

Scott A. Brandt

Curriculum Vitae

August 11, 2010

Computer Science Department
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EMPLOYMENT HISTORY

Academic and Professional Positions

1999–present	Professor , Computer Science Department, University of California, Santa Cruz
2012–present	Associate Dean of Research and Graduate Studies
2007–present	Professor
2007–present	Director , UCSC / Los Alamos National Laboratory Institute for Scalable Scientific Data Management (ISSDM)
2000–present	Director , UCSC Systems Research Laboratory (SRL)
2007	Acting Associate Dean of Research and Graduate Studies , Jack Baskin School of Engineering (January–March, 2007)
2005–2008	Director of Graduate Studies , Computer Science Department
2005–2008	Associate Director , UCSC Storage Systems Research Center (SSRC)
2005–2007	Co-founder / Associate Director , UCSC/LANL Institute for Scalable Scientific Data Management (ISSDM)
2003–2005	Associate Director of Graduate Studies , Computer Science Department
2003–2007	Associate Professor
2001	Co-founder , UCSC Storage Systems Research Center (SSRC)
1999–2003	Assistant Professor
1994–1999	Instructor/Research Assistant/Teaching Assistant , Computer Science Department, University of Colorado, Boulder
1992–1994	Senior Computer Scientist , Secure Computing Corporation, Roseville, Minnesota
1991–1992	Senior Research Scientist , Alliant Techsystems Research and Technology Center (Formerly Honeywell Systems and Research Center), Hopkins, Minnesota
1990–1991	Founder and Vice President , Theseus Research, Minneapolis, Minnesota
1987–1990	Senior Research Scientist , Honeywell Systems and Research Center, Minneapolis, Minnesota
1985–1987	Software Engineer , B-Tree Software, Minnetonka, Minnesota
1985	Summer Intern/Assistant Software Engineer , Northern Telecom, Minnetonka, Minnesota

1982–1985 **Assistant Software Engineer**, CPT Corporation, Eden Prairie, Minnesota

Consulting

June 2010–April 2011 **Expert Witness (Apple v. HTC)**, Perkins Coie
August 2008–June 2010 **Technical Consulting**, IBM Almaden Research Center, San Jose, California
October 2007–April 2010 **Expert Witness (Netapp v. Sun)**, DLA Piper, Palo Alto, California
May 2006–July 2007 **Expert Witness (Express Logic v. Green Hills Software)**, Buchanan Ingersoll & Rooney / Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, San Diego, California
March 2006–December 2006 **Consulting Expert**, The Chatham Group, Los Altos, California
November 2003–August 2005 **Expert Witness (HP v. EMC)**, Bartlit Beck Herman Palenchar & Scott LLP, Chicago, Illinois
July 2004–September 2004 **Expert Witness (Optima v. Roxio)**, Holland + Knight, Los Angeles, California
June 2001–May 2003 **Expert Witness (Powerquest v. Symantec)**, The Hecker Law Group, Los Angeles, California
1997 **Instructor and Programmer**, Jacobson, Myers and Associates, Boulder, Colorado
March 1987–May 1988 **Consultant**, HyTec Design, Maple Grove, Minnesota

EDUCATION

- **Ph.D., Computer Science**, University of Colorado at Boulder, June 1999
Dissertation: *Soft Real-Time Processing with Dynamic QoS Level Resource Management*
Advisor: Gary Nutt
- **M.S., Computer Science**, University of Minnesota, Minneapolis, December 1993
Thesis: *Enhanced Robotic Visual Tracking under the Controlled Active Vision Framework*
Advisor: Nikolaos Papanikolopoulos
- **B. Mathematics (Philosophy minor)**, University of Minnesota, Minneapolis, June 1987

RESEARCH FUNDING

Grants

- G25. **Los Alamos National Laboratory**, "Institute for Scalable Scientific Data Management," PI: Scott Brandt, Co-PI: Carlos Maltzahn, \$1,953,336, 2011–2016.
- G24. **DOE Office of Science**, "Adding Data Management Services to Parallel File Systems," PI: Scott Brandt, Co-PIs: Carlos Maltzahn, Alkis Polyzotis, Wang-Chiew Tan, \$1,012,535, 2010–2013.
- G23. **SAP**, "Ceph Research for SAP", PI: Scott Brandt, Co-PIs: Carlos Maltzahn and Alkis Polyzotis, \$150,000 (combination of grant and gift), 2009–2010
- G22. **National Science Foundation**, "End-to-End Performance Management for Large Distributed Storage: Research Experience for Undergraduates Supplement," PI: Scott A. Brandt, Co-PI: Carlos Maltzahn, \$16,000, 2009–2010

- G21. **UC Lab Research Program**, "Institute for Scalable Scientific Data Management", PI: Scott Brandt, \$450,000, 2009–2010.
- G20. **UC Lab Research Program**, "RADIX: Data Center Performance Monitoring and Management", PI: Scott Brandt, Co-PIs: Carlos Maltzahn, and Nathan Debardeleben (LANL), \$1,100,000, 2009–2011
- G19. **Oracle**, "Predictable High Performance Data Management", PI: Scott Brandt, \$30,000, 2008–2009
- G18. **UC Office of the President**, "Institute for Scalable Scientific Data Management", PI: Scott Brandt, \$430,000, 2008–2009
- G17. **US Department of Education**, Graduate Assistance in Areas of National Need (GAANN)—Computer Science, PI: Ira Pohl, Co-PI: Scott A. Brandt (Brandt PI/Director 2007–2008), \$383,643, 2007–2010
- G16. **US Department of Education**, Graduate Assistance in Areas of National Need (GAANN)—Computer Science, PI: Ira Pohl, Co-PIs: Suresh Lodha, and Scott Brandt (Brandt PI/Director 2007–2008), \$693,432, 2003–2008
- G15. **US Department of Energy Office of Science**, "Petascale Data Storage Institute", PI: Darrell D. E. Long, Co-PIs: Scott A. Brandt, Ethan L. Miller, Carlos Maltzahn, in collaboration with Carnegie Mellon University, University of Michigan, Los Alamos National Laboratory, Sandia National Laboratory, Lawrence Berkeley National Laboratory, Oak Ridge National Laboratory, and Pacific Northwest National Laboratory, \$11,250,000 (UCSC: \$1,500,000), 2006–2011
- G14. **National Science Foundation**, "End-to-End Performance Management for Large Distributed Storage," PI: Scott A. Brandt, Co-PIs: Carlos Maltzahn, Richard Golding, Theodore Wong, \$999,840, 2006–2009
- G13. **University of California/Los Alamos National Laboratory**, *UCSC/LANL Institute for Scientific Data Management*, PI: Scott A. Brandt ~\$5,000,000, 2005–2010
- G12. **Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Sandia National Laboratory**, "Scalable File Systems for High Performance Computing," PI: Scott A. Brandt, Co-PIs: Darrell D. E. Long, Ethan L. Miller, Martín Abadi, and Carlos Maltzahn, \$750,000, 2005–2008.
- G11. **Network Appliance**, "Linking File System Research", PI: Scott A. Brandt, Co-PI: Carlos Maltzahn, \$45,000, 2005–2006
- G10. **Industry donations to the Storage Systems Research Center from Hewlett-Packard, Hitachi Global Storage Systems, IBM, Engenio, Microsoft, Network Appliance, Onstor, Overland Storage, Veritas, and others**, PIs: Darrell D. E. Long, Scott A. Brandt, and Ethan L. Miller, ~\$150,000 annually, 2003–2007
- G9. **UC MICRO**, "Dynamic Integrated Scheduling of Hard Real-Time, Soft Real-Time and Non-Real-Time Processes," PI: Scott A. Brandt, \$32,879, 2004–2005
- G8. **UC MICRO**, "Dynamic Integrated Scheduling of Hard Real-Time, Soft Real-Time and Non-Real-Time Processes," PI: Scott A. Brandt, \$26,511, 2003–2004
- G7. **National Science Foundation**, "Building High-performance, Reliable Storage Systems Using Magnetic RAM", PI: Ethan L. Miller, Co-PI: Scott A. Brandt, \$413,000, 2003–2006
- G6. **Intel**, "Dynamic Integrated Scheduling of Hard Real-Time, Soft Real-Time, and Non-Real-Time Processes," PI: Scott A. Brandt, \$110,000, 2002–2005

- G5. **Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Sandia National Laboratory**, “Scalable File Systems for High-Performance Computing,” PI: Darrell D. E. Long, Co-PIs: Scott A. Brandt, Ethan L. Miller, and Katia Obraczka, \$900,000, 2002–2005
- G4. **USENIX**, “The BEST Scheduler for Integrated Processing of Best-effort and Soft Real-Time Processes,” PI: Scott A. Brandt, \$22,000, 2001–2002
- G3. **Lawrence Livermore National Laboratory**, “Building a High-Performance Storage System from Commodity Components,” PI: Darrell D. E. Long, Co-PIs: Ethan L. Miller, and Scott A. Brandt, \$65,000, 2001–2002
- G2. **Institute for Scientific Computing Research**, “Application of Probe-based Storage to High Performance Computing,” PI: Darrell D. E. Long, Co-PI: Scott A. Brandt, \$43,163, 2000–2001
- G1. **National Science Foundation**, “Architectures and Algorithms to Exploit Probe-based Storage,” PI: Darrell D. E. Long, Co-PIs: Tara Madhyastha, and Scott A. Brandt, \$345,191, 2000–2002

Awards and Honors

- H6. Best Paper Award, 2010 Conference of the ACM Special Interest Group on Management of Data (SIGMOD 2010)
- H5. Best Paper Award, 2010 ACM Conference on High Performance Distributed Computing (HPDC 2010)
- H4. Best Paper Award, 2010 Euromicro Conference on Real-Time Systems (ECRTS 2010)
- H3. Springer Journal of Real-Time Systems Award for Best Student Paper, 2008 IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2008)
- H2. Best Paper award, IPCCC 2007.
- H1. Senior Member, IEEE, 2006

PUBLICATIONS

NOTE: *denotes a student co-author. **denotes a student co-author supervised by me.

