.S., Summer 02), Employer: Verizon Corporation
8. Saif Hasan (M.S., Summer 01) Employer: Microsoft Corporation
9. Anoop Ninan(M.S., Summer 01) Employer: EMC Corporation
10. M S. Raunak (M.S., Summer00)
11. Venkata Duvvuri (M.S.,Summer 99) Inital Employer: Goldman Sachs

National, International and Professional Service

- **National-level and International Service**
  - Co-organiser of a CCC/NSF workshop to develop a vision and the research agenda for the "Role of Information Technology in Sustainability." 2011.
  - Member of an ad-hoc IUCEE committee to improve the quality of Engineering Ph.D programs in emerging economies such as India (2010-11).
  - Organizer of a week-long IUCEE workshop to enhance graduate-level curriculum in the area of Distributed Computing Systems, New Delhi, India, 2010.
- **Journal Editorial Boards** and **Guest Editor for Special Issues**
  - Editorial board member, *ACM Transaction on the Web (TWEB)*, 2008-present.
  - Editorial board member, *Springer/ACM Multimedia Systems Journal*, 2006-present.
  - Guest Editor, *IEEE Internet Computing*, Special Issues on Internet Data Dissemination 2007.
  - Guest Editor, *Multimedia Tools and Applications*, 2005.
  - Guest Editor, *ACM Transcaction on Multimedia Communication and Applications (TOMCAP)*, February 2005.
  - Guest Editor, *IEEE Communications Maganize*, Special Issue on Proxy Services for the Internet, August 2004.
  - Guest Editor, *ACM/Springer Multimedia Systems Journal*, Special Issue on Multimedia Computing and Networking, 2003.
- **Program Chair**
  - Program Chair, *ACM Buildsys 2013*
  - Program Chair, *IEEE COMSNETS 2013* conference.
  - Program Chair, *USENIX HotCloud* 2009; Co-founded the HotCloud series in the Cloud Computing Area.
  - Program Chair, *ACM Sigmetrics* 2008
  - Program Chair, *Performance 2007* conference.
  - Program Chair, *World Wide Web 2007* conference.
  - Program Chair, *Multimedia Information Systems* Workshop, College Park, MD, August 2004.
  - Program Chair, *ACM Multimedia Conference*, Berkeley CA, November 2003.
  - Program Chair, *ACM SIGMultimedia/SPIE Multimedia Computing and Networking (MMCN) Conferer-ence*, January 2002.
- **Other conference organization:** General chair, Vice Chair, etc.
  - Program Vice Chair, *World Wide Web Conference*, Japan 2005.
  - Deputy Chair, *World Wide Web Conference*, New York, 2004.
  - General Chair, *ACM SIGMultimedia/SPIE Multimedia Computing and Networking (MMCN) Conference*, January 2003.
  - Associate Chair, *ACM Multimedia Conference*, December 2002.

  - Student Posters Chair, *ACM SIGCOMM 2004*.
  - Tutorials Chair, *ACM SIGMETRICS* 2002.

- **Program Committee and Referee activities**

  - Program Committee Member, *ACM MMSys 2013, ICDCS 2103, NOSSDAV 2012, ACM CoNext 2102, MMSys 2012, E6 2012, GreenNEts 2012, ACM Buildsys 2012, SOCC 2011, Sigmetrics 2011, MMSys 2011, Sensys 2010, USENIX 2009, ACM Sigmetrics 2009, COMSNET 2009, MMCN 2009, ICNP 2008, ACM Multimedia 2008, ACM NOSSDAV 2008, IEEE LANMAN 2008, ACM HotMetrics 2008, ACM Multimedia 2007, ACM NOSSDAV 2007, ACM Multimedia 2006, ACM NOSSDAV 2006, IEEE Infocom 2006, IEEE Infocom 2005, ACM Multimedia 2005, ACM Nossdav 2005, COMAD 2005, Sigmetrics 2004, Global Internet 2004, ACM MDM 2004, MMCN 2004, IEEE WIAPP 2003, IEEE ICDE 2003, IEEE RTSS 2002, ACM NOSSDAV 2002, WWW 2002, Packet Video Workshop 2002, ACM Multimedia 2001, ACM/SPIE MMCN'2001, NOSSDAV'2000, ACM SIGMETRICS 2000, ACM SIGMETRICS Workshop on Internet Server Performance (WISP'99), IEEE ICDCS'99*.
  - Referee for numerous journals: *ACM TOCS, ACM TIOT, IEEE TOC, IEEE TSE, IEEE TPDS, IEEE TKDE, IEEE/ACM TON, IEEE TMM, Journal of Parallel and Distributed Computing, ACM/Springer Multimedia Systems Journal, Kluwer Telecommunication Systems Journal, IEEE Multimedia Magazine, and IEEE Internet Magazine*.

