

**Cumulative Bio-Bibliography**  
**University of California, Santa Cruz**  
**September 11, 2009**  
**DARRELL DON EARL LONG**  
**Professor, Computer Science**  
**Kumar Malavalli Endowed Chair in Storage Systems Research**

**EMPLOYMENT HISTORY**

- 2005– Kumar Malavalli Endowed Chair in Storage Systems Research
- 2004– Associate Dean for Research and Graduate Studies, Jack Baskin School of Engineering, University of California, Santa Cruz
- 2001– Director, Storage Systems Research Center, University of California, Santa Cruz
- 1999– Professor, Department of Computer Science, University of California, Santa Cruz
- 1998–01 Associate Dean, Jack Baskin School of Engineering, University of California, Santa Cruz
- 1994–99 Associate Professor, Department of Computer Science, University of California, Santa Cruz
- 1988–94 Assistant Professor, Department of Computer Science, University of California, Santa Cruz
- 1986–88 Research Assistant, Department of Computer Science & Engineering, University of California, San Diego
- 1985–87 Teaching Associate, Department of Computer Science & Engineering, University of California, San Diego
- 1984–87 Lecturer in Mathematics, Department of Mathematical Sciences, San Diego State University
- 1981–84 Systems Programmer, University Computer Center, San Diego State University

**VISITOR HISTORY**

- 2009 (February) Professeur Invité, Université Paris–Dauphine
- 2008 (February) Visiting Professor, University of Technology, Sydney
- 2007 (Winter) Visiting Scholar, University of California, San Diego
- 2007 (Winter) Visiting Scholar, Center for Communications Research
- 1995– Visiting Scientist, IBM Almaden Research Center

**EDUCATION**

- Ph.D. 1988 University of California, San Diego, Computer Science
- M.S. 1986 University of California, San Diego, Computer Science
- B.S. 1984 San Diego State University, Computer Science

## **HONORS**

- 2008 Fellow, American Association for the Advancement of Science  
Certificate of Appreciation for Outstanding Service, National Research Council
- 2006 Fellow, Institute of Electrical and Electronics Engineers
- 2005 Kumar Malavalli Endowed Chair in Storage Systems Research  
IBM Research Invention Achievement Award (Third Plateau)  
Certificate of Appreciation for Outstanding Service, National Research Council
- 2003 IBM Faculty Award
- 2002 IBM Research Invention Achievement Award (Second Plateau)  
IEEE Computer Society Certificate of Appreciation
- 2001 IBM Corporate Accomplishment for Adaptive Differential Back-up in the Tivoli Storage Manager
- 1997 IBM Research Invention Achievement Award (First Plateau)
- 1996 IBM Research Invention Achievement Award  
IEEE Computer Society Certificate of Appreciation
- 1995 Honorable mention, 1994–95 Excellence in Teaching Award
- 1994 Senior Member, Institute of Electrical and Electronics Engineers
- 1993 IEEE Computer Society Certificate of Appreciation
- 1992 Regents Junior Faculty Fellow
- 1991 Student Alumni Council Favorite Professor Award
- 1989 Regents Junior Faculty Fellow
- 1988 Regents Junior Faculty Fellow

## **CONSULTING**

- 2008–10 Hewlett-Packard Laboratories
- 2006– Fish & Richardson; Weil, Gotshal & Manges
- 2004–05 Faegre & Benson
- 2004 Siemens Technology-to-Business Center
- 2002– MITRE Corporation
- 2002–05 Fish & Richardson
- 2001–03 Hecker Law Group; Bartlit, Beck, Herman, Palenchar & Scott; Jenner & Block
- 2000 Sony Music Ventures
- 1997–02 Chief of Naval Research
- 1996 Chatham Group

## GRANTS

- 2009–14 *Collaborative Research: A Multi-University I/UCRC Center on Intelligent Storage*, National Science Foundation, \$275,000 (with E. Miller).
- 2009–10 *Development of a Collaborative Project for Remotely Sensed Science and Technology*, NASA, \$300,000 (with Raphael Kudela, Ethan Miller, Roberto Manduci, Donald Potts, Eli Silver, Michael Loik and Chris Wilmers).
- 2007 *ViewFS: Dynamic Name-Spaces for Metadata-Rich File Systems*, Lawrence Livermore National Laboratory, \$74,994 (with E. Miller).
- 2006–09 *End-to-End Performance Management for Large Distributed Storage*, National Science Foundation, \$956,647 (with S. Brandt).
- 2006–11 *Petascale Data Storage Institute*, Department of Energy, Office of Science, \$11,250,000 (in collaboration with Carnegie-Mellon University, University of Michigan, and the Department of Energy National Laboratories).
- 2005–10 *Institute for Scalable Scientific Data Management*, Department of Energy, Los Alamos National Laboratory, \$4,750,000 (with S. Brandt and E. Miller).
- 2005–06 *Scalable File Systems for High Performance Computing*, Department of Energy, Defense Programs Laboratories, \$250,000 (with S. Brandt, E. Miller, M. Abadi and C. Maltzahn).
- 2003 *A Scalable On-Line Associative Deep Store*, University of California, Microelectronics Electronics Innovation and Computer Research Opportunities Program (MICRO), \$27,000.
- 2003–06 *A Scalable On-Line Associative Deep Store*, National Science Foundation, \$294,012.
- 2002–07 *Applications of Data Grouping for Effective Mobility*, National Science Foundation, \$338,130.
- 2002–05 *Scalable File Systems for High Performance Computing*, Department of Energy, Defense Programs Laboratories, \$900,000 (with S. Brandt, E. Miller and K. Obraczka).
- 2001–02 *Building a High-Performance Storage Systems from Commodity Components*, Department of Energy, Lawrence Livermore National Laboratory, \$65,000.
- 2000–01 *Application of Probe-based Storage to High Performance Computing*, Department of Energy, Lawrence Livermore National Laboratory, \$39,239.
- 2000–03 *Architectures and Algorithms to Exploit Probe-Based Storage*, National Science Foundation, \$345,191 (with S. Brandt and T. Madhyastha).
- 2000–02 *An Experimental Study of Broadcasting Protocols for Video-on-Demand*, National Science Foundation, \$100,000.
- 1999–01 *High Performance Integration of Advanced Tertiary Stores*, National Science Foundation, \$170,353.
- 1998 *Real-Time Environmental Information Network and Analysis System (REINAS)*, Office of Naval Research, \$100,000.
- 1998–99 *Tactical Environmental Data System/Real-time (TEDS/RT)*, Naval Research Laboratory, \$75,000.
- 1997–02 *National Partnership for Advanced Computing Infrastructure (NPACI)*, National Science Foundation, \$819,000 (with P. Mantey, A. Pang and S. Flatté).
- 1997–99 *Predictive Power Conservation*, National Science Foundation, \$122,011 (with D. Helmbold).
- 1997–99 *Improving Cache Performance by Predicting I/O System Actions*, National Science Foundation, \$136,647.

- 1996–97 *Efficient Back-up and Restore Using Differential Files*, International Business Machines Corporation, \$79,864.
- 1995–98 *Instant Infrastructure and Distributed Resource Management*, Office of Naval Research, \$90,911.
- 1995–96 *Efficient Resource Utilization Through Idle-Time Prediction*, University of California Seed Funds, \$15,000 (with D. Helmbold).
- 1993–94 *Global-scale Distributed Data Base Management*, Academic Senate Committee on Research, \$1,500.
- 1993–95 *Integration of Heterogeneous Real-time Data Repositories for Scientific Use*, Office of Naval Research, \$219,164.
- 1992–93 *Estimating Host Reliability Using the Internet*, University of California, Microelectronics Electronics Innovation and Computer Research Opportunities Program (MICRO), \$5,481.
- 1992–97 *Real-time Environmental Information Network and Analysis System (REINAS)*, Office of Naval Research, \$4,767,112 (with P. Mantey *et al.*).
- 1992–93 *Estimating Reliability Using the Internet*, University of California Seed Funds, \$10,000.
- 1992–93 *Estimating Host Reliability Using the Internet*, Sun Microsystems, Incorporated, \$16,590.
- 1991–92 *A Distributed Architecture for High-speed I/O*, Department of Energy, Lawrence Livermore National Laboratory, \$15,183.
- 1991–93 *High-speed Distributed Storage Management*, National Science Foundation, \$68,955.
- 1991–92 *A High-speed System to Support Multimedia*, Academic Senate Committee on Research, \$1,500.
- 1991–92 *Instructional Improvement Grant*, Academic Senate Committee on Teaching, \$200.
- 1990–91 *Concurrent Systems Laboratory*, University of California Seed Funds, \$12,500.
- 1989–90 *Fault-tolerant Operating System Techniques*, University of California, Microelectronics Electronics Innovation and Computer Research Opportunities Program, (MICRO) \$4,000.
- 1988–89 *Modeling Fault-tolerant Computations*, Academic Senate Committee on Research, \$1,500.

## PATENTS

1. Darrell D. E. Long and Thomas M. Kroeger. “Predictive Event Tracking Method,” U.S. Patent no. 5,889,993, March 1999.
2. Luis Felipe Cabrera and Darrell D. E. Long. “Method and Apparatus for Establishing and Maintaining the Status of Membership Sets used in Mirrored Read and Write Input/Output without Logging,” U.S. Patent no. 5,917,998, June 1999.
3. Randal C. Burns, Edward G. Chron, Darrell D. E. Long and Benjamin C. Reed. “Secure Array of Remotely Encrypted Storage Devices,” U.S. Patent no. 5,931,947, August 1999.
4. Randal C. Burns and Darrell D. E. Long. “A Method for Generating and Reconstructing In-place Delta Files,” U.S. Patent no. 6,018,747, January 2000.
5. Edward G. Chron, Darrell D. E. Long, Randal C. Burns and Benjamin Reed. “Decentralized Remotely Encrypted File System,” U.S. Patent no. 6,405,315, June 2002.
6. Randal C. Burns, Robert M. Rees and Darrell D. E. Long. “Data Placement and Allocation using Virtual Contiguity,” U.S. Patent no. 6,651,147, November 2003.
7. Randal C. Burns, Robert M. Rees, Darrell D. E. Long and Atul Goel. “Lease-Based Safety Protocol for Distributed System with Multiple Networks,” U.S. Patent no. 6,775,703, August 2004.

8. Randal C. Burns and Darrell D. E. Long. "System and Method for Managing Authentication and Coherency in a Storage Area Network," U.S. Patent no. 6,792,424, September 2004.
9. Randal C. Burns, Darrell D. E. Long and Robert M. Rees. "System and Method for Restoring a File System from Backups in the Presence of Deletions," U.S. Patent no. 6,938,056, August 2005.
10. Rajagopal Ananthanarayanan, Ralph Becker-Szendy, Randal C. Burns, Darrell D. E. Long, Jujjuri Venkateswararao, David M. Wolf and Jason C. Young. "Method, System and Computer Program Product for Implementing Copy-on-Write of a File," U.S. Patent no. 7,085,909, August 2006.
11. Jason C. Young, Rajagopal Ananthanarayanan, Randal C. Burns, Darrell D. E. Long, Robert M. Rees, Ralph A. Becker-Szendy, James J. Seeger and David M. Wolf. "Managing File System Versions," U.S. Patent no. 7,139,781, November 2006.
12. Darrell D. E. Long, Randal C. Burns, Robert M. Rees and Wayne Hineman. "Coordinated Backup and Restore for a Physically Separated File System," *Confidential, pending*.
13. Sudhir G. Rao, Robert M. Rees, Randal C. Burns and Darrell D. E. Long. "Reliable Leader Election," *Confidential, pending*.
14. Ralph Becker-Szendy, Darrell D. E. Long, and Richard A. Golding. "Using Cash to Enforce Quota in a Distributed Object Storage System," *Confidential, pending*.