Journals

- J18. Shelby Funk, Greg Levin**, Caitlin Sadowski*, and Scott Brandt, “DP-FAIR: A Unifying Theory for Optimal Hard Real-Time Multiprocessor Scheduling”, *Real-Time Systems: The International Journal of Time-Critical Computing Systems*, Volume 47, Number 5, pp. 389–429, September 2011.
- J17. Carlos Maltzahn, Esteban Molina-Estolano*, Amandeep Khurana*, Alex Nelson*, Scott Brandt, and Sage Weil, “Ceph as a Scalable Alternative to the Hadoop Distributed File System,” *login: The USENIX Magazine*, Volume 35, Number 4, August 2010 (<http://www.usenix.org/publications/login/2010-08/openpdfs/maltzahn.pdf>).
- J16. Changkyu Kim Jatin Chhugani, Nadathur Satish, Eric Sedlar, Anthony Nguyen, Tim Kaldewey**, Victor Lee, Scott Brandt, Pradeep Dubey, “Designing Fast Architecture Sensitive Tree Search on Modern Multi-Core/Many-Core Processors,” *ACM Transactions on Database Systems*, Vol. 9, No. 4, Article 39, pp. 39:1–39:31, March 2010.

- J15. Manel Velasco, Pau Marti, Josep M. Fuertes, Camilo Lozoya and Scott A. Brandt, "Experimental evaluation of slack management in real-time control systems: coordinated vs. self-triggered approach", *Journal of Systems Architecture*, Volume 56, Issue 1, pp. 63–74, January 2010.
- J14. Esteban Molina-Estolano*, Carlos Maltzahn, John Bent, and Scott A. Brandt, "Building a Parallel File System Simulator," *Journal of Physics: Conference Series*, SciDAC 2009, Volume 180, No. 1, August 2009.
- J13. Pau Marti**, Caixue Lin**, Scott A. Brandt, Manel Velasco, Josep Fuertes, "Draco: Efficient Resource Management for Resource-Constrained Control Tasks," *IEEE Transactions on Computers*, Volume 58, Issue 1, pp. 90–105, January 2009.
- J12. Anna Povzner**, Tim Kaldewey**, Scott A. Brandt, Richard Golding, Theodore M. Wong, Carlos Maltzahn, "Efficient Guaranteed Disk Request Scheduling with Fahrrad," *ACM SIGOPS Operating Systems Review*, Volume 42, Issue 4, pp. 13–25, May 2008. (This paper is a republication of C53)
- J11. Carlos Maltzahn, Nikhil Bobb**, Mark W. Storer*, Damian Eads*, Scott A. Brandt, and Ethan L. Miller, "Graffiti: A Framework for Testing Collaborative Distributed Metadata," *Distributed Data and Structures 7*, Proceedings in Informatics, Carleton Scientific, Volume 21, pp. 97–111, 2007.
- J10. Timothy Bisson**, Joel Wu**, and Scott A. Brandt, "A Distributed Spin-Down Algorithm for Object-Based Storage Devices with Write Redirection," *Distributed Data and Structures 7*, Carleton Scientific, Volume 21, 2007
- J9. 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*, Volume 2, No. 2, pp. 1–22, May 2006.
- J8. Pau Martí, Caixue Lin**, Scott A. Brandt, Manel Velasco*, Jordi Ayza* and Josep M. Fuertes, "Asignación Dinámica de Recursos en Sistemas de Control de Tiempo Real" ("Dynamic Resource Allocation in Real-Time Control Systems"), *Revista Iberoamericana de Automática e Informática Industrial (Iberoamerican Journal of Automatics and Industrial Control)*, Vol. 3, No. 2, pp. 50–60, April 2006.
- J7. Bo Hong**, Feng Wang**, Scott A. Brandt, Darrell D. E. Long, and Thomas J. E. Schwarz, "Using MEMS-Based Storage in Computer Systems—MEMS Storage Architectures," *ACM Transactions on Storage*, Volume 2, No. 1, pp. 1–21, February 2006.
- J6. David Andrews, Ravi Vemuri, David Chelberg, David Fleeman, David Parrott, Lonnie Welch, and Scott A. Brandt, "A framework for Using Benefit in Complex Real-Time Systems," *Journal of Parallel and Distributed Computing Practices*, Volume 5, No. 1, March 2002.
- J5. Ismail Ari*, Ahmed Amer*, Robert Gramacy*, Ethan L. Miller, Scott A. Brandt, and Darrell D. E. Long, "ACME: Adaptive Caching Using Multiple Experts," *Distributed Data and Structures 4*, Carleton Scientific, Volume 14, pp. 143–158, 2002.
- J4. Scott A. Brandt and Gary J. Nutt, "Flexible Soft Real-Time Processing in Middleware," *Real-Time Systems: The International Journal of Time-Critical Computing Systems, Special Issue on Flexible Scheduling in Real-Time Systems*, Volume 22, Nos. 1/2, pp. 77–118, January-March 2002.
[Acceptance rate: 19%]

- J3. Gary J. Nutt, Scott A. Brandt, Adam Griff*, Sam Siewert*, Toby Berk, and Marty Humphrey, “Dynamically Negotiated Resource Management for Data Intensive Application Suites,” *IEEE Transactions on Knowledge and Data Engineering*, Volume 12, No. 1, pp. 78–95, January/February 2000. [Acceptance rate: 11%]
- J2. Christopher Smith*, Scott A. Brandt, and Nikolaos Papanikolopoulos, “Eye-in-Hand Robotic Tasks in Uncalibrated Environments,” *IEEE Transactions on Robotics and Automation*, Volume 13, No. 6, pp. 903–914, December 1997.
- J1. Christopher Smith, Charles Richards, Scott A. Brandt, and Nikolaos Papanikolopoulos, “Visual Tracking for Intelligent Vehicle-Highway Systems,” *IEEE Transactions on Vehicular Technology*, Volume 45, No. 4, pp. 744–758, November 1996.

Conferences and Symposia

Acceptance rates provided where known.

- C62. Shinpei Kato, Michael McThrow**, Carlos Maltzahn, Scott A. Brandt, “Gdev: First-Class GPU Resource Management in the Operating System”, USENIX Annual Technical Conference (USENIX ATC ’12), June 13-15, 2012, Boston, MA. [Acceptance rate: 14%]
- C61. Dimitris Skourtis**, Shinpei Kato, Scott A. Brandt, “QBox: Guaranteeing I/O Performance on Black Box Storage Systems”, The ACM International Symposium on High Performance Distributed Computing (HPDC), Delft, The Netherlands, June 20–22, 2012. [Acceptance rate: 16%]
- C60. Paul Regnier*, George Lima, Ernesto Massa* Greg Levin**, Scott Brandt, “RUN: Optimal Multiprocessor Real-Time Scheduling via Reduction to Uniprocessor”, IEEE Real-Time Systems Symposium (RTSS 2011), Vienna, Austria, November 29–December 3, 2011. **Best Paper Award.** [Acceptance rate: 21%]
- C59. Joe Buck**, Noah Watkins**, Jeff LeFevre*, Kleoni Iouannidou, Carlos Maltzahn, Neoklis Polyzotis, and Scott Brandt, “SciHadoop: Array-based Query Processing in Hadoop,” SC11, Seattle, Washington, November 12–18, 2011. [Acceptance rate: 21%]
- C58. Roberto Pineiro**, Kleoni Iouannidou, Carlos Maltzahn, and Scott Brandt, “RAD-FLOWS: Buffering for Predictable Communication,” The IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), Chicago, Illinois, April 11–14, 2011. [Acceptance rate: 21%]
- C57. Greg Levin**, Shelby Funk, Caitlin Sadowski*, Ian Pye*, Scott A. Brandt, “DP-FAIR: A Simple Model for Understanding Optimal Multiprocessor Scheduling,” the Euromicro Conference on Real-Time Systems (ECRTS), Brussels, Belgium, July 6–9, 2010. **Best Paper Award.** [Acceptance rate: 24%]
- C56. Anna Povzner**, Darren Sawyer, Scott A. Brandt, “Horizon: Efficient Deadline-Driven Disk I/O Management for Distributed Storage Systems,” The ACM International Symposium on High Performance Distributed Computing (HPDC), Chicago, Illinois, June 20–25, 2010. **Best Paper Award.** [Acceptance rate: 25%]
- C55. Changkyu Kim Jatin Chhugani, Nadathur Satish, Eric Sedlar, Anthony Nguyen, Tim Kaldewey**, Victor Lee, Scott Brandt, Pradeep Dubey, “FAST: Fast Architecture Sensitive Tree Search on Modern CPUs and GPUs,” ACM SIGMOD, Indianapolis, Indiana, June 6–11, 2010. **Best Paper Award.** [Acceptance rate: 21%]

- C54. David Bigelow**, Scott A. Brandt, John Bent, H. B. Chen, "Mahanaxar: Quality of Service Guarantees in High-Bandwidth, Real-Time Streaming Data Storage," the IEEE / NASA Conference on Mass Storage Systems and Technologies (MSST 2010), Lake Tahoe, Nevada, May 3–7, 2010. [Acceptance rate: 27%]
- C53. Anna Povzner**, Tim Kaldewey**, Scott A. Brandt, Richard Golding, Theodore Wong, and Carlos Maltzahn, "Efficient Guaranteed Disk Request Scheduling with Fahrrad", *Eurosys 2008*, Glasgow, Scotland, March 31–April 4, 2008. [Acceptance rate: 18%]
- C52. Tim Kaldewey**, Anna Povzner**, Theodore Wong, Richard Golding, Scott Brandt, Carlos Maltzahn, "Virtualizing Disk Performance", *The IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS 2008)*, St. Louis, Missouri, April 22–24, 2008. **Best Student Paper Award**. [Acceptance rate: 25%]
- C51. Tim Bisson** and Scott A. Brandt, "Reducing Hybrid Disk Write Latency with Flash-Backed I/O Requests," *International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS '07)*, Istanbul, Turkey, October 24–26, 2007. [Acceptance rate: 33%]
- C50. Joel Wu**, Scott A. Brandt, "Providing Quality of Service Support in Object-based File Systems," *IEEE / NASA Goddard Conference On Mass Storage Systems And Technologies (MSST 2007)*, San Diego, California, September 24–27, 2007. [Acceptance rate: 19%]
- C49. Timothy Bisson** and Scott A. Brandt, "Flushing Policies for NVCache Enabled Hard Disks," *IEEE / NASA Goddard Conference On Mass Storage Systems And Technologies (MSST 2007)*, San Diego, CA, September 24–27, 2007. [Acceptance rate: 38%]
- C48. Timothy Bisson**, Scott A. Brandt, Darrell Long, "A Hybrid Disk-Aware Spin-Down Algorithm with I/O Subsystem Support," *IEEE International Performance, Computing, and Communications Conference (IPCCC 2007)*, New Orleans, Louisiana, April 11–13, 2007. **Best Paper award**. [Acceptance rate: 37%]
- C47. Joel Wu**, Bo Hong**, Scott A. Brandt, "Ensuring Performance in Activity-Based File Relocation," *IEEE International Performance, Computing, and Communications Conference (IPCCC 2007)*, New Orleans, Louisiana, April 11–13, 2007. [Acceptance rate: 37%]
- C46. Caixue Lin**, Tim Kaldewey**, Anna Povzner**, Scott A. Brandt, "Diverse Soft Real-Time Processing in an Integrated System," *IEEE Real-Time Systems Symposium (RTSS 2006)*, Rio de Janeiro, Brazil, December 5–8, 2006. [Acceptance rate: 24%]
- C45. Sage A. Weil**, Scott A. Brandt, Carlos Maltzahn, and Ethan L. Miller, "CRUSH: Controlled, Scalable, and Decentralized Placement of Replicated Data," *International Conference for High Performance Computing, Networking, Storage, and Analysis (SC06)*, Denver, Colorado, November 11–17, 2006. [Acceptance rate: 23%]
- C44. Sage A. Weil**, Scott . Brandt, Ethan L. Miller, Darrell D. E. Long, and Carlos Maltzahn, "Ceph: A Scalable, High-Performance, Distributed Object-based Storage System," *Symposium on Operating Systems Design and Implementation (OSDI '06)*, pp. 307–320, Seattle, Washington, November 6–8, 2006. [Acceptance rate: 18%]
- C43. Timothy Bisson**, Scott A. Brandt, and Darrell D. E. Long, "NVCache: Increasing the Effectiveness of Disk Spin-down Algorithms with Caching," *International Symposium on Modeling, Analysis, and*