- Panelist for various National Science Foundation (NSF) panels

Federal and State Funding for Research and Education

- NSF MRI award, $2.3M, October 2012-2015
- National Science Foundation OCI-1032765 (UMass PI), "Collaborative Research: SDCI The Missing Link: Connecting Eucalyptus Clouds with Multi-Layer Networks", (UMass share of award $115K), Sept 2010-Aug 2013.
- National Science Foundation Computer Systems Research Award CNS-0916972 (Co-PI), " High Assurance at Low Cost in Data Centers Using Virtualization," $500K, (Sept 2009-Aug 2012).
- NSF CNS-0916577 Computer Systems Research Award (Co-PI) "System and Network Support for Harvesting-aware Solar Sensor Networks," $500K, (Sept 2009- Aug 2012).
- NSF Global Environment for Network Innovation (GENI) Grant (Co-PI), "DiCloud: A Data-intensive Cloud Testbed," $500K, (Duration Oct 2009 - Sept 2012). All GENI grants are administered by BBN Technologies via subcontract.
- National Science Foundation Computing Research Infrastructure award CNS-0855128 "Design of a Solar-powered River Sensor Network Tested," $662K, (Sept 2009-Aug 2012).
- UMass President's Science and Technology Award (Co-PI), "The Massachusetts Green High Performance Computing Center," $200K, Sept 2009-Aug 2011.
- NSF Global Environment for Network Innovation (GENI) Grant (PI), "Sensor Virtualization and Slivering in an Outdoor Wide-area Wireless Sensor/Actuator Network Testbed," $490K, (Duration Oct 2008 - Sept 2011). All GENI grants are administered by BBN Technologies via subcontract.

- UMass Presidents Science and Technology Grant, "The Massachusetts Center for Water and Environmental Sensing Technologies (MassWEST)," Co-directors: B. Levine and P. Shenoy, $175K, Sept 2007.
- NSF Computer Systems Research Award CNS-0720616 (PI), "Measurement, modeling and Analysis of Large Complex Data Centers", $200K, (Duration 9/07-8/10).
- NSF Computer Systems Research Award CNS-0720271 (PI), "Dynamic recofiguration in Virtualized Data Centers", $330K, (Duration 9/07-8/09).
- NSF Embedded Systems Research Award CNS-0615075 (Co-PI), "ASPIRE: Antipodal Staged Processing for Role-adaptive Embedded Systems", Joint grant with UCLA and Yale, $650K, (Duration: Sept 2006 Aug 2009).
- NSF Network of Sensor Systems (NOSS) Award CNS-0626873 (Co-PI), "STONES: Storage-centric Network Embedded Systems," $500,000 (Duration: Sept 2006 Aug 2009).
- NSF Major Research Instrumentation Award (MRI), CNS-052072 (PI), "Acquisition of a Laboratory Testbed for Networked Embedded Systems and Sensor Research," $300,000, (Sept 2005-August 2009). Joint with Amherst College and Mount Holyoke; submitted through Five Colleges, Inc.
- NSF Information Technology Research Award ANI-0325868 (Co-PI), "Hyperion - Next Generation Measurement Infrastructure and Application Use," $2,700,000, September 2003 (Duration: 9/03-8/09).
- NSF Engineering Research Center (ERC), (Affiliated Faculty), "Center For Collaborative Adaptive Sensing of the Atmosphere (CASA)," $17,000,000 (and $13,428,929 in cost-sharing), September 2003 (Duration: 9/03-8/09, with a planned extension through 2013).
- NSF Research Resources Award EIA-0323597, (PI), "Instrumenting and Measuring Distributed Internet Applications," $444,000 (including cost-sharing), September 2003 (Duration: 9/03-8/06).
- NSF Information Technology Research Award, CCR-0219520 (PI), "System Support for Mobile Multimedia and Web Applications," $350,000, September 2002 (Duration: 9/02-8/05).
- NSF Distributed Systems Program Award CCR-0098060 (PI), "Proxy-based Dissemination of Dynamic Web Data," $140,000, April 2001 (Duration: 9/01-8/04).
- NSF Combined Research and Curriculum Development (CRCD) Award EIA-0087945 (Co-PI), "Curriculum Development and Infrastructure for an Advanced Systems Laboratory," $496,000, September 2000 (Duration: 9/00-8/04).
- NSF Research Infrastructure Award EIA-0080119 (Co-PI), "Infrastructure to Support Mixed Wired/Wireless Information Systems," $992,585, September 2000 (Duration: 9/00-8/05).
- NSF Career Award CCR-9984030 (PI), "Scalable High-Performance Information Servers for Internet-based Multimedia Applications," $200,000, April 2000 (Duration: 4/00-3/04).
- NSF Special Projects in Networking Award ANI 9977635 (Co-PI), "Proxy Services in Wide Area Networks," $1,010,263, September 1999 (Duration: 9/99-8/03).