## PUBLICATIONS

### Journals

1. Bo Hong, Scott A. Brandt, Darrell D. E. Long, Ethan L. Miller and Ying Lin. "Using MEMS-Based Storage in Computer Systems – Device Modeling and Management," *ACM Transactions on Storage*, vol. 2, no. 2, May 2006, pp. 139–160.
2. Bo Hong, Feng Wang, Scott A. Brandt, Darrell D. E. Long and Thomas J. E. Schwarz, S.J. "Using MEMS-Based Storage in Computer Systems – MEMS Storage Architectures," *ACM Transactions on Storage*, vol. 2, no. 1, February 2006, pp. 1–21.
3. Randal Burns, Larry Stockmeyer and Darrell Long. "In-Place Reconstruction of Version Differences," *IEEE Transactions on Knowledge and Data Engineering*, vol. 14, no. 4, July–August 2003, pp. 973–984.
4. Miklos Ajtai, Randal Burns, Ronald Fagin, Darrell Long and Larry Stockmeyer. "Compactly Encoding Unstructured Inputs with Differential Compression," *Journal of the ACM*, vol. 49, no. 3 (2002), pp. 318–367.
5. Randal C. Burns, Robert M. Rees and Darrell D. E. Long. "Efficient Data Distribution in a Web Server Farm," *Internet Computing*, IEEE, July 2001, pp. 56–65.
6. Randal C. Burns, Robert M. Rees, Larry Stockmeyer, and Darrell D. E. Long. "Scalable Session Locking for a Distributed File System," *Cluster Computing Journal*, Kluwer Academic Publishers, vol. 4, no. 4 (2001), pp. 295–306.
7. David P. Helmbold, Darrell D. E. Long, Tracey L. Sconyers and Bruce Sherrod. "Adaptive Disk Spin-Down for Mobile Computers," *ACM/Baltzer Mobile Networks and Applications Journal (MONET)*, vol. 5, no. 4 (2000), pp. 285–297.
8. Benjamin C. Reed, Darrell D. E. Long, Edward G. Chron and Randal C. Burns. "Authenticating Network Attached Storage," *IEEE Micro*, January–February 2000, pp. 49–57.
9. Steven W. Carter and Darrell D. E. Long. "Improving Bandwidth Efficiency of Video-on-Demand Servers," *Computer Networks*, Elsevier, vol. 31, nos. 1–2 (1999) pp. 99–111.
10. Eric C. Rosen, Theodore R. Haining, Darrell D. E. Long, Patrick E. Mantey. "REINAS: A Real-time System for Managing Environmental Data," *Journal of Software Engineering and Knowledge Engineering*, vol. 8, no. 1 (1998), pp. 35–53.

11. Darrell D. E. Long, Bruce R. Montague and Luis-Felipe Cabrera. "Swift/RAID: A Distributed RAID System," *Computing Systems*, vol. 7, no. 3 (1994), pp. 333–359.
12. Ivan Fellner, Ivan Racko, Milos Racek, Karol Fabian and Darrell D. E. Long. "A Comparison of Two Implementations of the Token Ring Priority Function," *International Journal in Computer Simulation*, vol. 5, no. 1 (1994), pp. 13–28.
13. Luis-Felipe Cabrera and Darrell D. E. Long. "Swift: Using Distributed Disk Striping to Provide High I/O Data Rates," *Computing Systems*, vol. 4, no. 4 (1991), pp. 405–436.
14. Richard A. Golding and Darrell D. E. Long. "Accessing Replicated Data in a Large-Scale Distributed System," *International Journal in Computer Simulation*, vol. 1, no. 4 (1991), pp. 347–372.
15. Jehan-François Pâris and Darrell D. E. Long. "The Performance of Available Copy Protocols for the Management of Replicated Data," *Performance Evaluation*, vol. 11 (1990), pp. 9–30.
16. Darrell D. E. Long, John L. Carroll and Kris Stewart. "Estimating the Reliability of Regeneration-Based Replica Control Protocols," *IEEE Transactions on Computers*, vol. 38, no. 12, (December 1989), pp. 1691–1702.

### Refereed Conference Papers

1. Jehan-François Pâris, Ahmed Amer, Darrell D. E. Long and Thomas J. E. Schwarz. "Evaluating the Impact of Irrecoverable Read Errors on Disk Array Reliability," *Proceedings of the IEEE 15th Pacific Rim International Symposium on Dependable Computing (PRDC)*, Shanghai, China, November 2009, *to appear*.
2. Jehan-François Pâris, Ahmed Amer, Darrell D. E. Long. "Using Storage Class Memories to Increase the Reliability of Two-dimensional RAID Arrays," *Proceedings of the Seventeenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, London: IEEE, September 21–23, 2009, *to appear*.
3. Avani Wildani, Thomas J. E. Schwarz, Ethan L. Miller and Darrell D. E. Long. "Protecting Against Rare Event Failures in Archival Systems," *Proceedings of the Seventeenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, London: IEEE, September 21–23, 2009, *to appear*.
4. Deepavali Bhagwat, Kave Eshghi, Darrell D. E. Long and Mark Lillibridge. "Extreme Binning: Scalable, Parallel Deduplication for Chunk-based File Backup," *Proceedings of the Seventeenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, London: IEEE, September 21–23, 2009, *to appear*.
5. Kevin M. Greenan, Darrell D. E. Long, Ethan L. Miller, Thomas J. E. Schwarz and Avani Wildani. "Building Flexible, Fault-Tolerant Flash-based Storage Systems," *Proceedings of Hot Topics in System Dependability (HotDep)*, Lisbon: IEEE, June 29, 2009.
6. Ahmed Amer, Jehan-François Pâris, Darrell D. E. Long and Thomas Schwarz. "Progressive Parity-Based Hardening of Data Stores," *Proceedings of the International Performance Conference on Computers and Communication (IPCCC)*, Austin: IEEE, December 7–9, 2008, pp. 34–42.
7. Jehan-François Pâris, Thomas Schwarz, Darrell D. E. Long and Ahmed Amer. "When MTDLs Are Not Good Enough: Providing Better Estimates of Disk Array Reliability," *Proceedings of the Seventh International Information and Telecommunication Technologies Symposium (I2TS)*, Cuiabá, Brazil, Foz do Iguaçu, Paraná State, Brazil, December 3–5, 2008, pp. 190–195.
8. Kevin M. Greenan, Darrell D. E. Long, Ethan L. Miller, Thomas J. E. Schwarz, S.J. and Jay J. Wylie. "A Spin-Up Saved is Energy Earned: Achieving Power-Efficient, Erasure-Coded Storage," *Proceedings of Hot Topics in System Dependability (HotDep)*, San Diego: Usenix, December 7, 2008.

9. Mark W. Storer, Kevin Greenan, Darrell D. E. Long and Ethan L. Miller. "Secure Data Deduplication," *Proceedings of the Fourth International Workshop on Storage Security and Survivability (StorageSS)*, held in conjunction with the *ACM Computer and Communications Security Conference (CCS)*, Alexandria, Virginia: ACM, October 31, 2008.
10. Ahmed Amer, Darrell D. E. Long, Jehan-François Pâris and Thomas Schwarz. "Increased Reliability with SSPiRAL Data Layouts," *Proceedings of the Sixteenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Baltimore: IEEE, September 8–10, 2008, pp. 189–198.
11. Kevin Greenan, Ethan L. Miller, Thomas Schwarz and Darrell D. E. Long. "Disaster Recovery Codes: Increasing Reliability with Large-Stripe Error Correction Codes," *Proceedings of the Third International Workshop on Storage Security and Survivability (StorageSS)*, held in conjunction with the *ACM Computer and Communications Security Conference (CCS)*, Alexandria, Virginia: ACM, October 29, 2007.
12. Kristal T. Pollack, Darrell D.E. Long, Richard A. Golding, Ralph A. Becker-Szendy and Benjamin Reed. "Quota Enforcement for High-performance Distributed Storage Systems," *Proceedings of the Conference on Mass Storage Systems and Technologies*, San Diego: IEEE, September 2007, pp. 72–84.
13. Timothy Bisson, Scott A. Brandt and Darrell D. E. Long. "A Hybrid Disk-Aware Spin-Down Algorithm with I/O Subsystem Support," *Proceedings of the International Performance Conference on Computers and Communication (IPCCC)*, New Orleans: IEEE, April 11–13, 2007.
14. Jehan-François Pâris, Thomas J. Schwarz, S.J. and Darrell D. E. Long. "Self-Adaptive Two-Dimensional RAID Arrays," *Proceedings of the International Performance Conference on Computers and Communication (IPCCC)*, New Orleans: IEEE, April 11–13, 2007.
15. Jehan-François Pâris, Thomas J. Schwarz, S.J. and Darrell D. E. Long. "Protecting Data Against Early Disk Failures," *Proceedings of the Fifth International Information and Telecommunication Technologies Symposium (I2TS)*, Cuiabá, Brazil, December 2006, pp. 113–119.
16. Jehan-François Pâris, Thomas J. Schwarz, S.J. and Darrell D. E. Long. "Self-Adaptive Disk Arrays," *Proceedings of the Eighth International Symposium on Stabilization, Safety, and Security of Distributed Systems (SSS)*, Springer, Lecture Notes in Computer Science: Dallas, November 2006, pp. 469–483.
17. Sage A. Weil, Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long and Carlos Maltzahn. "Ceph: A Scalable, High-Performance Distributed File System," *Proceedings of the Seventh Symposium on Operating Systems Design and Implementation (OSDI)*, Seattle: Usenix Association, November 2006, pp. 307–320.
18. Timothy Bisson, Scott A. Brandt and Darrell D. E. Long. "NVCache: Increasing the Effectiveness of Disk Spin-down Algorithms with Caching," *Proceedings of the Fourteenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Monterey: IEEE, September 2006, pp. 422–432.
19. Jeffrey P. Rybczynski, Darrell D. E. Long and Ahmed Amer. "Adapting Predictions and Workloads for Power Management," *Proceedings of the Fourteenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Monterey: IEEE, September 2006, pp. 3–12.
20. Deepavali Bhagwat, Kristal Pollack, Darrell D. E. Long, Ethan L. Miller, Thomas Schwarz, S.J. and Jehan-François Pâris. "Providing High Reliability in a Minimum Redundancy Archival Storage System," *Proceedings of the Fourteenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Monterey: IEEE, September 2006, pp. 412–421.
21. Lawrence L. You, Kristal T. Pollack and Darrell D. E. Long. "Deep Store: an Archival Storage System Architecture," *Proceedings of the Twenty-first International Conference on Data Engineering (ICDE)*, Tokyo: IEEE, April 2005, pp. 804–815.