- Simulation of Computer and Telecommunication Systems (MASCOTS '06)*, Monterey, California, September 11–13, 2006. [Acceptance rate: 36%]
- C42. Joel C. Wu** and Scott A. Brandt, “The Design And Implementation Of Aqua: An Adaptive Quality Of Service Aware Object-Based Storage Device,” *IEEE / NASA Goddard Conference On Mass Storage Systems And Technologies (MSST 2006)*, pp. 209–218, College Park, Maryland, May 15–18, 2006.
- C41. Sasha Ames*, Nikhil Bobb**, Kevin Greenan*, Carlos Maltzahn, Ethan L. Miller, and Scott A. Brandt, “LiFS: An Attribute-Rich File System for Storage Class Memories,” *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2006)*, College Park, Maryland, May 15–18, 2006.
- C40. Caixue Lin** and Scott A. Brandt, “Improving Soft Real-Time Performance Through Better Slack Management,” *IEEE Real-Time Systems Symposium (RTSS 2005)*, pp. 3–14, Miami, Florida, December 5–8, 2005. [Acceptance rate: 20%]
- C39. Joel Wu**, Scott Banachowski**, and Scott A. Brandt, “Hierarchical Disk Sharing for Multimedia Systems,” *ACM International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV 2005)*, pp. 189–194, Skamania, Washington, June 13–14, 2005. [Acceptance rate: 33%]
- C38. Feng Wang**, Bo Hong**, Scott A. Brandt, Darrell D.E. Long, “Using MEMS-based Storage to Boost Disk Performance,” *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2005)*, pp. 202–209, Monterey, California, April 11–14, 2005. [Acceptance rate: 40%]
- C37. Kristal T. Pollack**, Scott A. Brandt, “Efficient Access Control for Distributed Hierarchical File Systems,” *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2005)*, pp. 253–260, Monterey, California, April 11–14, 2005. [Acceptance rate: 40%]
- C36. Alexander Ames*, Nikhil Bobb**, Scott A. Brandt, Adam Hiatt*, Carlos Maltzahn, Ethan L. Miller, Alisa Neeman*, and Deepa Tuteja**, “Richer File System Metadata Using Links and Attributes,” *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2005)*, pp. 49–60, Monterey, California, April 11–14, 2005. [Acceptance rate: 25%]
- C35. Joel Wu**, Scott Banachowski**, and Scott A. Brandt, “Automated QoS Support for Multimedia Disk Access”, *Conference on Multimedia Computing and Networking (MMCN 2005)*, Proceedings of SPIE – Volume 5680, Multimedia Computing and Networking 2005, Surendar Chandra, Nalini Venkatasubramaniam, editors, pp. 103–107, San Jose, California, January 19–20, 2005. [Acceptance rate: 24%]
- C34. Manel Velasco*, Josep M. Fuertes, Caixue Lin**, Pau Martí, and Scott A. Brandt, “A Control Approach to Bandwidth Management in Networked Control Systems,” *30th Annual Conference of the IEEE Industrial Electronics Society (IECON04)*, Volume 3, pp. 2343–2348, Busan, South Korea, November 2–6, 2004.
- C33. Scott Banachowski**, Timothy Bisson**, and Scott A. Brandt, “Integrating Best-effort Scheduling into a Real-Time System”, *IEEE Real-Time Systems Symposium (RTSS 2004)*, pp. 139–150, Lisbon, Portugal, December 5–8, 2004. [Acceptance rate: 22%]
- C32. Pau Martí, Caixue Lin**, Scott A. Brandt, Manel Velasco*, and Josep Fuertes, “Optimal State Feedback Resource Allocation for Resource-Constrained Control Tasks”, *IEEE Real-Time Systems Symposium (RTSS 2004)*, pp. 161–172, Lisbon, Portugal, December 5–8, 2004. [Acceptance rate: 22%]

- C31. Bo Hong**, Thomas Schwarz, Scott A. Brandt, and Darrell D. E. Long, “Reliability of MEMS-based Storage Enclosures”, *IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2004)*, pp. 571–579, Volendam, The Netherlands, October 5–7, 2004. [Acceptance rate: 38%]
- C30. Nathan Edel*, Deepa Tuteja**, Ethan L. Miller, and Scott A. Brandt, “MRAMFS: A Compressing File System for Non-Volatile RAM”, *IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2004)*, pp. 596–603, Volendam, The Netherlands, October 5–7, 2004. [Acceptance rate: 38%]
- C29. Sage A. Weil**, Kristal T. Pollack**, Scott A. Brandt, and Ethan L. Miller, “Dynamic Metadata Management for Petabyte-scale File Systems,” *SuperComputing (SC2004)*, 12 pages (CDROM proceedings), Pittsburgh, Pennsylvania, November 6–12, 2004. Nominee, Best Student Paper. [Acceptance rate: 31%]
- C28. Nathan K. Edel*, Ethan L. Miller, Karl S. Brandt*, and Scott A. Brandt, “Measuring the Compressibility of Metadata and Small Files for Disk/NVRAM Hybrid Storage Systems,” *International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS’04)*, pp. 577–586, San Jose, California, July 25–29, 2004.
- C27. Joel Wu** and Scott A. Brandt, “Storage Access Support for Soft Real-Time Applications”, *IEEE Real-Time Technology and Applications Symposium (RTAS 2004)*, pp. 164–173, Toronto, Canada, May 25–28, 2004. [Acceptance rate: 30%]
- C26. Feng Wang**, Scott A. Brandt, Ethan L. Miller, and Darrell D. E. Long, “OBFS: A File System for Object-Based Storage Devices,” *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2004)*, pp. 283–300, College Park, Maryland, April 13–16, 2004. [Acceptance rate: 30%]
- C25. Feng Wang**, Qin Xin*, Bo Hong**, Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long, and Tyce T. McLarty, “File System Workload Analysis for Large Scale Scientific Computing Applications,” *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2004)*, pp. 139–152, College Park, Maryland, April 13–16, 2004. [Acceptance rate: 30%]
- C24. Scott Banachowski**, Joel Wu**, and Scott A. Brandt, “Missed Deadline Notification in Best-Effort Schedulers”, *Conference on Multimedia Computing and Networking (MMCN 2004)*, pp. 123–135, San Jose, California, January 21–22, 2004. [Acceptance rate: 25%]
- C23. Scott A. Brandt, Scott Banachowski**, Caixue Lin**, Timothy Bisson**, “Dynamic Integrated Scheduling of Hard Real-Time, Soft Real-Time, and Non-Real-Time Processes,” *IEEE Real-Time Systems Symposium (RTSS 2003)*, pp. 396–409, Cancun, Mexico, December 3–5, 2003. [Acceptance rate: 19%]
- C22. Bo Hong**, Scott A. Brandt, Darrell D. E. Long, Ethan L. Miller, Karen A. Glocer*, and Zachary N. J. Peterson*, “Zone-Based Shortest Positioning Time First Scheduling for MEMS-Based Storage Devices,” *IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2003)*, pp. 104–113, Orlando, Florida, October 12–15, 2003. [Acceptance rate: 30%]
- C21. Ismail Ari*, Bo Hong**, Ethan L. Miller, Scott A. Brandt and Darrell D. E. Long, “Managing Flash Crowds on the Internet,” *IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2003)*, pp. 246–249, Orlando, Florida, October 12–15, 2003. [Acceptance rate: 30%]

- C20. Qin Xin*, Ethan L. Miller, Thomas Schwarz, Scott A. Brandt, Darrell D. E. Long, and Witold Litwin, "Reliability Mechanisms for Very Large Storage Systems," *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2003)*, pp. 146–156, San Diego, California, April 7–10, 2003. [Acceptance rate: 35%]
- C19. Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long, and Lan Xue**, "Efficient Metadata Management in Large Distributed File Systems," *IEEE / NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2003)*, pp. 290–298, San Diego, California, April 7–10, 2003. [Acceptance rate: 35%]
- C18. Robert Gramacy*, Manfred Warmuth, Scott A. Brandt, and Ismail Ari*, "Adaptive Caching by Refetching," *Neural Information Processing Systems (NIPS 2002)*, pp. 1465–1472, Vancouver, British Columbia, Canada, December 9–12, 2002. [Acceptance rate: 10%]
- C17. Ying Lin*, Scott A. Brandt, Darrell D. E. Long, and Ethan L. Miller, "Power Conservation Strategies for MEMS-based Storage Devices," *Proceedings of the 10th International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2002)*, pp. 53–62, Fort Worth, Texas, October 11–16, 2002. [Acceptance rate: 32%]
- C16. Tsozen Yeh*, Darrell D. E. Long, and Scott A. Brandt, "Increasing Predictive Accuracy by Prefetching Multiple Program and User Specific Files," *International Symposium on High Performance Computing Systems and Applications (HPCS 2002)*, pp. 12–19, Moncton, New Brunswick, Canada, June 17–19, 2002.
- C15. Scott A. Banachowski**, Zachary N. J. Peterson*, Ethan L. Miller, and Scott A. Brandt, "Intra-file Security for a Distributed File System," *IEEE Symposium on Mass Storage Systems and Technologies (MSST 2002)*, pp. 153–163, Adelphi, Maryland, April 15–18, 2002. [Acceptance rate: 35%]
- C14. Scott Banachowski** and Scott A. Brandt, "The BEST Scheduler for Integrated Processing of Best-effort and Soft Real-time Processes," *Conference on Multimedia Computing and Networking 2002 (MMCN '02)*, pp. 46–60, San Jose, California, January 18–25, 2002
- C13. Tsozen Yeh*, Darrell D. E. Long, and Scott A. Brandt, "Increasing Predictive Accuracy through Limited Prefetching," *Communication Networks and Distributed Systems Modeling and Simulation Conference (CNDS 2002)*, pp. 131–138, San Antonio, Texas, January 27–31, 2002.
- C12. Tsozen Yeh*, Darrell D. E. Long, and Scott A. Brandt, "Using program and user information to improve file prediction performance," *International Symposium on Performance Analysis of Systems and Software (ISPASS '01)*, pp. 111–119, Tucson, Arizona, November 4–6, 2001.
- C11. Tsozen Yeh*, Darrell D. E. Long, and Scott A. Brandt, "Performing File Prediction with a Program-Based Successor Model," *International Symposium on Modeling, Analysis, and Simulation on Computer and Telecommunication Systems (MASCOTS 2001)*, pp. 193–202, Cincinnati, Ohio, August 15–18, 2001.
- C10. Ethan L. Miller, Scott A. Brandt and Darrell D. E. Long, "HeRMES: High-Performance Reliable MRAM-Enabled Storage," *IEEE Workshop on Hot Topics in Operating Systems (HotOS-VIII)*, pp. 83–87, Elmau, Germany, May 20–23, 2001. [Acceptance rate: 25%]
- C9. Scott A. Brandt, "Performance Analysis of Dynamic Soft Real-Time Systems," *IEEE International Performance, Computing, and Communications Conference (IPCCC 2001)*, pp. 379–386, Phoenix, Arizona, April 4–6, 2001