22. Qin Xin, Ethan L. Miller, Thomas J. E. Schwarz, and Darrell D. E. Long. "Impact of Failure on Interconnection Networks in Large Storage Systems," *Proceedings of the Twenty-second Conference on Mass Storage Systems and Technologies*, Monterey: IEEE, April 2005, pp. 189–196.
23. Feng Wang, Bo Hong, Scott A. Brandt and Darrell D. E. Long. "Using MEMS-based Storage to Boost Disk Performance," *Proceedings of the Twenty-second Conference on Mass Storage Systems and Technologies*, Monterey: IEEE, April 2005, pp. 202–209.
24. Thomas J. E. Schwarz, Qin Xin, Ethan L. Miller, Darrell D. E. Long, Andrew Hospodor and Spencer Ng. "Disk Scrubbing in Large Archival Storage Systems," *Proceedings of the Twelfth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Volendam, The Netherlands: IEEE, October 2004, pp. 409–418.
25. Karl Brandt, Darrell D. E. Long and Ahmed Amer. "Predicting When Not To Predict," *Proceedings of the Twelfth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Volendam, The Netherlands: IEEE, October 2004, pp. 419–426.
26. Bo Hong, Thomas J. E. Schwarz, Scott A. Brandt and Darrell D. E. Long. "Reliability of MEMS-Based Storage Enclosures," *Proceedings of the Twelfth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Volendam, The Netherlands: IEEE, October 2004, pp. 571–579.
27. Bo Hong, Demyan Plantenberg, Darrell D. E. Long and Miriam Sivan-Zimet. "Duplicate Data Elimination in a SAN File System," *Proceedings of the Twenty-first Symposium on Mass Storage Systems (MSS)*, Goddard, Maryland: NASA, April 2004, pp. 301–314.
28. Purvi Shah, Jehan-François Pâris, Ahmed Amer and Darrell D. E. Long. "Identifying Stable File Access Patterns," *Proceedings of the Twenty-first Symposium on Mass Storage Systems (MSS)*, Goddard, Maryland: NASA, April 2004, pp. 159–163.
29. Feng Wang, Qin Xin, Bo Hong, Scott A. Brandt, Ethan Miller, Darrell Long and Tyce T. M<sup>c</sup>Larty. "File System Workload Analysis For Large Scale Scientific Computing Applications," *Proceedings of the Twenty-first Symposium on Mass Storage Systems (MSS)*, Goddard, Maryland: NASA, April 2004, pp. 139–152.
30. Feng Wang, Scott A. Brandt, Ethan L. Miller and Darrell D. E. Long. "OBFS: A File System for Object-Based Storage Devices," *Proceedings of the Twenty-first Symposium on Mass Storage Systems (MSS)*, Goddard, Maryland: NASA, April 2004, pp. 283–300.
31. Ismail Ari, Bo Hong, Ethan L. Miller, Scott A. Brandt and Darrell D. E. Long. "Managing Flash Crowds on the Internet," *Proceedings of the Eleventh International Symposium on Modeling, Analysis, and Simulation in Computer and Telecommunication Systems (MASCOTS)*, Orlando: IEEE, October 2003, pp. 246–249.
32. Bo Hong, Scott A. Brandt, Darrell D. E. Long, Ethan L. Miller, Karen A. Glocer, Zachary N. J. Peterson. "Zone-Based Shortest Positioning Time First Scheduling for MEMS-Based Storage Devices," *Proceedings of the Eleventh International Symposium on Modeling, Analysis, and Simulation in Computer and Telecommunication Systems (MASCOTS)*, Orlando: IEEE, October 2003, pp. 104–113.
33. Karthik Thirumalai, Jehan-François Pâris and Darrell D. E. Long. "Tabbycat: an Inexpensive Scalable Server for Video-on-Demand," *Proceedings of the IEEE 2003 International Conference on Communications (ICC)*, Anchorage, Alaska: IEEE, May 2003, pp. 896–900.
34. Ahmed Amer, Alison Luo, Newton Der, Darrell D. E. Long and Alex Pang. "Visualizing Cache Effects on I/O Workload Predictability," *Proceedings of the International Performance Conference on Computers and Communication (IPCCC)*, Phoenix: IEEE, April 2003, pp. 417–424.
35. Jehan-François Pâris and Darrell D. E. Long. "A Proactive Implementation of Interactive Video-on-Demand," *Proceedings of the International Performance, Computing, and Communications Conference (IPCCC)*, Phoenix: IEEE, April 2003, pp. 425–431.

36. Qin Xin, Ethan L. Miller, Scott A. Brandt, Darrell D. E. Long, Thomas Schwarz and Witold Litwin. "Reliability Mechanisms for Very Large Storage Systems," *Proceedings of the Twentieth Symposium on Mass Storage Systems (MSS)*, San Diego: IEEE, April 2003, pp. 146–156.
37. Gary A. S. Whittle, Jehan-François Pâris, Ahmed Amer, Darrell D. E. Long and Randal Burns. "Using Multiple Predictors to Improve the Accuracy of File Access Predictions," *Proceedings of the Twentieth Symposium on Mass Storage Systems (MSS)*, San Diego: IEEE, April 2003, pp. 230–240.
38. Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long and Lan Xue. "Efficient Metadata Management in a Large Distributed Storage System," *Proceedings of the Twentieth Symposium on Mass Storage Systems (MSS)*, San Diego: IEEE, April 2003, pp. 290–298.
39. Jehan-François Pâris and Darrell D. E. Long. "A Variable Bandwidth Broadcasting Protocol For Video-on-Demand," *Proceedings of the 2003 SPIE Multimedia Computing and Networking Conference (MMCN)*, San Jose: SPIE, January 2003, pp. 209–219.
40. Ying Lin, Scott A. Brandt, Darrell D. E. Long and Ethan L. Miller. "Power Conservation Strategies for MEMS-based Storage Devices," *Proceedings of the Tenth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Fort Worth: IEEE, October 2002, pp. 53–62.
41. Ahmed Amer, Darrell D. E. Long and Randal C. Burns. "Group-Based Management of Distributed File Caches," *Proceedings of the Twenty-second International Conference on Distributed Computing Systems (ICDCS)*, Vienna: IEEE, July 2002, pp. 525–534.
42. Tsozen Yeh, Darrell D. E. Long and Scott A. Brandt. "Increasing Predictive Accuracy by Prefetching Multiple Program and User Specific Files," *Proceedings of the Sixteenth Annual International Symposium on High Performance Computing Systems and Applications (HPCS)*, Moncton, New Brunswick, Canada: IEEE, June 2002, pp. 12–19.
43. Alison Luo, Ahmed Amer, Scott Speidel, Darrell D. E. Long and Alex Pang. "Visualizing I/O Predictability," *Proceedings of the First International Symposium on 3D Data Processing, Visualization, and Transmission (3DPVT)*, Padova, Italy: IEEE, June 2002, pp. 202–207.
44. Ahmed Amer, Darrell D. E. Long, Jehan-François Pâris and Randal C. Burns. "File Access Prediction with Adjustable Accuracy," *Proceedings of the International Performance Conference on Computers and Communication (IPCCC)*, Phoenix: IEEE, April 2002, pp. 131–140.
45. Tsozen Yeh, Darrell D. E. Long and Scott A. Brandt. "Increasing Predictive Accuracy through Limited Prefetching," *Proceedings of Communications Networks and Distributed Systems Modeling and Simulation (CNDS)*, San Antonio: Society for Computer Simulation, January 2002, pp. 131–138.
46. Ethan L. Miller, Darrell D. E. Long, William Freeman and Benjamin C. Reed. "Strong Security for Network-Attached Storage," *Proceedings of the Conference on File and Storage Technologies (FAST)*, Monterey: Usenix Association, January 2002, pp. 1–13.
47. Tsozen Yeh, Darrell D. E. Long and Scott A. Brandt. "Using Program and User Information to Improve File Prediction Performance," *Proceedings of the International Symposium on Performance Analysis of Systems and Software (ISPASS)*, Tucson: IEEE, November 2001, pp. 111–119.
48. Ahmed Amer and Darrell D. E. Long. "Aggregating Caches: A Mechanism for Implicit File Prefetching," *Proceedings of the Ninth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Cincinnati: IEEE, August 2001, pp. 293–301.
49. Tsozen Yeh, Darrell D. E. Long and Scott A. Brandt. "Performing File Prediction with a Program-Based Successor Model," *Proceedings of the Ninth International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, Cincinnati: IEEE, August 2001, pp. 193–202.
50. Thomas M. Kroeger and Darrell D. E. Long. "Design and Implementation of a Predictive File Prefetching Algorithm," *Proceedings of Usenix Technical Conference*, Boston: Usenix Association, June 2001, pp. 105–118.

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## Books

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2. John L. Carroll and Darrell D. E. Long. *Theory of Finite Automata*. Englewood Cliffs, New Jersey: Prentice-Hall, 1989.

## Chapters in Books

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2. Steven W. Carter, Darrell D. E. Long and Jehan-François Pâris. "Video-on-Demand Broadcasting Protocols," *Multimedia Communications: Directions and Innovations*, J. D. Gibson, Ed. San Diego: Academic Press, 2000, pp. 179–189.
3. Richard A. Golding and Darrell D. E. Long. "Simulation Modeling of Weak-Consistency Protocols," *Network Systems Design*, E. Gelenbe, K. Bagchi and G. Zobrist, Eds. Gordon and Breach Science Publishers, 1999, pp. 161–186.
4. Darrell D. E. Long and John L. Carroll. "Using Simulation to Evaluate Consistency Protocols for Replicated Data," *Progress in Simulation II*, G. W. Zobrist and J. V. Leonard, Eds. Ablex Publishing, 1995.

## Refereed Short Papers

1. Ian F. Adams, Darrell D. E. Long and Ethan L. Miller. “Maximizing Efficiency By Trading Storage for Computation,” *Proceedings of the Workshop on Hot Topics in Cloud Computing (Hot Cloud)*, San Diego: Usenix, June 2009.
2. Mark W. Storer, Kevin M. Greenan, Ian F. Adams Ethan L. Miller, Darrell D. E. Long and Kaladhar Voruganti. “Logan: Automatic Management for Evolvable, Large-Scale, Archival Storage,” *Proceedings of the 2008 Petascale Data Storage Workshop (PDSW)*, November 2008.
3. Neerja Bhatnagar, Kevin M. Greenan, Rosie Wacha, Ethan L. Miller and Darrell D. E. Long. “Energy-Reliability Tradeoffs in Sensor Network Storage,” *Proceedings of Fifth Workshop on Embedded Networked Sensors (HotEM-Nets)*, ACM: Charlottesville, Virginia, June 2–3, 2008.
4. Jehan-François Pâris, Darrell D. E. Long and Thomas J. E. Schwarz. “Ensuring Data Survival in Solid-State Storage Devices,” *Proceedings of the First International Workshop on Storage and I/O Virtualization, Performance, Energy, Evaluation and Dependability (SPEED)*, IEEE: Salt Lake City, February 2008.
5. Jehan-François Pâris, Darrell D. E. Long. “Using Device Diversity to Protect Data against Batch-Related Disk Failures,” *Proceedings of the Second International Workshop on Storage Security and Survivability (StorageSS)*, held in conjunction with the *ACM Computer and Communications Security Conference (CCS)*, Alexandria, Virginia: ACM, October 30, 2006.
6. Jehan-François Pâris and Darrell D. E. Long. “An Analytic Study of Stream Tapping Protocols,” *Proceedings of the 2006 IEEE International Conference on Multimedia (ICME)*, Toronto: IEEE, July 2006, pp. 1237–1240.
7. Jeffrey P. Rybczynski, Darrell D. E. Long and Ahmed Amer. “Expecting the Unexpected: Adaptation for Predictive Energy Conservation,” *Proceedings of the International Workshop on Storage Security and Survivability (StorageSS)*, held in conjunction with the *ACM Computer and Communications Security Conference (CCS)*, Alexandria, Virginia: ACM, November 2005, pp. 130–134.
8. Jehan-François Pâris, Ahmed Amer and Darrell D. E. Long. “A Stochastic Approach to File Access Prediction,” *Proceedings of the International Workshop on Storage Network Architecture and Parallel I/O (SNAPI)*, New Orleans: IEEE, September 2003.
9. Ismail Ari, Ahmed Amer, Robert Gramacy, Ethan Miller, Scott Brandt and Darrell Long. “Who is more Adaptive? ACME: Adaptive Caching Using Multiple Experts,” *Proceedings of the 2002 Workshop on Distributed Data and Structures (WDAS)*, Paris, France: Carleton Scientific, March 2002.
10. Jehan-François Pâris and Darrell D. E. Long. “The Case for Aggressive Partial Preloading in Video-on-Demand Broadcasting Protocols,” *Proceedings of the 2001 IEEE International Conference on Multimedia (ICME)*, Tokyo, Japan: IEEE, August 2001, pp. 113–116.
11. Tsozen Yeh, Darrell D. E. Long and Scott A. Brandt. “Caching Files with a Program-based Last  $n$  Successors Model,” *Proceedings of the Workshop on Caching, Coherence and Consistency (WC3)*, Sorrento, Italy: ACM, June 2001.
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14. Ahmed Amer and Darrell D. E. Long. “Dynamic Relationships and the Persistence of Pairings,” *Proceedings of the International Workshop on Wireless Networks and Mobile Computing (WNMC)*, Mesa, Arizona: IEEE, April 2001, pp. 502–507.

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20. Jehan-François Pâris, Darrell D. E. Long and Walter A. Burkhard. "The Management of Consistency in Fault-Tolerant File Systems," *Proceedings of the Workshop on Fault Tolerance in Parallel and Distributed Computing*, San Diego: IEEE, December 1987, pp. 58–59.
21. Darrell D. E. Long. "Optimistic Algorithms for Replicated Data Management," *Proceedings of the Second Workshop on Large-Grained Parallelism*, Carnegie-Mellon University, November 1987, pp. 58–59.

#### **Invited Articles**

1. David Pease and Darrell Long. "Future File Systems," *Proceedings of Computing with Massive and Persistent Data (CMPD)*, Baltimore: IEEE, September 22, 2008.
2. Randal Burns, Larry Stockmeyer and Darrell Long. "Experimentally Evaluating In-Place Delta Reconstruction," *Proceedings of the NASA and IEEE Mass Storage Conference*, College Park: IEEE, April 2002, pp. 137–151.
3. Darrell D. E. Long. "A Technique for Managing Mirrored Disks," *Proceedings of the International Performance Conference on Computers and Communication*, Phoenix: IEEE, April 2001, pp. 272–277.
4. Darrell D. E. Long, Patrick E. Mantey, Craig M. Wittenbrink, Theodore R. Haining, Bruce R. Montague. "REINAS: the Real-Time Environmental Information Network and Analysis System," *Proceedings of the IEEE Computer Society CompCon*, San Francisco: IEEE, March 1995, pp. 482–487.

#### **Miscellanea**

1. António M. Baptista, Michael Wilkin, Phillip Pearson, Paul Turner, Cole M<sup>c</sup>Candlish, Phillip Barrett, Salil Das, Wendy Sommerfield, Ming Qi, Neetu Nangia, David Jay, Darrell Long, Calton Pu, John Hunt, Zhaoqing Yang, Edward Myers, Jeff Darland and Anna Farrenkopf, "Towards a Multipurpose Forecast Systems for the Columbia River Estuary," *Proceedings of the Ocean Community Conference*, Baltimore: Marine Technology Society, November 1998.
2. Benjamin Reed and Darrell D. E. Long, "Analysis of Caching Algorithms for Distributed File Systems," *Operating Systems Review*, July 1996, vol. 30, no. 3, pp. 12–21.
3. Daniel M. Fernandez, Patrick E. Mantey, Darrell D. E. Long, Eric Rosen and Craig M. Wittenbrink. "REINAS: Real-Time Environmental Information Network," *Sea Technology*, May 1996, vol. 37, no. 5, pp. 47–53.
4. Darrell D. E. Long. "A Note On Bit-Mapped Free Sector Management," *Operating Systems Review*, April 1993, vol. 27, no. 2, pp. 7–9.

## **PROFESSIONAL ACTIVITIES**

### **Government Service**

- 2009 United States Army Laboratory Assessment Group. Department of Energy. National Nuclear Security Administration. Department of Defense.
- 2008 United States Army Laboratory Assessment Group. National Research Council, Standing Committee on Technology Insight-Gauge, Evaluate, and Review (TIGER). Department of Energy. National Nuclear Security Administration. Department of Defense.
- 2007 External Review Committee, United States Naval Postgraduate School. United States Army Technology Objectives Review Panel. National Science Foundation (review panels). National Research Council, Standing Committee on Technology Insight-Gauge, Evaluate, and Review (TIGER). National Research Council, Reviewer. Department of Energy. National Nuclear Security Administration. Department of Defense.
- 2006 National Science Foundation (review panels). National Research Council, Standing Committee on Technology Insight-Gauge, Evaluate, and Review (TIGER). National Research Council, Reviewer. Department of Energy. National Nuclear Security Administration. Department of Defense.
- 2005 National Research Council, Standing Committee on Technology Insight-Gauge, Evaluate, and Review (TIGER). Department of Energy. National Nuclear Security Administration. Department of Defense.
- 2004 National Research Council, Defense Intelligence Agency Technology Forecast and Reviews Committee. National Nuclear Security Administration. Department of Defense. Los Alamos National Laboratory, hiring committee for Associate Director for Nuclear Weapons Physics and Principal Associate Director for Nuclear Weapons Programs.
- 2003 National Science Foundation (two Information Technology Research panels). Department of Energy. National Nuclear Security Administration. Department of Defense.
- 2002 National Science Foundation (two Information Technology Research panels). Department of Energy. National Nuclear Security Administration.
- 2001 National Science Foundation. Department of Energy. National Nuclear Security Administration.
- 2000 National Science Foundation (Information Technology Research panel, National Environmental Observatory Network planning panel, CAREER panel).
- 1999 National Science Foundation (site review of Data Storage Systems Center, panel on Engineering Research Centers). Department of Defense.
- 1998 National Science Foundation (site review of Data Storage Systems Center). Department of the Navy.
- 1997 Department of the Navy.

### **Service to Professional Societies**

- 2008–10 Chair, IEEE Reynold B. Johnson Information Storage Systems Award Committee.
- 2007 IEEE Fellows Selection Committee.
- 2006–08 IEEE Reynold B. Johnson Information Storage Systems Award Committee.
- 2000–02 Chair, Usenix Association Scholarship and Research Committee.
- 1998–02 Usenix Association Scholarship and Research Committee.
- 1997– University Liaison for the Usenix Association.

- 1997 Committee on the Future of the Usenix Association.
- 1996– Executive Committee, *IEEE Technical Committee on Operating Systems*.
- 1995 IEEE/ACM focus group on Software Engineering Body of Knowledge and Recommended Practices.
- 1993–96 Chair, *IEEE Technical Committee on Operating Systems and Applications Environments*.

### Editorial Duties

- 2004– Associate Editor, *ACM Transactions on Storage*.
- 2002–03 Editorial Board, *Mobile Computing and Communications Review*.
- 1993–97 Editorial Board, *International Journal in Computer Simulation*.
- 1990–93 Editor, *Bulletin of the IEEE Computer Society Technical Committee on Operating Systems and Applications Environments*.
- 1990–93 Associate Editor, *International Journal in Computer Simulation*.

### Conference Organization

- 2009 Program Committee: *International Workshop on Software Support for Portable Storage (IWSSPS)*, *Inaugural International Conference on Virtualization and Cloud Computing*, *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, *Petascale Data Storage Workshop (PDSW)*.  
 Program Chair: *Web Information Systems Engineering (WISE)*.  
 General Chair: *Symposium on Applications and the Internet (SAINT)*.  
 Steering Committee: *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, *Symposium on File and Storage Systems Technology (FAST)*.
- 2008 Program Committee: *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, *Petascale Data Storage Workshop (PDSW)*.  
 Steering Committee: *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, *Symposium on File and Storage Systems Technology (FAST)*.
- 2007 Program Committee: *Symposium on File and Storage Systems Technology (FAST)*, *Petascale Data Storage Workshop (PDSW)*.  
 Steering Committee: *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*, *Symposium on File and Storage Systems Technology (FAST)*.
- 2006 Program Committee: *International Conference on Dependable Systems and Networks (DSN)*, *Dependable Computing and Communications Symposium (DCCS)*, *Symposium on Applications and the Internet (SAINT)*.  
 Steering Committee: *Symposium on File and Storage Systems Technology (FAST)*, *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*.
- 2005 Program Committee: *Symposium on File and Storage Systems Technology (FAST)*, *Workshop on Storage Security and Survivability (StorageSS)*, *First International Workshop on Software Support for Portable Storage (IWSSPS)*.
- 2004 Program Committee: *Symposium on Applications and the Internet (SAINT)*; *SIGMetrics*.  
 Steering Committee: *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS)*.

- 2003 Program Committee: *Usenix Technical Conference, Symposium on File and Storage Systems Technology (FAST), Very Large Data Bases (VLDB), International Conference on Distributed Computing Systems (ICDCS), IEEE International Performance, Computing, and Communications Conference (IPCCC), Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- Steering Committee: *Symposium on File and Storage Systems Technology (FAST), Workshop on Mobile Computing Systems and Applications (WMCSA), IEEE International Performance, Computing, and Communications Conference (IPCCC), Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- 2002 Program Committee: *IEEE International Performance, Computing, and Communications Conference (IPCCC), Workshop on Caching, Coherency and Consistency (WC3), Workshop on Distributed Data and Structures (WDAS), Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- Steering Committee: *Symposium on File and Storage Systems Technology (FAST), Workshop on Mobile Computing Systems and Applications (WMCSA), IEEE International Performance, Computing, and Communications Conference (IPCCC).*
- 2001 Founding Program Chair: *Symposium on File and Storage Systems Technology (FAST).*
- Program Chair: *IEEE International Performance, Computing, and Communications Conference (IPCCC).*
- Program Committee: *International Conference on Distributed Computing Systems (ICDCS).*
- 2000 Program Committee: *Communication Networks and Distributed Systems Modeling and Simulation Conference (CNDS), Research Issues in Data Engineering (RIDE), Hot Interconnects, Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- Steering Committee: *Workshop on Mobile Computing Systems and Applications (WMCSA), Symposium on Applications and the Internet (SAINT).*
- 1999 General Chair: *Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- Program Committee: *Communication Networks and Distributed Systems Modeling and Simulation Conference (CNDS), IEEE International Performance, Computing, and Communications Conference (IPCCC).*
- Steering Committee: *Symposium on Applications and the Internet (SAINT).*
- 1998 Program Committee: *Symposium on Reliable Distributed Systems (SRDS), Fault Tolerant Computing Systems (FTCS), Usenix Technical Conference.*
- Steering Committee: *IEEE Workshop on Mobile Computing Systems and Applications (WMCSA).*
- Advisory Committee: *Hawaii International Conference on System Sciences (HICSS).*
- 1997 General Chair: *IEEE Computer Society CompCon.*
- Program Committee: *International Conference on Parallel and Distributed Systems (ICPDS), Communications Networks and Distributed Systems Modeling and Simulation Conference (CNDS), Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- Steering Committee: *Hot Topics in Operating Systems VI (HotOS).*
- 1996 General Chair: *IEEE Computer Society/National Science Foundation Workshop on Workspaces in the Information Age.*
- 1996 Program Chair: *IEEE Computer Society CompCon.*
- Program Committee: *International Conference on Distributed Computing Systems (ICDCS), Annual Simulation Symposium, International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- Steering Committee: *Hot Topics in Operating Systems V (HotOS).*