- C8. Scott A. Brandt, Gary J. Nutt, Toby Berk, and James Mankovich, "A Dynamic Quality of Service Middleware Agent for Mediating Application Resource Usage," *IEEE Real-Time Systems Symposium (RTSS '98)*, pp. 307–317, Madrid, Spain, December 2–4, 1998. [Acceptance rate: 25%]
- C7. Scott A. Brandt, Gary J. Nutt, Toby Berk, and Marty Humphrey, "Soft Real-Time Application Execution with Dynamic Quality of Service Assurance," *IEEE/IFIP International Workshop on Quality of Service (IWQoS '98)*, pp. 154–163, Napa, California, May 18–20, 1998. [Acceptance rate: 17%]
- C6. Karl M. Fant and Scott A. Brandt, "Null Convention Logic, A Complete and Consistent Logic for Asynchronous Digital Circuit Synthesis," *International Conference on Application Specific Systems, Architectures, and Processors (ASAP '96)*, pp. 261–273, Chicago, Illinois, August 19–21, 1996.
- C5. Christopher Smith, Scott A. Brandt, and Nikolaos Papanikolopoulos, "Robotic Exploration under the Controlled Active Vision Framework," *IEEE Conference on Decision and Control (CDC '94)*, pp. 3796–3801, Lake Buena Vista, Florida, December 14–16, 1994.
- C4. Christopher Smith, Nikolaos Papanikolopoulos, Scott A. Brandt, and Charles Richards, "Visual Tracking Strategies for Intelligent Vehicle and Highway Systems," *SPIE Photonics East – Intelligent Vehicle Highway Systems*, 2344:234–245, Boston, Massachusetts, November 1–3, 1994.
- C3. Scott A. Brandt, Christopher Smith, and Nikolaos Papanikolopoulos, "The Minnesota Robotic Visual Tracker: A Flexible Testbed for Vision-Guided Robotic Research," *IEEE International Conference on Systems, Man, and Cybernetics (SMC '94)*, pp. 1363–1368, San Antonio, Texas, October 2–5, 1994.
- C2. Christopher Smith, Scott A. Brandt, and Nikolaos Papanikolopoulos, "Vision Sensing for Intelligent Vehicle-Highway Systems," *IEEE International Conference on Multisensor Fusion and Integration for Intelligent Systems (MFI '94)*, pp. 784–791, Las Vegas, Nevada, October 2–5, 1994.
- C1. Christopher Smith, Scott A. Brandt, and Nikolaos Papanikolopoulos, "Controlled Active Exploration of Uncalibrated Environments," *IEEE International Conference on Computer Vision and Pattern Recognition (CVPR '94)*, pp. 792–795, Seattle, Washington, June 21–23, 1994. [Acceptance rate: 29%]

Workshops

- W28. Shinpei Kato, Scott Brandt, Yutaka Ishikawa, Ragunathan (Raj) Rajkumar, "Operating Systems Challenges for GPU Resource Management", Workshop on Operating Systems Platforms for Embedded Real-Time Applications (OSPRT 2011) at the Euromicro Conference on Real-Time Systems (ECRTS 2011), Porto, Portugal, July 5, 2011.
- W27. Scott Brandt, Carlos Maltzahn, Neoklis Polyzotis, and Wang-Chiew Tan, "Fusing Data Management Services with File Systems", Petascale Data Storage Workshop (PDSW) at Supercomputing '09 (SC09), Portland, Oregon, November 15, 2009.
- W26. Esteban Molina-Estolano*, Maya Gokhale, Carlos Maltzahn, John May, John Bent, Scott A. Brandt, "Mixing Hadoop and HPC Workloads on Parallel Filesystems", Petascale Data Storage Workshop (PDSW) at Supercomputing '09 (SC09), Portland, Oregon, November 15, 2009.
- W25. Scott A. Brandt, Carlos Maltzahn, Neoklis Polyzotis, Wang-Chiew Tan, "Fusing Data Management Services with File Systems," Petascale Data Storage Workshop (PDSW) at Supercomputing '09 (SC09), pp. 42–46, Portland, Oregon, November 15, 2009.

- W24. Joe Buck**, Noah Watkins**, Carlos Maltzahn, Scott A. Brandt, Abstract Storage: Moving File Format-Specific Abstractions into Petabyte-Scale Storage Systems, 2nd International Workshop on Data-Aware Distributed Computing (in conjunction with HPDC-18), Munich, Germany, June 9, 2009.
- W23. Scott A. Brandt, Carlos Maltzahn, Anna Povzner**, Roberto Pineiro**, Andrew Shewmaker**, Tim Kaldewey**, "An Integrated Model for Performance Management in a Distributed System," *Workshop on Operating Systems Platforms for Embedded Real-Time Applications (OSPERT 2008)* at *the Euromicro International Conference on Real-Time Systems (ECRTS 2008)*, Prague, Czech Republic, July 1, 2008.
- W22. Sage Weil**, Andrew Leung*, Scott A. Brandt, and Carlos Maltzahn, "RADOS: A Scalable, Reliable Storage Service for Petabyte-scale Storage Clusters," Petascale Data Storage Workshop at SC07, Reno, NV, Nov. 11, 2007.
- W21. David O. Bigelow**, Suresh Iyer**, Tim Kaldewey**, Roberto C. Pineiro**, Anna Povzner**, Scott A. Brandt, Richard A. Golding, Theodore M. Wong, and Carlos Maltzahn, "End-to-End Performance Management for Scalable Distributed Storage," Petascale Data Storage Workshop at SC07, Reno, NV, Nov. 11, 2007.
- W20. Sage A. Weil**, Scott A. Brandt, and Carlos Maltzahn, "Scaling Linux Storage to Petabytes," *Linux Storage and Filesystem Workshop (LSF07)*, held in conjunction with the *Conference on File and Storage Technology (FAST '07)*, San Jose, CA, February 12-13, 2007.
- W19. Timothy Bisson** and Scott A. Brandt, "Leveraging Hybrid Disks for Power and Performance," *Linux Storage and Filesystem Workshop (LSF07)*, held in conjunction with the *Conference on File and Storage Technology (FAST '07)*, San Jose, CA, February 12-13, 2007.
- W18. Nikhil Bobb**, Damian Eads*, Mark W. Storer*, Scott A. Brandt, Carlos Maltzahn, and Ethan L. Miller, "Graffiti: A Framework for Testing Collaborative Distributed Metadata," *Workshop on Distributed Data and Structures (WDAS 2006)*, Santa Clara, California, January 4–6, 2006.
- W17. Timothy Bisson**, Joel Wu**, and Scott A. Brandt, "A Distributed Spin-Down Algorithm for Object-Based Storage Devices with Write Redirection," *Workshop on Distributed Data and Structures (WDAS 2006)*, Santa Clara, California, January 4–6, 2006.
- W16. Joel Wu** and Scott A. Brandt, "QoS Support in Object-based Storage Devices," *International Workshop on Storage Network Architecture and Parallel I/O (SNAPI '05)*, pp. 41–48, held in conjunction with the *International Conference on Parallel Architectures and Compilation Techniques (PACT 2005)*, Saint Louis, Missouri, September 17–21, 2005.
- W15. Scott A. Brandt, Scott Banachowski**, Caixue Lin**, and Joel Wu**, "Developing a Complete Integrated Real-Time System," *Workshop on Operating Systems Platforms for Embedded Real-Time Applications (OSPERT 2005)* at *the Euromicro International Conference on Real-Time Systems (ECRTS 2005)*, Palma de Mallorca, Spain, July 6–8, 2005.
- W14. Timothy Bisson** and Scott A. Brandt, "Reducing Energy Consumption with a Non-Volatile Storage Cache," *International Workshop on Software Support for Portable Storage (IWSSPS)* held in conjunction with the *IEEE Real-Time and Embedded Systems and Applications Symposium (RTAS 2005)*, San Francisco, California, March 7–10, 2005.
- W13. Manel Velasco, Pau Mart, Jos Ypez, Ricard Vill, Jordi Ayza, Josep M. Fuertes, Caixue Lin**, Scott A. Brandt, "Distributed Bandwidth Management in Networked Control Systems," VII Jornadas de Tiempo Real (JTR), Bilbao, Spain, February, 2005.