- 1995 Program Committee: *Symposium on Reliable Distributed Systems (SRDS), Usenix Technical Conference, Services in Distributed and Networked Environments (SDNE), International Conference on Distributed Computing Systems (ICDCS), Annual Simulation Symposium, International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- 1994 Founding General Chair: *Workshop on Mobile Computing Systems and Applications (WMCSA).*
- 1994 Program Committee: *Applied Data Bases; First International Workshop on Services in Distributed and Networked Environments, International Conference on Distributed Computing Systems (ICDCS), Annual Simulation Symposium, International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- 1993 Program Committee: *International Conference on Parallel and Distributed Systems (ICPDS), IEEE Workshop on Advances in Parallel and Distributed Systems, International Conference on Distributed Computing Systems (ICDCS), Annual Simulation Symposium, International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- 1992 Program Committee: *Annual Simulation Symposium, Second Workshop on the Management of Replicated Data (WMRD), International Workshop on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS).*
- 1991 Local Arrangements Chair and Program Committee: *Second Workshop on the Management of Replicated Data (WMRD).*
- 1990 Publicity Chair: *First Workshop on the Management of Replicated Data (WMRD).*
- 1989 Program Committee: *Usenix Association/ACM/IEEE-CS, Workshop on Experiences with Building Distributed and Multiprocessor Systems.*
- 1988 Program Committee: *IFIP Working Group 6.5, International Working Conference on Message Handling Systems and Distributed Applications.*

### **Reviewer of Technical Papers and Proposals**

- 2009 ACM Transactions on Storage; The Journal of Systems and Software.
- 2008 ACM Transactions on Storage; IEEE Transactions on Computers; International Conference on Networking, Architecture, and Storage.
- 2007 ACM Transactions on Storage; IEEE Transactions on Computers; Performance and Dependability Symposium (PDS).
- 2006 IEEE Transactions on Computers; ACM Transactions on Storage; IEEE Transactions on Magnetics; International Symposium on Stabilization, Safety, and Security of Distributed Systems; International Parallel and Distributed Processing Symposium; University of California, MICRO Program; International Conference on Dependable Systems and Networks.
- 2005 ACM Transactions on Storage; IEEE/ACM Transactions on Networking.
- 2004 ACM Transactions on Storage; IEEE Transactions on Computers; IEEE Transactions on Parallel and Distributed Systems; International Journal of Computers and Applications.
- 2003 Symposium on Operating Systems Principles; IEEE Transactions on Broadcasting; Computer Journal; IEEE Communications Letters.
- 2002 Transactions on Knowledge and Data Engineering; Transactions on Broadcasting; International Conference on Parallel Processing; IEEE Communications Letters; Symposium on Operating System Design and Implementation; Western Multiconference.

- 2001 IEEE Personal Communications; Workshop on Hot Topics in Operating Systems (HotOS); ETRI Journal; International Conference on Modeling, Analysis, and Simulation of Computer and Telecommunications Systems; International Conference on Distributed Computing Systems; Symposium on Operating Systems Principles; Western Multiconference.
- 2000 Transactions on Knowledge and Data Engineering; Symposium on Reliable Distributed Systems; Communications of the ACM; IEEE Personal Communications; Transactions on Computer Systems; Transactions on Modeling and Computer Simulation; Workshop on Wireless Networks and Mobile Computing.
- 1999 ACM/Baltzer Mobile Networks and Applications; IEEE Software; IEEE Transactions on Software Engineering; International Conference on Modeling, Analysis, and Simulation of Computer and Telecommunications Systems; Usenix Technical Conference; Journal of Parallel and Distributed Computing.
- 1998 IEEE Software; IEEE Transactions on Parallel and Distributed Systems; ACM Transactions on Computer Systems; Conference on Computing and Telecommunications; International Conference on High Performance Computing; International Conference on Parallel Processing.
- 1997 National Science Foundation; IEEE Computer; IEEE Transactions on Parallel and Distributed Systems; Symposium on Reliable Distributed Systems; Software – Practice & Experience; IEEE Software; Computer Journal; Transactions on Knowledge and Data Engineering.
- 1996 National Science Foundation; Computer Journal; University of California, MICRO program; Information Systems Journal; IEEE Transactions on Parallel and Distributed Systems.
- 1995 University of California, MICRO program; National Science Foundation; Computer Journal; Distributed Systems Engineering Journal; Computing Surveys; Dependable Computing and Critical Applications Conference; IEEE Transactions on Knowledge and Data Engineering.
- 1994 IEEE Computer; High Performance Distributed Computing; California Space Institute; Operating Systems Design and Implementation; International Journal in Computer Simulation; Information Processing Letters; Journal of Distributed and Parallel Data Bases; IEEE Software. ACM Transactions on Computer Systems.
- 1993 International Conference on Distributed Computing Systems; Distributed and Parallel Databases; Hawaii International Conference on Systems Sciences; International Workshop on Modeling, Analysis, and Simulation of Computer and Telecommunications Systems; International Symposium on Autonomous Decentralized Systems; IEEE Transactions on Parallel Distributed Systems; IEEE Transactions on Computers; Information Processing Letters; IEEE Computer.
- 1992 International Symposium on Autonomous Decentralized Systems; IEEE Transactions on Parallel Distributed Systems; IEEE/ACM Transactions on Networking; Information Systems; IFIP Dependable Computing in Critical Applications; IEEE Transactions on Software Engineering; IEEE Transactions on Computers; International Conference on Data Engineering; IEEE Transactions on Knowledge and Data Engineering; University of California, MICRO Program; IEEE Computer; Information Processing Letters.
- 1991 International Conference on Data Engineering; International Journal on Very Large Databases; ACM Conference on Principles of Data Base Systems; IEEE Transactions on Parallel and Distributed Systems; IEEE Transactions on Knowledge and Data Engineering; Computing Systems; University of California, MICRO Program; IEEE Computer; ACM Transactions on Computer Systems; Information Processing Letters.
- 1990 IEEE Transactions on Parallel and Distributed Systems; IEEE Transactions on Knowledge and Data Engineering; Computing Systems; Communications of the ACM; 1991 SIGMETRICS Conference on Measurement and Modeling of Computer Systems; University of California, MICRO Program; National Science Foundation; IEEE Computer; ACM Transactions on Computer Systems; Information Processing Letters; IEEE Software.

- 1989 National Science Foundation; IEEE Computer; ACM Transactions on Computer Systems; Information Processing Letters; IEEE Software; International Conference on Data Engineering; International Conference on Distributed Computing Systems.
- 1988 International Conference on Distributed Computing Systems.
- 1987 International Conference on Data Engineering.

### **Reviewer for Publishers**

- 2003 Prentice-Hall.
- 2002 John Wiley & Sons.
- 1997 Academic Press; Addison-Wesley; Gordon and Beach.
- 1995 Addison-Wesley; Benjamin/Cummings; Springer-Verlag.
- 1994 Benjamin/Cummings; Morgan-Kaufman.
- 1993 Kluwer Academic Publishers; Norton; Benjamin/Cummings; McGraw-Hill; John Wiley & Sons.
- 1991–93 Aksen Associates.
- 1988–91 Addison-Wesley.

### **Membership in Professional Associations**

- Fellow, IEEE Computer Society.
- Member, Association for Computing Machinery.
- Fellow, American Association for the Advancement of Science.
- Member, American Society for Engineering Education.
- Member, Sigma Xi (Scientific Research Society).
- Member, Usenix Association.

### **Invited Lectures**

- 2009 “High-Performance Petascale File Systems,” Université de technologie en sciences des organisations et de la décision de Paris–Dauphine
- 2009 “High-Performance Petascale File Systems,” Commissariat à l’Energie Atomique, Direction des Applications Militaires et Direction des Ames Nucléaires.
- 2007 “Ceph: A Scalable, High-Performance Distributed File System,” University of Technology, Sydney, Australia.
- 2007 “Ceph: A Scalable, High-Performance Distributed File System,” University of California, San Diego.
- 2006 “Storage Management – Unchecked Challenges, Untapped Opportunities,” Workshop on Distributed Data and Structures, Santa Clara University.
- 2005 “Storage Management – Unchecked Challenges, Untapped Opportunities,” Storage Networking Summit, Bangalore, India.
- 2005 “Ceph: A Distributed Object-based Storage System,” Indian Institute of Science, Bangalore, India.
- 2005 “Deep Store: Minimum Redundancy Archival Storage,” Amrita University, Coimbatore, India.
- 2004 “Peta-scale Data Storage: Challenges and (a few) Solutions,” Yahoo!

- 2004 “Deep Store,” University of Arizona.
- 2004 “Deep Store,” Vrije Universiteit.
- 2003 “Deep Store: Associative Archival Storage Architecture,” Network Appliance.
- 2002 “Group-based Management of Distributed File Caches,” Hewlett-Packard Laboratories.
- 2002 “Group-based Management of Distributed File Caches,” Technische Universität München.
- 2000 “Perspective on Academic Storage Research,” IBM Research.
- 2000 “Produce-Consumer Locking” and “Analytical Lease Modeling,” San Francisco State University.
- 2000 “The Storage Tank System,” Université de technologie en sciences des organisations et de la décision de Paris–Dauphine
- 1997 “Differential Storage Management” and “Efficient Video-on-Demand Services,” Université de technologie en sciences des organisations et de la décision de Paris–Dauphine
- 1997 “Differential Storage Management,” Queen Mary College, University of London.
- 1997 “A Dynamic Disk Spin-down Technique for Mobile Computing,” University of California, Riverside.
- 1997 “Replication with Minimal Metadata,” IBM Corporation.
- 1996 “Predicting File System Actions from Prior Events,” University of California, San Diego.
- 1995 “Fault-Tolerance in Distributed Systems,” WiTel Advanced Technology Group.
- 1994 “The REINAS System,” University of California, Riverside.
- 1992 “A Study of the Reliability of Internet Sites,” San Diego State University.
- 1991 “Swift – A Distributed Storage System for Multimedia,” Matsushita Information Technology Laboratory.
- 1991 “A Study of the Reliability of Internet Sites,” INRIA (Institut National de Recherche en Informatique et Automatique).
- 1991 “A Study of the Reliability of Internet Sites,” University of California, San Diego.
- 1991 “Swift – A Distributed Storage System for Multimedia,” Hewlett-Packard Laboratories.
- 1991 “Reliable Distributed Storage Systems,” Sun Microsystems.
- 1991 “A Study of the Reliability of Internet Sites,” Bay Area Systems Seminar.
- 1990 “Swift: A Storage Architecture for Very Large Objects,” Hewlett-Packard Laboratories.
- 1990 “Estimating the Reliability of Regeneration-Based Replica Control Protocols,” IBM Almaden Research and SRI International.
- 1989 “Availability and Reliability of Regeneration Protocols for Replicated Objects,” Hewlett-Packard Laboratories.
- 1988 “Optimistic Protocols for Replicated Data Management,” Vanderbilt University and Stanford University.
- 1987 “The Management of Replication in a Distributed Computing System,” Georgia Institute of Technology.
- 1987 “Optimistic Algorithms for Replicated Data Management,” Oxford University.
- 1987 “The Management of Replication: An Overview of the Gemini Project,” United States Naval Research Laboratory.
- 1986 “On Improving the Availability of Replicated Files,” University of California, Berkeley.

## UNIVERSITY SERVICE

### University-wide Service

- 2008–09 Several Directorate and Capability review committees for Lawrence Livermore and Los Alamos National Laboratories.
- 2007–08 Advisory Board, Department of Computer Engineering, Santa Clara University.  
Predictive Knowledge Systems Advisory Committee, Lawrence Livermore National Laboratory.  
Several Directorate and Capability review committees for Lawrence Livermore and Los Alamos National Laboratories.
- 2007– Science & Technology Committee for both Lawrence Livermore and Los Alamos National Laboratories.
- 2007 Nonproliferation, Homeland and International Security, Directorate Review Committee, Lawrence Livermore National Laboratory.  
Petascale Computing Management Review Committee, Los Alamos National Laboratory.
- 2005– Faculty Advisory Group for the South Asia Initiative.
- 2005– Executive Committee, Center for Information technology Research in the Interest of Society (CITRIS).
- 2003–07 National Security Panel and Intelligence Panel for the National Laboratories (Office of the President).
- 2002–03 Chair, University-wide Committee on Research Policy; National Security Panel, Science & Technology Panel, President’s Council (University-wide Senate Representative).
- 2001–02 Vice Chair, University-wide Committee on Research Policy; Screening Committee for the Director of Lawrence Livermore National Laboratory; National Security Panel, Science & Technology Panel, President’s Council (University-wide Senate Representative).
- 2000–01 University-wide Committee on Research Policy.

### Campus Service

- 2008–09 Committee on Academic Personnel *ad hoc* subcommittee.
- 2007–08 Committee on Academic Personnel *ad hoc* subcommittee.
- 2006–07 Committee on Research.
- 2005–06 Committee on Research; Committee on Academic Personnel *ad hoc* subcommittee.
- 2004–05 Confidential personnel review for senior administrator.
- 2003–04 Committee on Committees; Committee on Academic Personnel *ad hoc* subcommittee; Chair, Engineering II Building Committee.
- 2002–03 Chair, Engineering II Building Committee.
- 2001–02 Chair, Engineering II Building Committee; Committee on Academic Personnel *ad hoc* subcommittee; Committee on Research.
- 2000–01 Chair, Engineering II Building Committee; Committee on Research; Chair, Committee on Academic Personnel *ad hoc* subcommittee; Silicon Valley Regional Center Task Force; California Institutes for Science and Innovation proposal (with P. Mantey & Berkeley colleagues); Junior Faculty Mentor, Ethan Miller.
- 1999–00 Committee on Academic Personnel *ad hoc* subcommittee; Computing and Telecommunications Committee; Junior Faculty Mentor, Scott Brandt.

- 1998–99 Confidential personnel review for senior administrator; Computing and Telecommunications Committee.
- 1998 Faculty mentor, California Alliance for Minority Participation (CAMP).
- 1997 Faculty mentor, California Alliance for Minority Participation (CAMP).
- 1996–97 Information Technology Disaster Preparedness Task Force.
- 1995–97 Senate Rules Committee, Information Technology Disaster Preparedness Task Force.
- 1995–96 Electrical Engineering/Applied and Engineering Mathematics Committee.
- 1994–95 Task Force on Computer and Network Security, Summer Science Honors Institute.
- 1990–91 Technical Consultant to Computing and Telecommunication Services (CATS) for University computing facilities.
- 1988–90 Natural Sciences Division Space Committee.
- 1988–89 Applied Sciences Building Remodeling Committee. Open Access Computing Committee.

**Departmental and School of Engineering Service**

- 2008–09 Associate Dean for Research and Graduate Studies; Director for Research, Computer Science Department; Chair, Adjunct Committee.
- 2007–08 Associate Dean for Research and Graduate Studies; Director for Research, Computer Science Department; Chair, Adjunct Committee; Seminar Coordinator, Computer Science Department.
- 2006–07 Associate Dean for Research and Graduate Studies; Personnel Review Committee; Director for Research, Computer Science Department.
- 2005–06 Associate Dean for Research and Graduate Studies; Personnel Review Committee, Director for Research, Computer Science Department; Department of Information Systems and Technology Management.
- 2004–05 Associate Dean for Research and Graduate Studies; Director for Research, Computer Science Department; Master of Ceremonies, Engineering 2 dedication; Information Technologies Institute (ITI) Executive Committee.
- 2003–04 Director for Research, Computer Science Department; Information Technologies Institute (ITI) Executive Committee; School of Engineering Technical Services Committee.
- 2002–03 Chair, Promotion Review Subcommittee; Computer Science Faculty Recruitment Committee; ISTM Chair Recruitment; Faculty Recruitment Committee.
- 2001–02 Chair, Promotion Review Subcommittee; Computer Science Faculty Recruitment Committee; Computer Science Department Facilities Director; Computing Infrastructure Committee; Faculty Recruitment Committee.
- 2000–01 Computer Science Faculty Recruitment Committee; Computer Science Department Facilities Director; Computing Infrastructure Committee; Faculty Recruitment Committee.
- 1999–00 Computer Science Faculty Recruitment Committee; Computer Science Department Facilities Director; Computing Infrastructure Committee; Faculty Recruitment Committee.
- 1998–99 Computer Science Faculty Recruitment Committee; Computer Science Department Facilities Director; Computing Infrastructure Committee; Faculty Recruitment (Software Engineering); Information Systems Management Major.
- 1997–98 Computer Science Faculty Recruitment Committee; Computer Science Department Facilities Director; Information Systems Management Major.

- 1991–96 Computer Science Facilities Director.
- 1990–91 Computer & Information Sciences Assistant Facilities Director.
- 1989–90 Computer & Information Sciences Department Faculty Recruitment Committee, Co-Chair for the Operating Systems position.
- 1989 Computer & Information Sciences Department Representative to Electronics Engineering Program Development Committee.
- 1988–89 Research Funding Director, Computer & Information Sciences Department (responsible for the CIS/CE 1989 grant proposal to the National Science Foundation Institutional Infrastructure Program).
- 1988–89 Computer & Information Sciences Department Representative on Computer Engineering Department Recruitment Committee.

### TEACHING 1988–89

				Enrolled	%Eval Retd	Shared?
Fall	CIS	104	Introduction to Compiler Design	43	74	no
	CIS	301	Supervised Teaching Experience	1	n/a	no
Winter	CIS	221	Advanced Operating Systems	5	100	no
Spring	CIS	104	Introduction to Compiler Design	31	74	no
	CIS	301	Supervised Teaching Experience	1	100	no

### TEACHING 1989–90

				Enrolled	%Eval Retd	Shared?
Fall	CIS	204	Compiler Design	18	94	no
	CIS	297	Independent Study/Research	1	n/a	no
	CIS	299	Thesis Research	1	n/a	no
Winter	CIS	104	Introduction to Compiler Design	17	88	no
	CIS	195	Independent Study/Research	1	n/a	no
	CIS	221	Advanced Operating Systems	8	88	no
	CIS	299	Thesis Research	3	n/a	no
Spring	CIS	301	Supervised Teaching Experience	1	100	no
	CIS	104	Introduction to Compiler Design	22	86	no
	CIS	297	Independent Study/Research	2	n/a	no
	CIS	299	Thesis Research	3	n/a	no
	CIS	301	Supervised Teaching Experience	1	100	no

### TEACHING 1990–91

				Enrolled	%Eval Retd	Shared?
Fall	CIS	204	Compiler Design	10	100	no
	CIS	221	Advanced Operating Systems	12	75	no
	CIS	299	Thesis Research	3	n/a	no
Winter	CIS	104A	Fundamentals of Compiler Design I	18	67	no
	CIS	198	Independent Study/Research	2	n/a	no
	CIS	297	Independent Study/Research	1	n/a	no
	CIS	299	Thesis Research	3	n/a	no
Spring	CIS	301	Supervised Teaching Experience	1	n/a	no
	CIS	104B	Fundamentals of Compiler Design II	17	76	no
	CIS	195	Independent Study/Research	2	n/a	no

	CIS	297	Independent Study/Research	2	n/a	no
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**TEACHING 1991–92**

				Enrolled	%Eval Retd	Shared?
Fall	CIS	221	Advanced Operating Systems	9	100	no
	CIS	198	Independent Study/Research	1	n/a	no
	CIS	297	Independent Study/Research	2	n/a	no
	CIS	299	Thesis Research	1	n/a	no
Winter	CIS	198	Independent Study/Research	2	n/a	no
	CIS	297	Independent Study/Research	3	n/a	no
	CIS	299	Thesis Research	3	n/a	no
Spring	CIS	104B	Fundamentals of Compiler Design II	14	79	no
	CIS	195	Independent Study/Research	2	n/a	no
	CIS	198	Independent Study/Research	1	n/a	no
	CIS	203	Programming Languages & Environments	8	88	no
	CIS	297	Independent Study/Research	3	n/a	no
	CIS	299	Thesis Research	5	n/a	no
	CIS	301	Supervised Teaching Experience	1	100	no

**TEACHING 1992–93**

				Enrolled	%Eval Retd	Shared?
Fall	CIS	111	Introduction to Operating Systems	43	80	no
	CIS	299	Thesis Research	6	n/a	no
	CIS	301	Supervised Teaching Experience	1	100	no
Winter	CIS	198	Independent Study/Research	1	n/a	no
	CIS	204	Compiler Design	5	100	no
	CIS	297	Independent Study/Research	4	n/a	no
	CIS	299	Thesis Research	3	n/a	no
Spring	CIS	195	Senior Thesis Research	1	n/a	no
	CIS	221	Advanced Operating Systems	8	100	no
	CIS	297	Independent Study/Research	4	n/a	no
	CIS	299	Thesis Research	3	n/a	no
	Stev	003	Privacy & Computer Security	11	73	no

**TEACHING 1993–94**

				Enrolled	%Eval Retd	Shared?
Fall	CIS	111	Introduction to Operating Systems	36	78	no
	CIS	297	Independent Study/Research	4	n/a	no
	CIS	299	Thesis Research	3	n/a	no
	CIS	301	Supervised Teaching Experience	1	100	no
Winter	CIS	204	Compiler Design	5+1	100	no
	CIS	297	Independent Study/Research	10	n/a	no
	CIS	299	Thesis Research	1	n/a	no
Spring	CIS	203	Programming Languages & Environments	21	85	no
	CIS	297	Independent Study/Research	8	n/a	no
	CIS	299	Thesis Research	5	n/a	no

### TEACHING 1994-95

				Enrolled	%Eval Retd	Shared?
Fall	CIS	111	Introduction to Operating Systems	56	68	no
	CIS	195	Senior Thesis Research	1	n/a	no
	CIS	221	Advanced Operating Systems	15	60	no
	CIS	297	Independent Study/Research	3	n/a	no
	CIS	299	Thesis Research	9	n/a	no
Winter	CIS	301	Supervised Teaching Experience	1	100	no
	CIS	198	Independent Study/Research	3	n/a	no
	CIS	297	Independent Study/Research	5	n/a	no
Spring	CIS	299	Thesis Research	10	n/a	no
	CIS	195	Senior Thesis Research	1	n/a	no
	CIS	203	Programming Languages & Environments	16+3	95	no
	CIS	297	Independent Study/Research	2	n/a	no
	CIS	299	Thesis Research	10	n/a	no
CIS	301	Supervised Teaching Experience	1	100	no	