- W12. Scott Banachowski** and Scott A. Brandt, “Better Real-time Response for Time-share Scheduling,” *International Workshop on Parallel and Distributed Real-Time Systems (WPDRTS 2003)*, pp. 124–131, Nice, France, April 22–24, 2003.
- W11. David Andrews, Lonnie Welch, David Chelberg, and Scott A. Brandt, “A Framework for Using Benefit Functions in Complex Real-Time Systems,” *Workshop on Parallel and Distributed Real-Time Systems (WPDRTS 2002)*, pp. 92–95, Fort Lauderdale, Florida, April 15–16, 2002
- W10. Ismail Ari*, Ahmed Amer*, Ethan L. Miller, Scott A. Brandt, and Darrell D. E. Long. “Who is more adaptive? ACME: adaptive caching using multiple experts,” *Workshop on Distributed Data and Structures (WDAS 2002)*, Paris, France, March 20–23, 2002.
- W9. Tsozen Yeh*, Darrell D. E. Long, and Scott A. Brandt, “Caching Files with a Program-based Last N Successors Model,” *Workshop on Caching, Coherency and Consistency (WC3 '01)*, Sorrento, Italy, June 17, 2001.
- W8. Tsozen Yeh*, Darrell D. E. Long, and Scott A. Brandt, “Conserving Battery Energy through Making Fewer Incorrect File Predictions,” *IEEE Workshop on Power Management for Real-Time and Embedded Systems at the IEEE Real-Time Technology and Applications Symposium (RTAS 2001)*, pp. 30–36, Taipei, Taiwan, May 29, 2001.
- W7. Lonnie Welch and Scott A. Brandt, “Toward a Realization of the Value of Benefit in Real-Time Systems,” *Workshop on Parallel and Distributed Real-Time Systems (WPDRTS 2001)*, San Francisco, California, April 23–24, 2001.
- W6. “Soft Real-Time Processing with Dynamic QoS Level Resource Management,” Dagstuhl Seminar 00271, Stochastic and Dynamic Real-Time Systems, Schloss Dagstuhl, Germany, July 2000.
- W5. Marty Humphrey, Scott A. Brandt, Gary J. Nutt, and Toby Berk, “The DQM Architecture: Middleware for Application-Centered QoS Resource Management,” *IEEE Workshop on Middleware for Distributed Real-Time Systems and Services (WMDRTSS)* at the *IEEE Real-Time Systems Symposium (RTSS 1997)*, pp. 97–104, San Francisco, California, December 2, 1997.
- W4. Marty Humphrey, Toby Berk, Scott A. Brandt, and Gary J. Nutt, “Dynamic Quality of Service Resource Management for Multimedia Applications on General Purpose Processors,” *IEEE Workshop on Middleware for Distributed Real-Time Systems and Services (WMDRTSS)* at the *IEEE Real-Time Systems Symposium (RTSS 1997)*, San Francisco, California, December 2, 1997.
- W3. Gary J. Nutt, Toby Berk, Scott A. Brandt, Marty Humphrey, and Sam Siewert, “Resource Management of a Virtual Planning Room,” *International Workshop on Multimedia Information Systems (MIS '97)*, pp. 129–134, Como, Italy, September 25–27, 1997.
- W2. Christopher Smith, Nikolaos Papanikolopoulos, and Scott Brandt, “Application of the Controlled Active Vision Framework to Robotic and Transportation Problems,” *IEEE Workshop on Applications of Computer Vision (WACV '94)*, pp. 213–220, Sarasota, Florida, December 5–7, 1994.
- W1. Scott A. Brandt and John Budenske, “STARCON – A Reconfigurable Fieldable Signal Processing System,” *AIPR Image Understanding in the 90's: Building Systems That Work*, Proceedings of the *Workshop on Applied Image Pattern Recognition*, B.T. Mitchell, ed., SPIE, pp. 122–126, McLean, Virginia, October 18–19, 1990.

Short Papers

- S24. David Bigelow**, Scott A. Brandt, John Bent, H.B. Chen, "Valmar: High-Bandwidth Real-Time Streaming Data Management", the IEEE / NASA Conference on Mass Storage Systems and Technologies (MSST '12), Pacific Grove, CA, April 16–20, 2012.
- S23. Rosie Wacha**, Scott A. Brandt, "RAID4S: Adding SSDs to RAID Arrays," Poster Session *and* Doctoral Workshop of EuroSys 2010, April 13–16, Paris, France.
- S22. Esteban Molina-Estolano*, Carlos Maltzahn, Ben Reed, and Scott A. Brandt, "Haceph: Scalable Metadata Management for Hadoop using Ceph," Poster Session of the USENIX Symposium on Network Design and Implementation (NSDI '10), April 28–30, 2010, San Jose, California.
- S21. Milo Polte*, Esteban Molina-Estolano*, John Bent, Scott Brandt, Garth Gibson, Maya Gokhale, Carlos Maltzahn, Meghan Wingate, "Enabling Scientific Application I/O on Cloud FileSystems," Work-in-Progress Session of the Conference on File and Storage Technology (FAST 2010), San Jose, CA, February 24, 2010.
- S20. Rosie Wacha**, Scott A. Brandt, John Bent, Carlos Maltzahn, "RAID4S: Adding SSDs to RAID Arrays," Poster Session of the Conference on File and Storage Technology (FAST 2010), February 24, 2010, San Jose, CA.
- S19. Roberto Pineiro and Scott Brandt, "Predictable and Guaranteeable Performance with Throughput, Latency, and Firmness Controls in Buffer-Cache", Work-In-Progress Session of the Conference on File and Storage Technology (FAST 2009), San Francisco, CA, February 24–27, 2009.
- S18. Esteban Molina-Estolano, Carlos Maltzahn, Scott Brandt, and John Bent, "Comparing the Performance of Different Parallel Filesystem Placement Strategies", Work-In-Progress Session of the Conference on File and Storage Technology (FAST 2009), San Francisco, CA, February 24–27, 2009.
- S17. Tim Kaldewey, Jeff Hagen, Eric Sedlar, Andrea Di Blas, and Scott Brandt, "Memory Matters," Work-in-Progress Session of the IEEE Real-Time Systems Symposium (RTSS 2008), Barcelona, Spain, Nov 30-Dec 3, 2008.
- S16. Anna Povzner, Scott Brandt, Richard Golding, Theodore Wong, and Carlos Maltzahn, "Virtualizing Disk Performance with Fahrrad", Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26–29, 2008.
- S15. Tim Kaldewey, Andrew Shewmaker, Carlos Maltzahn, Theodore Wong, and Scott Brandt, "RADoN: QoS in storage Networks", Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26–29, 2008.
- S14. Esteban Molina-Estolano, Carlos Maltzahn, Sage Weil, and Scott Brandt, "Dynamic Load Balancing in Ceph", Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26–29, 2008.
- S13. Ian Pye, Scott Brandt, and Carlos Maltzahn, "Ringer: A Global-Scale Lightweight P2P File Service", Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26–29, 2008.
- S12. David Bigelow, Scott Brandt, Carlos Maltzahn, and Sage Weil, "Adapting RAID Methods for Use in Object Storage Systems", Work-in-Progress Session of the USENIX Conference on File and Storage Technology (FAST 2008), San Jose, CA, February 26–29, 2008.

- S11. Tim Kaldewey**, Caixue Lin**, and Scott A. Brandt, “Firm Real-Time Processing in an Integrated Real-Time System,” *Work-in-Progress Session of the IEEE Real-Time and Embedded Technologies and Applications Symposium (RTAS 2006)*, San Jose, California, April 4–7, 2006.
- S10. Anna Povzner**, Caixue Lin**, and Scott A. Brandt, “Supporting Rate-Based Processes in an Integrated System,” *Work-in-Progress Session of the IEEE Real-Time and Embedded Technologies and Applications Symposium (RTAS 2006)*, San Jose, California, April 4–7, 2006.
- S9. Timothy Bisson** and Scott A. Brandt, “Adaptive Disk Spin-down Algorithms in Practice,” *Work-in-Progress Proceedings of the Usenix Conference of File and Storage Technology (FAST 2004)*, San Francisco, California, March 31–April 2, 2004.
- S8. Caixue Lin**, Pau Martí, Scott A. Brandt, Scott Banachowski**, Manel Velasco* and Josep Fuertes, “Improving Control Performance Using Discrete Quality of Service Levels in a Real-Time System”, *Work-in-Progress Session of the IEEE Real-Time Technology and Applications Symposium (RTAS 2004)*, Toronto, Canada, May 25–28, 2004.
- S7. Sage A. Weil**, Scott A. Brandt, Ethan L. Miller, and Kristal T. Pollack**, “Intelligent Metadata Management for a Petabyte-Scale File System,” 2nd *Intelligent Storage Workshop*, University of Minnesota, Minneapolis, Minnesota, May 19, 2004.
- S6. Joel Wu** and Scott A. Brandt, “QoS Support for Intelligent Storage Devices,” 2nd *Intelligent Storage Workshop*, University of Minnesota, Minneapolis, Minnesota, May 19, 2004.
- S5. Zachary Peterson*, Darrell D. E. Long, and Scott A. Brandt, “Data Placement Based on Seek Time Analysis of a MEMS-based Storage Device,” *Work-In-Progress Session of the Conference on File and Storage Technologies (FAST 2002)*, Monterey, California, January 28–30, 2002.
- S4. Scott Banachowski** and Scott A. Brandt, “The BEST Desktop Soft Real-Time Scheduler,” *Work-in-Progress session of the Real-Time Systems Symposium (RTSS 2001)*, pp. 9–12, London, UK, December 3–6, 2001.
- S3. Scott A. Brandt, Gary J. Nutt, and Kenneth Klingenstein, “A Discrete and Dynamic Approach to Application/Operating System QoS Resource Management,” *Internet2 Joint Application/Engineering QoS Workshop (I2QoS '98)*, pp. 22–25, Santa Clara, California, May 21–22, 1998.
- S2. Ron Belt, Danny Anthony, James Brandt, Scott A. Brandt, Don Krantz, Ramin Mojdehbaksh, Bel Shenoy, Alan Smythe, Lynne TeWinkel, Mark Vojta, and William Wehner, “Programming the Aladdin Multiprocessor,” *Government Microcircuit Applications Conference (GOMAC)*, Las Vegas, Nevada, November 9–12, 1992.
- S1. Scott A. Brandt and Carl Graf, “Digital Image Generation – VICAM,” *Digital/Electronic Terrain Board Symposium*, pp. 281–282, Wichita, Kansas, October 5–6, 1989 (published February 1, 1990).

Technical Reports

- T13. Greg Levin**, Caitlin Sadowski, Ian Pye, Scott A. Brandt, ”SNS: A Simple Model for Understanding Optimal Hard Real-Time Multiprocessor Scheduling,” Technical Report UCSC-SOE-11-09, Jack Baskin School of Engineering, University of California, Santa Cruz, March 2011.
- T12. Roberto Piniero**, Kleoni Iouannidou, Scott A. Brandt, Carlos Maltzahn, ”RAD-FETCH: Modeling Prefetching for Hard Real-Time Tasks,” Technical Report UCSC-SOE-11-08, Jack Baskin School of Engineering, University of California, Santa Cruz, February 2011.