### TEACHING 1995-96

				Enrolled	%Eval Retd	Shared?
Fall	CIS	111	Introduction to Operating Systems	18	78	no
	CIS	204	Compiler Design	6	83	no
	CIS	297	Independent Study/Research	3	n/a	no
	CE	297	Independent Study/Research	1	n/a	no
	CIS	299	Thesis Research	3	n/a	no
Winter	CIS	198	Independent Study/Research	2	n/a	no
	CIS	297	Independent Study/Research	4	n/a	no
	CIS	299	Thesis Research	3	n/a	no
Spring	CIS	195	Senior Thesis Research	1	n/a	no
	CIS	221	Advanced Operating Systems	13	77	no
	CIS	297	Independent Study/Research	3	n/a	no
	CE	297	Independent Study/Research	1	n/a	no
	CIS	299	Thesis Research	6	n/a	no
CE	299	Thesis Research	1	n/a	no	

### TEACHING 1996-97

				Enrolled	%Eval Retd	Shared?
Fall	CS	111	Introduction to Operating Systems	20	70	no
	CS	195	Thesis Research	1	n/a	no
	CS	297	Independent Study/Research	8	n/a	no
	CE	297	Independent Study/Research	4	n/a	no
	CS	299	Thesis Research	5	n/a	no
	CE	299	Thesis Research	3	n/a	no
	CS	301	Supervised Teaching Experience	1	100	no
Winter	CS	290X	Cryptography	6	67	no
	CS	297	Independent Study/Research	5	n/a	no
	CS	299	Thesis Research	6	n/a	no
Spring	CE	299	Thesis Research	2	n/a	no
	CS	090X	Internet Security & Privacy	19	58	no
CS	221	Advanced Operating Systems	8	88	no	

CS	297	Independent Study/Research	6	n/a	no
CS	299	Thesis Research	6	n/a	no
CE	299	Thesis Research	3	n/a	no

#### TEACHING 1997-98

			Enrolled	%Eval Retd	Shared?
Fall	CS	Sabbatical Leave			
	CS	297 Independent Study/Research	1	n/a	no
	CS	299 Thesis Research	9	n/a	no
	CE	299 Thesis Research	3	n/a	no
Winter	CS	112 Comparative Programming Languages	58	60	no
	CS	297 Independent Study/Research	3	n/a	no
	CS	299 Thesis Research	10	n/a	no
	CE	299 Thesis Research	2	n/a	no
	CS	301 Supervised Teaching Experience	1	n/a	no
Spring	CS	221 Advanced Operating Systems	9	100	no
	CS	297 Independent Study/Research	2	n/a	no
	CS	299 Thesis Research	8	n/a	no
	CE	299 Thesis Research	1	n/a	no

#### TEACHING 1998-99

			Enrolled	%Eval Retd	Shared?
Fall	CE	299 Thesis Research	1	n/a	no
	CS	297 Independent Study/Research	3	n/a	no
	CS	299 Thesis Research	6	n/a	no
Winter	CE	299 Thesis Research	1	n/a	no
	CS	297 Independent Study/Research	4	n/a	no
	CS	299A Thesis Research	6	n/a	no
Spring	CE	299 Thesis Research	1	n/a	no
	CS	111 Introduction to Operating Systems	62	76	no
	CS	221 Advanced Operating Systems	6	100	no
	CS	297 Independent Study/Research	2	n/a	no
	CS	299 Thesis Research	5	n/a	no
	CS	301 Supervised Teaching Experience	1	100	no
Summer	CS	198 Independent Study/Research	1	n/a	no

#### TEACHING 1999-00

			Enrolled	%Eval Retd	Shared?
Fall	CE	299 Thesis Research	1	n/a	no
	CS	111 Introduction to Operating Systems	45	63	no
	CS	297 Independent Study/Research	2	n/a	no
	CS	299 Thesis Research	6	n/a	no
	CS	301 Supervised Teaching Experience	1	100	no
Winter	CS	112 Comparative Programming Languages	47	73	no
	CS	297 Independent Study/Research	3	n/a	no
	CS	299 Thesis Research	2	n/a	no
Spring	CS	198 Independent Study/Research	1	n/a	no
	CS	297 Independent Study/Research	2	n/a	no

	CS	299	Thesis Research	3	n/a	no
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**TEACHING 2000-01**

				Enrolled	%Eval Retd	Shared?
Fall	CS	299C	Thesis Research	2	n/a	no
	CS	301	Supervised Teaching Experience	1	n/a	no
	ISM	150	Introduction To Information Networks	36	0	no
Winter	CS	112	Comparative Programming Languages	75	77	no
	CS	297A	Individual Study/ Research	1	n/a	no
	CS	299C	Thesis Research	2	n/a	no
	CS	301	Supervised Teaching Experience	1	n/a	no
Spring	CS	297A	Individual Study/ Research	3	n/a	no
	CS	299C	Thesis Research	2	n/a	no
Summer	CS	297A	Individual Study/ Research	1	n/a	no
	CS	299A	Thesis Research	1	n/a	no

**TEACHING 2001-02**

				Enrolled	%Eval Retd	Shared?
Fall	CS	198	Individual Study/Research	2	n/a	no
	CS	297A	Individual Study/Research	1	n/a	no
	CS	299C	Thesis Research	2	n/a	no
	ISM	150	Introduction To Information Networks	54	69	no
Winter	CS	195	Senior Thesis Research	1	n/a	no
	CS	198	Individual Study/Research	1	n/a	no
	CS	221	Advanced Operating Systems	17	82	no
	CS	221-50	Advanced Operating Systems	9	89	no
	CS	297A	Individual Study/Research	2	n/a	no
	CS	299C	Thesis Research	2	n/a	no
Spring	CS	112	Comparative Programming Languages	62	61	no
	CS	198	Individual Study/Research	1	n/a	no
	CS	296	Masters Project	1	n/a	no
	CS	297A	Individual Study/Research	1	n/a	no
	CS	297B	Individual Study/Research	1	n/a	no
	CS	299A	Thesis Research	1	n/a	no
	CS	299C	Thesis Research	2	n/a	no
Summer	CS	297A	Individual Study/Research	1	n/a	no

**TEACHING 2002-03**

				Enrolled	%Eval Retd	Shared?
Fall	CS	111	Introduction To Operating Systems	53	92	no
	CS	280S	Seminar On Computer Systems	10	n/a	no
	CS	297A	Individual Study/Research	2	n/a	no
	CS	297B	Individual Study/Research	1	n/a	no
Winter	CS	296	Masters Project	1	n/a	no
	CS	297A	Individual Study/Research	3	n/a	no
	CS	297B	Individual Study/Research	1	n/a	no
Spring	CE	299B	Thesis Research	1	n/a	no
	CS	229	Storage Systems	8	100	no

CS	299B	Thesis Research	1	n/a	no
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**TEACHING 2003-04**

			Enrolled	%Eval Retd	Shared?
Fall	CS	13H Introduction Programming/Data Structures	9	77	no
	CS	280S Seminar Computer Systems	14	0	no
	CS	297A Individual Study	1	n/a	no
	CS	299A Thesis Research	1	n/a	no
	CS	299B Thesis Research	1	n/a	no
Winter	CS	111 Introduction Operating Systems	47	70	no
	CS	297A Individual Study	3	n/a	no
	CS	299B Thesis Research	2	n/a	no
Spring	CE	297B Individual Study	1	n/a	no
	CS	290S Adv Topics: Computer Systems	7	100	no
	CS	297A Individual Study	2	n/a	no
	CS	299A Thesis Research	2	n/a	no
	CS	299B Thesis Research	1	n/a	no

**TEACHING 2004-05**

			Enrolled	%Eval Retd	Shared?
Fall	CS	296 Masters Project	1	n/a	no
	CS	297A Individual Study	1	n/a	no
	CS	299A Thesis Research	1	n/a	no
	CS	299B Thesis Research	1	n/a	no
Winter	CE	299A Thesis Research	1	n/a	no
	CE	299B Thesis Research	1	n/a	no
	CS	296 Masters Project	1	n/a	no
	CS	297A Individual Study	1	n/a	no
	CS	299A Thesis Research	2	n/a	no
	CS	280S Seminar Computer Systems	18	50	no
Spring	CMPS	111 Introduction to Operating Systems	58	76	no
	CMPS	297A Individual Study	2	n/a	no
	CMPS	297B Individual Study	1	n/a	no
	CMPS	299A Thesis Research	1	n/a	no
	CMPS	299B Thesis Research	1	n/a	no
Summer	CMPS	297A Individual Study	1	n/a	no

**TEACHING 2005-06**

			Enrolled	%Eval Retd	Shared?
Fall	CMPS	296 Masters Project	1	n/a	no
	CMPS	297A Individual Study	2	n/a	no
	CMPS	299A Thesis Research	1	n/a	no
	CMPS	299B Thesis Research	2	n/a	no
	CMPS	299C Thesis Research	1	n/a	no
Winter	CMPS	60N Beginning Programming	3	133	no
	CMPS	299A Thesis Research	2	n/a	no
	CMPS	299B Thesis Research	3	n/a	no
	CMPS	299C Thesis Research	1	n/a	no

Spring	CMPS 111	Introduction to Operating Systems	24	108	yes
	CMPS 280	Seminar on Computer Systems	13	8	no
	CMPS 299A	Thesis Research	3	n/a	no
	CMPS 299B	Thesis Research	2	n/a	no
	CMPS 299C	Thesis Research	1	n/a	no

#### TEACHING 2006-07

			Enrolled	%Eval Retd	Shared?
Fall	CMPS 299B	Thesis Research	2	n/a	no
	CMPS 299B	Thesis Research	2	n/a	no
Winter	CMPS 299A	Thesis Research	2	n/a	no
	CMPS 299B	Thesis Research	2	n/a	no
Spring	CMPS 111	Introduction to Operating Systems	14	86	no
	CMPS 198	Individual Study or Research	1	n/a	no
	CMPS 280S	Seminar on Computer Systems	16	13	no
	CMPS 299B	Thesis Research	2	n/a	no

#### TEACHING 2007-08

			Enrolled	%Eval Retd	Shared?
Fall	CMPS 221	Advanced Operating Systems	10	90	no
	CMPS 280S	Seminar on Computer Systems	10	50	no
	CMPS 299B	Thesis Research	2	n/a	no
Winter	CMPS 297A	Individual Study	1	n/a	no
	CMPS 299B	Thesis Research	1	n/a	no
	CMPS 299C	Thesis Research	1	n/a	no
Spring	CMPS 111	Introduction to Operating Systems	38	71	no
	CMPS 198	Individual Study or Research	1	n/a	no
	CMPS 280S	Seminar on Computer Systems	13	62	no
	CMPS 297A	Individual Study	1	n/a	no
	CMPS 297B	Individual Study	1	n/a	no
	CMPS 299B	Thesis Research	1	n/a	no
	CMPS 299C	Thesis Research	1	n/a	no

#### TEACHING 2008-09

			Enrolled	%Eval Retd	Shared?
Fall	CMPE 297B	Individual Study	1	n/a	no
	CMPS 111	Introduction to Operating Systems	21	43	no
	CMPS 296	Masters Project	1	n/a	no
	CMPS 297B	Individual Study	1	n/a	no
	CMPS 299A	Thesis Research	1	n/a	no
	CMPS 299C	Thesis Research	2	n/a	no
Winter	CMPS 297A	Individual Study	1	n/a	no
	CMPS 297B	Individual Study	1	n/a	no
	CMPS 299C	Thesis Research	2	n/a	no
Spring	CMPS 223	Advanced Computer Security	12	83	no
	CMPS 223	Advanced Computer Security (LANL)	2	100	no
	CMPS 297A	Individual Study	2	n/a	no
	CMPS 297B	Individual Study	1	n/a	no

**OTHER TEACHING****Advisor to Continuing Graduate Students**

M.S. Robert Rees  
 Ph.D. Deepavali Bhagwat  
 Ph.D. Stephanie Jones  
 Ph.D. Jeffrey LeFevre  
 Ph.D. Christina Strong

**Master of Science Advisor**

2008	Rosie Wacha	<i>Data Reliability Techniques for Specialized Storage Environments</i>
2007	Kristal Pollack	<i>Quota Enforcement for High-Performance Distributed Storage Systems</i>
2005	Jeffrey Rybczynski	<i>Active Workload Reshaping to Maximize Disk Energy Conservation</i>
2005	Jörg Meyer	<i>Large Scale Multi-Type Inverted List Indexing</i>
2004	Svetlana Kagan	<i>Using Containers for Efficient Storage of Small Files in the Deep Store Archival System</i>
2004	Karl Brandt	<i>Using Multiple Experts to Perform File Prediction</i>
2003	Ian Brown	<i>Upgrading NFS File Servers in a Live Environment</i>
2003	Karen Glocer	<i>The Utility of Fine-Grained Workload Characterizations</i>
2002	Ying Lin	<i>Power Conservation Strategies for MEMs-Based Storage Devices</i>
2002	Zachary Peterson	<i>Data Placement for Copy-on-Write Using Virtual Contiguity</i>
2000	Pu Yang	<i>Modeling Probe Based Data Storage Devices</i>
2000	A. David McNab	<i>Extensible UNIX Access Control Lists</i>
1999	John Colby	<i>Error Correction for Incremental LR Parsers</i>
1998	Tracey Sconyers	<i>An Examination of Power Consumption in Wireless Modems</i>
1997	Randal Burns	<i>Differential Compression: A Generalized Solution for Binary Files</i>
1996	Thomas Kroeger	<i>Predicting File System Actions From Reference Patterns</i>
1994	David Schreiber	<i>A Code Generator for the PowerPC 601</i>
1994	Chane Fullmer	<i>Implementation of Adaptive Flow Control Mechanism to the Swift Redundant Distributed File Architecture</i>
1993	Michelle Abram	<i>Transparent Remote Procedure Calls</i>
1993	K. B. Sriram	<i>A Study of the Reliability of Hosts on the Internet</i>
1993	Cheng Tang	<i>A Transport Mechanism for Supporting Multimedia Traffic in ATM Networks</i>
1992	William Osser	<i>Automatic Process Selection for Load Balancing</i>
1992	Carol Osterbrock	<i>A Transport Level Protocol for Guaranteed Performance in a Local Area Network</i>
1991	Richard Golding	<i>Accessing Replicated Data in a Large Scale Distributed System</i>

### Master of Science Thesis Reading Committee Member

2004	Narayan Brooks	<i>Prof. Suresh Lodha</i>
2003	David Pease	<i>Prof. Richard Hughey</i>
2002	Reiner Kraft	<i>Prof. Raymie Stata</i>
2002	Feng Wang	<i>Prof. Scott Brandt</i>
2002	Alicia Szczurowska	<i>Prof. Scott Brandt</i>
2000	Paul Caamano	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1999	Manosiz Bhattacharrya	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1998	Christina Parsa	<i>Prof. J.J. Garcia-Luna</i>
1998	Jyoti Raju	<i>Prof. J.J. Garcia-Luna</i>
1997	Bradley Smith	<i>Prof. J.J. Garcia-Luna</i>
1997	Michael Allen	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1997	Bruce Sherrod	<i>Prof. David Helmbold</i>
1996	Brian Levine	<i>Prof. J.J. Garcia-Luna</i>
1996	Thomas Clay Shields	<i>Prof. J.J. Garcia-Luna</i>
1996	Catherine Wilson	<i>Prof. Suresh Lodha</i>
1995	Brian Chess	<i>Prof. F. Joel Ferguson</i>
1994	Shree N. Murthy	<i>Prof. J.J. Garcia-Luna</i>
1993	Theodore Haining	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1993	Rock Pfothenhauer	<i>Prof. Ira Pohl</i>
1993	Richard Snyder	<i>Prof. Robert Levinson</i>
1991	Matthew Breading	<i>Prof. Tracy Larrabee</i>
1990	Max Copperman	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1990	Daniel Edelson	<i>Prof. Ira Pohl</i>
1990	Frank Jas	<i>Prof. Karl Schimpf</i>
1989	James Kerr	<i>Prof. Allen Van Gelder</i>

### Doctoral Advisor

2008	David Pease	<i>Storage Tank: A Storage Area Network File System</i>
2006	Lawrence You	<i>Efficient Archival Data Storage</i>
2005	Bo Hong	<i>File and Storage Systems for MEMS-Based Storage</i>
2002	Ahmed Amer	<i>Predictive Data Grouping using Successor Prediction</i>
2002	Tsozen Yeh	<i>Improving File System Performance with File Access Predictions</i>
2000	Theodore Haining	<i>Non-volatile Cache Management for Improving Write Response Time with Rotating Magnetic Media</i>
2000	Benjamin Reed	<i>Using Network Attached Storage in a Secure Network Distributed File System</i>
2000	Randal Burns	<i>Data Management in a Distributed File System for Storage Area Networks</i>
2000	Thomas Kroeger	<i>Modeling File Access Patterns to Improve Caching Performance</i>
1992	Richard Golding	<i>Weak-consistency Group Communication and Membership</i>

### Doctoral Dissertation Reading Committee Member

2009	Karen Glocer	<i>Prof. Manfred Warmuth</i>
2009	Kevin Greenan	<i>Prof. Ethan Miller</i>
2009	Mark Storer	<i>Prof. Ethan Miller</i>
2007	Timothy Bisson	<i>Prof. Scott Brandt</i>
2007	John Colby	<i>Prof. Geoffrey Pullum</i>
2007	Dean Hildebrand	<i>Prof. Peter Honeyman (Michigan)</i>
2006	Zachary Peterson	<i>Prof. Randal Burns (Johns Hopkins)</i>
2006	Feng Wang	<i>Prof. Scott Brandt</i>
2006	Caixue Lin	<i>Prof. Scott Brandt</i>
2005	Reiner Kraft	<i>Prof. Raymie Stata</i>
2005	Qin Xin	<i>Prof. Ethan Miller</i>
2005	Scott Banachowski	<i>Prof. Scott Brandt</i>
2004	Ismail Ari	<i>Prof. Ethan Miller</i>
2004	Dmitrii Zagorodnov	<i>Prof. Keith Marzullo (UCSD)</i>
2003	R. Kameshwari	<i>Prof. K. Gopinath (IIS Bangalore)</i>
2003	Bradley Smith	<i>Prof. J.J. Garcia-Luna</i>
2002	Brian Chess	<i>Prof. F. Joel Ferguson</i>
2002	Jyoti Raju	<i>Prof. J.J. Garcia-Luna</i>
1999	Rodrigo Garcés	<i>Prof. J.J. Garcia-Luna</i>
1999	Clay Shields	<i>Prof. J.J. Garcia-Luna</i>
1998	Bruce Montague	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1996	Shree N. Murthy	<i>Prof. J.J. Garcia-Luna</i>
1996	Eric Rosen	<i>Prof. Patrick Mantey</i>
1995	Yuxia Zhang	<i>Prof. J.J. Garcia-Luna</i>
1993	Daniel Edelson	<i>Prof. Ira Pohl</i>
1993	Max Copperman	<i>Prof. Charles M<sup>c</sup>Dowell</i>

### Doctoral Qualifying Examination Committee Chair

2008	Andrew Leung	<i>Prof. Ethan Miller</i>
2008	Kevin Greenan	<i>Prof. Ethan Miller</i>
2008	Neerja Bhatnagar	<i>Prof. Ethan Miller</i>
2007	Mark Storer	<i>Prof. Ethan Miller</i>
2004	Reiner Kraft	<i>Prof. Raymie Stata</i>
2003	Qin Xin	<i>Prof. Ethan Miller</i>
2003	Scott Banachowski	<i>Prof. Scott Brandt</i>
2003	Feng Wang	<i>Prof. Scott Brandt</i>
2002	Ismail Ari	<i>Prof. Ethan Miller</i>
2002	Bradley Smith	<i>Prof. J.J. Garcia-Luna</i>

### Doctoral Qualifying Examination Committee Member

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2006	David Essary	<i>Prof. Ahmed Amer (University of Pittsburgh)</i>
2005	Karen Glocer	<i>Prof. Manfred Warmuth</i>
2003	Dmitrii Zagorodnov	<i>Prof. Keith Marzullo (University of California, San Diego)</i>
2003	Lawrence You	<i>Prof. Darrell Long</i>
2001	Tsozen Yeh	<i>Prof. Darrell Long</i>
2001	Aman Shaikh	<i>Prof. Anujan Varma</i>
2000	Ahmed Amer	<i>Prof. Darrell Long</i>
1999	Srinivas Vutukury	<i>Prof. J.J. Garcia-Luna</i>
1999	Jyoti Raju	<i>Prof. J.J. Garcia-Luna</i>
1998	Gil Fuchs	<i>Prof. Robert Levinson</i>
1998	Benjamin Reed	<i>Prof. Darrell Long</i>
1998	Marcelo Spohn	<i>Prof. J.J. Garcia-Luna</i>
1997	Steven Carter	<i>Prof. Darrell Long</i>
1997	Brian Chess	<i>Prof. F. Joel Ferguson</i>
1997	Thomas Kroeger	<i>Prof. Darrell Long</i>
1997	Brian Levine	<i>Prof. J.J. Garcia-Luna</i>
1997	Thomas Clay Shields	<i>Prof. J.J. Garcia-Luna</i>
1996	Bruce Montague	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1996	Hans-Peter Dommel	<i>Prof. J.J. Garcia-Luna</i>
1996	Lampros Kalampoukas	<i>Prof. J.J. Garcia-Luna</i>
1996	Fumiaki Kamiya	<i>Prof. Allen Van Gelder</i>
1996	Dirk Coldeway	<i>Prof. Charles M<sup>c</sup>Dowell</i>
1995	Jochen Behrens	<i>Prof. J.J. Garcia-Luna</i>
1995	Chane Fullmer	<i>Prof. J.J. Garcia-Luna</i>
1995	Theodore Haining	<i>Prof. Darrell Long</i>
1995	Shree N. Murthy	<i>Prof. J.J. Garcia-Luna</i>
1995	Dimitrios Stiliadis	<i>Prof. Anujan Varma</i>
1994	Gil Fuchs	<i>Prof. Robert Levinson</i>

### Senior Thesis Advisor

2001	Christopher Benson	<i>Peer-to-Peer File System using Weak Consistency Replication</i>
1994	Sean Gilligan	<i>MacMet: A Macintosh Program to Display Real-Time and Historical Data from Meteorological Stations</i>
1992	Nitin Ganatra	<i>Census: Collecting Host Information on a Wide Area Network</i>
1991	Aaron Emigh	<i>The Swift Architecture: Anatomy of a Prototype</i>
1989	Leland Wallace	<i>Font Extensions to the X-Fig Graphics Program</i>