- T11. Joe B. Buck**, Noah Watkins**, Jeff LeFevre*, Kleoni Iouannidou, Carlos Maltzahn, Neoklis Polyzotis, Scott Brandt, "SciHadoop: Array-based Query Processing in Hadoop," Technical Report UCSC-SOE-11-04, Jack Baskin School of Engineering, University of California, Santa Cruz, January 2011.
- T10. Theodore M. Wong, Richard A. Golding, Harvey M. Ruback, Wilfred Plouffe, Scott A. Brandt, "The Virtual Mission Bus," IBM Technical Report RJ10472 (A1009-013), September 2010.
- T9. Scott A. Brandt, "Scalable File Systems for High Performance Computing Final Report," Technical Report UCRL-TR-235259, Lawrence Livermore National Laboratory, October 2007.
- T8. Sage A. Weil**, Carlos Maltzahn, Scott A. Brandt, RADOS: A Reliable Autonomic Distributed Object Store, Technical Report UCSC-SOE-07-01, Jack Baskin School of Engineering, University of California, Santa Cruz, June 2007.
- T7. Sage A. Weil**, Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long, Carlos Maltzahn, Ceph: A Scalable Object-based Storage System, Technical Report SSRC-06-02, Storage Systems Research Center, University of California, Santa Cruz, January 2006.
- T6. Sage A. Weil**, Scott A. Brandt, Ethan L. Miller, Carlos Maltzahn, CRUSH: Controlled, Scalable, Decentralized Placement of Replicated Data, Technical Report SSRC-06-01, Storage Systems Research Center, University of California, Santa Cruz, January 2006.
- T5. Caixue Lin**, Pau Martí, Scott A. Brandt, Scott Banachowski, Manel Velasco, Josep Fuertes, "Improving Control Performance using Adaptive Quality of Service in a Real-Time System," Technical Report UCSC-CRL-04-04, Storage Systems Research Center, University of California, Santa Cruz, 2004.
- T4. Ismail Ari*, Bo Hong**, Ethan L. Miller, Scott A. Brandt, Darrell DE Long, "Modeling, analysis and simulation of flash crowds on the Internet," Technical Report UCSC-CRL-03-15, Storage Systems Research Center, University of California, Santa Cruz, 2004.
- T3. Nathan K. Edel*, Ethan L. Miller, Karl S. Brandt*, and Scott A. Brandt, "Measuring the Compressibility of Metadata and Small Files for Disk/NVRAM Hybrid Storage Systems," Technical Report UCSC-CRL-03-04, Storage Systems Research Center, University of California, Santa Cruz, July 2003.
- T2. Bo Hong** and Scott A. Brandt, "An analytical solution to a MEMS seek time model," Technical Report UCSC-CRL-02-31, Storage Systems Research Center, University of California, Santa Cruz, 2002.
- T1. Gary J. Nutt, Joe Antell, Scott A. Brandt, Chris Gantz, Adam Griff, Jim Mankovich, "Software Support for a Virtual Planning Room," Computer Science Department, University of Colorado, CU-CS-800-95, December, 1995.

Patents

- P7. Karl M. Fant and Scott A. Brandt, "**Asynchronous Logic with Intermediate Value Between Data and Null Values,**" U.S. Patent No. 6,333,640, December 2001.
- P6. Karl M. Fant and Scott A. Brandt, "**Null Convention Logic System,**" U.S. Patent No. 5,828,288, October 1998.
- P5. Karl M. Fant and Scott A. Brandt, "**Method and System for Process Expression and Resolution,**" U.S. Patent No. 5,805,461, September 1998.

- P4. Karl M. Fant and Scott A. Brandt, “**Null Convention Logic System,**” U.S. Patent No. 5,664,212, September 1997.
- P3. Karl M. Fant and Scott A. Brandt, “**Method and System for Process Expression and Resolution including a General Method of Direct Association,**” U.S. Patent No. 5,573,732, November 1996.
- P2. Karl M. Fant and Scott A. Brandt, “**Method and System for Process Expression and Resolution including a Generally and Inherently Concurrent Computer Language,**” U.S. Patent No. 5,355,496, October 1994.
- P1. Karl M. Fant and Scott A. Brandt, “**Null Convention Logic System,**” U.S. Patent No. 5,305,463, April 1994.

Software Distributions and Technology Transfer

SW3. HORIZON: A guaranteed disk request scheduler.

- (a) Implemented in NetApp Data OnTap. 2009–2010

SW2. RBED: An integrated virtualized real-time CPU scheduling. 2002–2010

- (a) Implemented for on-board real-time scheduling as part of the DARPA F6 distributed satellite program from Orbital Sciences, IBM, and NASA Jet Propulsion Laboratory.
- (b) Used in the Barrelfish operating system developed by ETH Zurich and Microsoft Research. See, for example, http://www.barrelfish.org/barrelfish_hotpar10.pdf
- (c) Being implemented in the L4 microkernel.

SW1. Ceph: An open-source petascale distributed file system with seamless scaling, strong reliability, fast recover, and an adaptive distributed metadata service. See <http://ceph.newdream.net> or Google “Ceph File System”. 2002–2010

- (a) Recently included in the official Linux kernel distribution.
See http://www.ucsc.edu/news_events/text.asp?pid=3807.
- (b) Used as the basis for Symantec’s S4 storage system.
- (c) CRUSH component used by Yahoo! for web hashing
- (d) CRUSH component implemented as the basis for LSI’s Next Generation Data Protection Layer (NGDPL).

Invited Talks

- I42. Keynote Speaker, Simpso Brasileiro de Engenharia de Sistemas Computacionais (Brazilian Symposium on Engineering of Computational Systems), Florianopolis, Santa Catarina, Brazil, Nov. 7. [Note: Sponsored by the Brazilian Computer Society and indexed by IEEE Xplore]
- I41. Panelist, Quality of Service Panel, HEC FSIO, August, 2011
- I40. “Managing the Performance of Large, Distributed Storage Systems” Smapper Inc., San Jose, CA, June 2011
- I39. “Ceph: A Scalable High-Performance Distributed File System,” SAP, Palo Alto, CA, September, 2010

- I38. "Managing the Performance of Large, Distributed Storage Systems", University of Nebraska, November, 2010.
- I37. "Ceph: A Scalable High-Performance Distributed File System," Sandia National Laboratory, Albuquerque, New Mexico, August, 2010
- I36. "Rate-Based Earliest Deadline (RBED) CPU Scheduling," IBM Houston (w/IBM, Orbital Sciences, and NASA Jet Propulsion Laboratory), May 2010
- I35. "Ceph: A Scalable, High-Performance Distributed File System," UC Berkeley RAD Lab, April, 2010
- I34. "Managing the Performance of Large, Distributed Storage Systems," Technische Universität Dresden (TU Dresden), Dresden, German, July 2009
- I33. "Managing the Performance of Large, Distributed Storage Systems," Universitat Politcnica de Catalunya, Barcelona, Spain, July 2009
- I32. "Managing the Performance of Large, Distributed Storage Systems," University of North Carolina, Raleigh, North Carolina, June 2009
- I31. "Managing the Performance of Large, Distributed Storage Systems," Los Alamos National Laboratory, Los Alamos, New Mexico, May 2009
- I30. "End-to-End Performance Management for Large, Distributed Storage", Symantec, San Jose, California, March 2009
- I29. "End-to-end quality of service for large distributed storage", High-End Computing—I/O Working Group HEC FSIO Workshop, Washington DC, August 2008.
- I28. "Managing the performance of large, distributed storage systems," Los Alamos National Laboratory, July 2008.
- I27. "End-to-end quality of service for large distributed storage", High-End Computing—I/O Working Group HEC FSIO Workshop, Washington DC, August 2007.
- I26. "Storage research at UCSC:Petascale storage, end-to-end QOS, and virtual disks", IBM Storage Research Strategy Meeting, IBM Almaden Research Center, San Jose, CA, July 2007
- I25. Presenter/panelist on File I/O, DOD NSA Center for Exceptional Computing Advanced Computing Systems Workshop, Baltimore, MD, June 2007.
- I24. Panelist, "High Performance I/O: The Road Less Traveled?", LCI Conference on High Performance Clustered Computing, South Lake Tahoe, CA, May 2007.
- I23. "Ceph: A Scalable, High-Performance Distributed File System," University of New South Wales, March 2007
- I22. "End-to-end performance management for large, distributed storage", National ICT Australia (NICTA), March 2007
- I21. "Ceph: A Scalable, High-Performance Distributed File System," VMware, March 2007.
- I20. "Ceph: A Scalable, High-Performance Distributed File System," Network Appliance, February 2007.
- I19. "Ceph: A Scalable, High-Performance Distributed File System," Symantec, January 2007.

- I18. "Integrating Real-Time and General-Purpose Computing", National ICT Australia (NICTA), October 2006.
- I17. "End-to-end Performance Management for Large, Distributed Storage," High-End Computing—I/O Working Group (HECURA) Workshop, Washington DC, August 2006.
- I16. "UCSCs Perspective on File System and I/O Research and Education," High-End Computing—I/O Working Group (HECURA) Workshop, Washington DC, August 2006.
- I15. Panelist, 10th Workshop on Distributed Supercomputing (SOS10), March, 2006.
- I14. "High-Performance Data Storage at Scale: Managing Petabytes of Data with Commodity Components", University of Pittsburgh, March, 2006.
- I13. "High-Performance Data Storage at Scale: Managing Petabytes of Data with Commodity Components", University of California, Riverside, February, 2006.
- I12. "Integrating Best-Effort and Real-Time Processing", Florida International University, Miami, Florida, December, 2005.
- I11. HEC-IWG File Systems and I/O R&D Workshop, Dallas, Texas, August, 2005.
- I10. "Developing a General-Purpose Real-Time Operating System", **Plenary Speaker**, *The Second Workshop on High Performance, Fault Adaptive, Large Scale Embedded Real-Time Systems (FALSE-II)*, San Francisco, California, March, 2005.
- I9. "Object-Based Storage Systems," Yahoo, Sunnyvale, California, 2005.
- I8. "Peta-Scale Data Storage: Challenges and (a few) Solutions," University of Virginia, Charlottesville, Virginia, October, 2004.
- I7. "Peta-Scale Storage Research at the UCSC Storage Systems Research Center (SSRC)", Network Appliance, Sunnyvale, California, November, 2003.
- I6. "Storage Research at the UCSC Storage Systems Research Center", School of Engineering Research Review Day, University of California, Santa Cruz, 2003.
- I5. "Storage Research at the UCSC Storage Systems Research Center", CITRIS Research Review Day, University of California, Davis, 2003.
- I4. "Architectures and Algorithms for MEMS-based Storage", University of Colorado Center for Information Storage, Boulder, Colorado, November 2002.
- I3. "The RA/S Model of Dynamic Integrated Multi-Class Real-Time Systems," University of Ohio, Athens, Ohio, August 2002.
- I2. "Soft Real-Time Processing with Dynamic QoS Level Resource Management," Technische Universität, Dresden, Germany, December 2001.
- I1. "Adaptive Soft Real-Time Processing with QoS Levels", University of Ohio, Athens, Ohio, September 2000.

PROFESSIONAL ACTIVITIES

Membership in Professional Societies

- **Senior Member**, IEEE
- **Member**, ACM
- **Member**, USENIX

Editorial Duties

- **Associate Editor**, Real-Time Systems journal, 2010-2012.
- **Editor**, *Proceedings of the Workshop on Operating Systems Platforms for Embedded Real-Time Applications* (OSPERT 2007), Pisa, Italy, July 3, 2007
- **Editor**, *Proceedings of the Workshop on Operating Systems Platforms for Embedded Real-Time Applications* (OSPERT 2006), Dresden, Germany, April 4, 2006
- **Guest Editor**, *Journal of Parallel and Distributed Computing Practices*, Special Issue on Parallel and Distributed Real-Time Systems, 2002
- **Editor**, *Proceedings of the IEEE Real-Time Systems Symposium* (RTSS 2000), Orlando, Florida, November 27–30, 2000

Steering Committee Service

- **Steering Committee Member**, Petascale Data Storage Workshop, 2010–present
- **Treasurer**, IEEE Technical Committee on Real-Time Systems, 2006–2010
- **Executive Committee Member**, IEEE Technical Committee on Real-Time Systems, 2006–present
- **Steering Committee Member**, *Workshop on Parallel and Distributed Real-Time Systems* (WPDRTS), 2002–2008

Organizing Committee Service

-
- **General Chair**, *IEEE Real-Time Systems Symposium* (RTSS 2011), Vienna, Austria, December 2011
- **Program Committee Chair**, *IEEE Real-Time Systems Symposium* (RTSS 2010), San Diego, CA, December 2010
- **Program Committee Chair**, *Data Management Track, International Conference on Distributed Computing Systems* (ICDCS 2010), Genova, Italy, June 2010
- **Finance Chair**, *IEEE Real-Time and Embedded Technology and Applications Symposium* (RTAS 2009), San Francisco, California, April 2009
- **Finance Chair**, *IEEE Real-Time Systems Symposium* (RTSS 2008), Barcelona, Spain, December 2008
- **General Chair**, *IEEE Real-Time and Embedded Technology and Applications Symposium* (RTAS 2008), St. Louis, Missouri, April 2008

- **Finance Chair**, *IEEE Real-Time Systems Symposium*, (RTSS 2007), Phoenix, Arizona, December 2007
- **Co-Chair**, *Workshop on Operating Systems Platforms for Embedded Real-Time Applications* (OSP-ERT 2007), Pisa, Italy, July 2007
- **Program Committee Chair**, *IEEE Real-Time and Embedded Technology and Applications Symposium*, (RTAS 2007), Bellevue, Washington, May 2007.
- **Finance Chair**, *IEEE Real-Time Systems Symposium* (RTSS 2006), Rio De Janeiro, Brazil, December, 2006.
- **Program Chair, Real-Time Middleware and Software Engineering Track**, *IEEE Real-Time Systems Symposium* (RTSS 2006), Rio De Janeiro, Brazil, December, 2006.
- **Open-Source Software Competition Chair**, *ACM Multimedia 2006*, Santa Barbara, California, October 22–28, 2006
- **Chair**, *Workshop on Operating Systems Platforms for Embedded Real-Time Applications* (OSP-ERT 2006), Dresden, Germany, July 5–7, 2006
- **Finance Chair**, *IEEE Real-Time and Embedded Technology and Applications Conference* (RTAS 2006), San Jose, California, April 4–7, 2006
- **Session Chair**, *Multimedia Computing and Networking* (MMCN 2006), San Jose, California, January 18–19, 2006
- **Local Arrangements Chair**, *IEEE Real-Time and Embedded Technology and Applications Symposium* (RTAS 2005), San Francisco, California, March 7–10, 2005
- **Session Chair**, *IEEE Real-Time and Embedded Technology and Applications Symposium* (RTAS 2004), Toronto, Canada, May 25–28, 2004
- **Publicity Chair**, *IEEE Real-Time Systems Symposium* (RTSS 2004), Lisbon, Portugal, December 5–8, 2004
- **Session Chair**, *IEEE Real-Time and Embedded Technology and Applications Symposium* (RTAS 2002), San Jose, California, September 24–27, 2002
- **Organizing Committee Member and Work-in-Progress Chair**, *Conference on File and Storage Technologies* (FAST 2002), Monterey, California, January 28–30, 2002
- **General Chair**, *Workshop on Parallel and Distributed Real-Time Systems* (WPDRTS 2002), Fort Lauderdale, Florida, April 15–16, 2002
- **Session Chair (Invited Session)**, *IEEE International Performance, Computing, and Communications Conference* (IPCCC 2001), Phoenix, Arizona, April 4–6, 2001
- **Program Chair for the Americas**, *International Workshop on Parallel and Distributed Real-Time Systems* (WPDRTS 2001) and *International Workshop on Embedded/Parallel HPC Systems* (EHPC 2000), San Francisco, California, April 23–24, 2001
- **Work-In-Progress Chair**, *IEEE Real-Time Systems Symposium* (RTSS 2000) , Orlando, Florida, November 27–30, 2000

Program Committee Service

- *IEEE International Conference on Networking, Architecture, and Storage* (NAS 2012), Xiamen, Fujian, China, June 2012
- *Euromicro Conference on Real-Time Systems* (ECRTS 2011), Porto, Portugal, July 2011.
- *Euromicro Conference on Real-Time Systems* (ECRTS 2010), Brussels, Belgium, July 2010.
- *Euromicro Conference on Real-Time Systems* (ECRTS 2009), Dublin, Ireland, July 2009.
- *ACM Symposium on Applied Computing* (SAC 2009), Hawai'i, March 2009.
- *Workshop on Compositional Theory and Technology for Real-Time Embedded Systems*, Collocated with RTSS 2008), Barcelona, Spain, November 2008.
- *IEEE Real-Time Systems Symposium* (RTSS 2008), Barcelona, Spain, December 2008.
- *Petascale Data Storage Workshop* at SC08, Austin, Texas, November, 2008.
- *Euromicro Conference on Real-Time Systems* (ECRTS 2008), Prague, Czech Republic, July 2008.
- *IEEE International Conference on Distributed Computer Systems* (ICDCS 08) (Main Program Committee), Beijing, China, June 2008.
- *IEEE International Conference on Distributed Computer Systems* (ICDCS 08) (Multimedia Systems Program Committee), Beijing, China, June 2008.
- *Multimedia Computing and Networking* (MMCN 2008), San Jose, California, January 2008.
- *IEEE Real-Time Systems Symposium* (RTSS 2007), Phoenix, Arizona, December 2007.
- *Euromicro Conference on Real-Time Systems* (ECRTS 2007), Pisa, Italy, July 2007.
- *IEEE International Symposium on Object-oriented Real-time Computing* (ISORC 2007), May, 2007.
- *USENIX Conference on File and Storage Technology* (FAST 2007), San Jose, California, February 2007.
- *IEEE International Conference on Embedded and Real-Time Computing Systems and Applications* (RTCSA 2006), Sydney, Australia, August 2006.
- *Euromicro Conference on Real-Time Systems* (ECRTS 2006), Dresden, Germany, July 2006.
- *IEEE Real-Time and Embedded Technology and Applications Conference* (RTAS 2006), San Jose, California, April 4–7, 2006
- *Multimedia Computing and Networking* (MMCN 2006), San Jose, California, January 18–19, 2006
- *IEEE Real-Time Systems Symposium* (RTSS 2005), Miami, FL, December 5–8, 2005
- *Workshop on Operating Systems Platforms for Embedded Real-Time Applications* (OSPERT 2005) at the *Euromicro International Conference on Real-Time Systems* (ECRTS 2005), Palma de Mallorca, Spain, July 6–8, 2005
- *Multimedia Computing and Networking* (MMCN 2005), San Jose, California, January 19–20, 2005

- *Multimedia Computing and Networking* (MMCN 2004), San Jose, California, January 21–22, 2004
- *IEEE Real-Time Systems Symposium* (RTSS 2003), Cancun, Mexico, December 3–5, 2003
- *Multimedia Computing and Networking* (MMCN 2003), Santa Clara, California, January 23–24, 2003
- *Multimedia Computing and Networking* (MMCN 2002), San Jose, California, January 18–25, 2002
- *IEEE International Performance, Computing, and Communications Conference* (IPCCC 2002), Phoenix, Arizona, April 3–5, 2002
- *IEEE Real-Time Systems Symposium* (RTSS 2000), Orlando, Florida, November 27–30, 2000

Reviewer

- *Transactions on Industrial Electronics*, 2009
- *External Reviewer*, Science Foundation Ireland (SFI), 2008
- *USENIX Symposium on Networked Systems Design and Implementation* (NSDI 2008)
- *EURASIP Journal on Embedded Systems*, 2007
- *The IEEE Conference on Measurement and Simulation of Computer and Telecommunication Systems* (MASCOTS 2006)
- *The International Journal of Computers and Applications*, 2005
- *The International Workshop on Storage Network Architecture and Parallel I/O* (SNAPI 2005)
- NSF Panel, 2004.
- NSF Panel, 2004.
- *IEEE Transactions on Computer System*, 2003
- *IEEE Transactions on Computer Systems*, 2002
- *Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems* (MASCOTS 2000)
- *Hot Interconnects VIII*, 2000
- *International Conference on the Application and Theory of Petri Nets*, 1998
- *International Conference on Robotics and Automation* (ICRA 94), 1994

Other Service

- **Reviewer**, LANL LDRD RD External Review Committee, 2009

Reviewer for External Promotions

- Promotion to Full Professor, 2010
- 3 Promotions to Associate Professor, 2010
- Promotion to Full Professor, 2009
- Promotion to Associate Professor, 2009
- Promotion to Associate Professor, 2008
- Promotion to Associate Professor, 2005
- Promotion to Research Associate Professor, 2005

UNIVERSITY SERVICE**Computer Science Department**

- **Chair**, CS Dept. Space Committee, 2011–2012
- **Member**, two merit/promotion review committees, 2011–2012
- **Chair**, merit review committee, 2011–2012
- **Chair**, promotion review committee, 2009–2010
- **Member**, merit review committee, 2009–2010
- **Member**, CS Software Engineering search committee, 2008–2009
- **Member**, 2 merit review committees, 2008–2009
- **Director**, Computer Science GAANN fellowship program, 2007–2008
- **Member**, 2 promotion review committees, 2007–2008
- **Graduate Director**, 2007–2008
- **Member**, Promotion review committee, 2006–2007
- **Member**, Mid-career review committee, 2006–2007
- **Created a distance learning program with Los Alamos National Laboratory, 2006–2007**
- **Graduate Director**, Computer Science, 2005–2006
- **Member**, Interactive Game Engineering program development committee, 2005–2006
- **Chair**, Promotion review committee, 2005–2006
- **Member**, Mid-career review committee, 2005–2006
- **Member**, Interactive Game Engineering program development committee, 2004–2005
- **Associate Graduate Director**, Computer Science, 2004–2005
- **Member**, Computer Science Search Committee, 2004–2005
- **Member**, Computer Science Graduate Committee, 2004–2005
- **Associate Graduate Director**, Computer Science, 2003–2004
- **Member**, Computer Science Graduate Committee, 2003–2004
- **Member**, Graduate Committee, Computer Science, 2002–2003
- **Member**, Computer Science Search Committee (2 positions), 2002–2003
- **Member**, Computer Science Graduate Committee, 2001–2002
- **Member**, Computer Science Search Committee (2 positions), 2001–2002
- **Member**, Computer Science Web Development Committee, 2001–2002

- **Member**, Computer Science Undergraduate Committee, 2000–2001
- **Member**, Computer Science Search Committee (2 positions), 1999–2000
- **Member**, Software Engineering Search Committee (3 positions), 1999–2000

University

- **Vice Chair**, Grad Council, 2011–2012
- **Chair**, *Ad hoc* promotion review committee, 2009–2010
- **Member**, Grad Council, 2009–2010
- **Member**, Grad Council, 2008–2009
- **Member**, *Ad hoc* promotion review committee, 2008–2009
- **Member**, *Ad hoc* promotion review committee, 2007–2008
- **Member**, faculty committee interviewing candidates for Vice Chancellor of Information Technology, 2007–2008
- **Member**, Committee on Computing and Telecommunications, 2007–2008
- **Acting Associate Dean of Research and Graduate Studies**, January–March, 2007
- **Member**, *Ad hoc* promotion review committee, 2006–2007
- **Member**, Data Center Solutions Committee, 2006–2007
- **Co-Chair**, GARP Steering Committee, 2005–2006
- **Member**, Committee on Faculty Welfare, 2003–2004
- **Member**, Special Advisory Committee on Affordable Housing for New Faculty, 2002–2003
- **Member**, Crown College Academic Standing Committee, 2002–2003
- **Coach**, UCSC ACM Programming Contest Teams (9th and 53rd place finishes out of 73 teams), 2002–2003
- **Member**, Special Advisory Committee on Affordable Housing for New Faculty, 2001–2002
- **Member**, Crown College Academic Standing Committee, 2001–2002
- **Member**, Library Committee, 2000–2001
- **Reviewer**, UC Micro Program, 2000–2001

ADVISING

Postdoctoral Advisor

- **Dr. Shinpei Kato**, (Associate Professor, Nagoya University), 2011–2012
- **Dr. Kleoni Ioannidou**, 2009–2012
- **Dr. Pau Martí** (Universidad Polytechnica de Catalunya, Barcelona, Spain), 2003–2004
- **Dr. Carlos Maltzahn** (UCSC Adjunct Associate Professor), 2003–2004

Doctoral Advisor

- **Dr. Anna Povzner**, Efficient Guaranteed Disk I/O Performance Management, 2010
- **Dr. Tim Kaldewey**, Predictable High Performance Data Management–Leveraging System Resource Characteristics To Efficiently Improve Performance and Predictability, 2010
- **Dr. Sage Weil**, *Ceph: Reliable, Scalable, and High-Performance Distributed Storage*, 2007
- **Dr. Joel Wu**, *Providing Quality of Service Support for Storage Systems*, 2007
- **Dr. Timothy Bisson**, *Improving Hard Disk Power Consumption, Performance, and Reliability Through I/O Redirection*, 2007
- **Dr. Feng Wang**, *Storage Management in Large Distributed Object-based Storage Systems*, 2006
- **Dr. Caixue Lin**, *Unified and Effective Soft Real-Time Processing in Integrated Systems*, 2006
- **Dr. Bo Hong**, *File and Storage Systems for MEMS-Based Storage*, 2005
- **Dr. Scott Banachowski**, *CPU Time-Sharing in Real-Time Systems*, 2005

Master of Science Advisor

- **Jason Aumiller**, *Data Communication with, within, and among GPUs*, 2012
- **Jan Pieper**, *Coping with the Storage Requirements of Cloud Computing*, 2010
- **Melanie Witt**, *Quality of Service in the Common Container*, 2010
- **Greg Levin**, *SnS: A Simple Model for Understanding Optimal Hard Real-Time Multiprocessor Scheduling*, 2010
- **David Bigelow**, *Managing High-Bandwidth Real-Time Data Storage*, 2009
- **Latchesar Ionkov**, *XCPU2 Distributed Seamless Desktop Extension*, 2009
- **Andrew Shewmaker**, *Investigating Efficient Real-time Performance Guarantees on Storage Networks*, 2009
- **Ian Pye**, *Beyond Hypertext: Distributed Naming on a Global Scale*, 2008
- **Tim Kaldewey**, *Virtualizing Storage Performance*, 2008
- **Suresh Iyer**, *The Right Split: Enabling User-Space Real-Time Scheduling*, 2008
- **Eric LaLonde**, *A Characterization of LANL HPC Systems*, 2007

- **Nikhil Bobb**, *The Graffiti Distributed Metadata Management System—Client*, 2006
- **Travis Odegaard**, *The Cache and Multimedia Data*, 2005
- **Timothy Bisson**, *Dynamic Spin-Down Kernel Implementation and Reducing Energy Consumption Using a Non-Volatile Storage Cache*, 2005
- **Ivan Dramaliev**, *Optimizing Probe-based Storage*, 2005
- **Deepa Tuteja**, *Linking File System with MRAM*, 2004
- **Suruchi Malatpure**, *Rate-Based Scheduling in RBED*, 2003
- **Caixue Lin**, *Managing the Soft Real-Time Processes in RBED*, 2003
- **Alicja Szczurowska**, *MRAM—Preliminary Analysis for File System Design*, 2002
- **Feng Wang**, *Using Mems-Based Storage Device in Storage Hierarchy*, 2002
- **Scott Banachowski**, *Using the Best-effort Scheduling Model to Support Soft Real-time Processing*, 2002
- **Lan Xue**, *Efficient Metadata Management in Large Distributed File Systems*, 2002

Doctoral Dissertation Reading Committee Member

- **Bo Adler**, Ph.D., 2012, (Advisor: Luca de Alfaro)
- **Caitlin Sadowski**, Ph.D., 2012 (Advisor: Prof. Jim Whitehead)
- **Tim Kaldewey**, Ph.D., 2010 (Advisor: Prof. Scott Brandt)
- **Avik Choudhury**, Ph.D., 2008 (Advisor: Prof. Martin Abadi)
- **Timothy Bisson**, Ph.D., 2007 (Advisor: Prof. Scott Brandt)
- **Sage Weil**, Ph.D., 2007 (Advisor: Prof. Scott Brandt)
- **Joel Wu**, Ph.D., 2007 (Advisor: Prof. Scott Brandt)
- **Feng Wang**, Ph.D., 2006 (Advisor: Prof. Scott Brandt)
- **Caixue Lin**, Ph.D., 2006 (Advisor: Prof. Scott Brandt)
- **Lawrence You**, Ph.D., 2006 (Advisor: Prof. Darrell Long)
- **Cintia Margi**, Ph.D., 2006 (Advisor: Profs. Katia Obraczka and Roberto Manduchi (CE))
- **Daniel Merl**, Ph.D., 2006 (Advisor: Prof. Raquel Prado (AMS))
- **Lars Reuther**, Ph.D., 2006 (TU Dresden, Advisor: Prof. Dr. Hermann Haertig)
- **Scott Banachowski**, 2005 (Advisor: Prof. Scott Brandt)
- **Bo Hong**, Ph.D., 2005 (Advisor: Prof. Scott Brandt)
- **Qin Xin**, Ph.D., 2005 (Advisor: Prof. Ethan Miller)

- **Ismail Ari**, Ph.D., 2004 (Advisor: Prof. Ethan Miller)
- **Abigail Joseph**, Ph.D., 2002 (Advisor: Prof. Suresh Lodha)
- **Ahmed Amer**, Ph.D., 2002 (Advisor: Prof. Darrell Long)
- **Tsozen (Frank) Yeh**, Ph.D., 2002 (Advisor Prof. Darrell Long)

Doctoral Qualifying Exam Committee Member

Note: * indicates that I served as qualifying exam committee chair.

- **Dimitris Skourtis**, 2012 (Advisor: Prof. Scott Brandt)
- **David Bigelow**, 2010 (Advisor: Prof. Scott Brandt)
- **Roberto Piniero**, 2010 (Advisor: Prof. Scott Brandt)
- **Greg Levin**, 2010 (Advisor: Prof. Scott Brandt)
- **Caitlin Sadowski***, 2010 (Advisor: Prof. Cormac Flanagan)
- **Michael Brown***, 2010 (Advisor: Prof. Jose Renau)
- **Rosie Wacha**, 2009 (Advisor: Prof. Scott Brandt)
- **Alexander Ames***, 2009 (Advisor: Adj. Prof. Carlos Maltzahn)
- **Tim Kaldewey**, 2009 (Advisor: Prof. Scott Brandt)
- **Bo Adler***, 2009 (Advisor: Prof. Luca de Alfaro)
- **Jaeheon Yi***, 2008 (Advisor: Prof. Cormac Flanagan)
- **Anna Povzner**, 2008 (Advisor: Prof. Scott Brandt)
- **Marzieh Veyseh**, 2008 (Advisor: Prof. J.J. Garcia-Luna)
- **Anonymous**, 2008 (University of Trento, Italy, Advisor: Prof. Luigi Palopoli)
- **Karl Schnaitter***, 2008 (Advisor: Prof. Neoklis Polyzotis)
- **Deepavali Bhagwat**, 2007 (Advisor: Prof. Darrell Long)
- **John Calendrino**, 2006 (University of North Carolina, Advisor: Prof. James Anderson)
- **Joel Wu**, 2006 (Advisor: Prof. Scott Brandt)
- **Timothy Bisson**, 2006 (Advisor: Prof. Scott Brandt)
- **Zhenjiang Li**, 2004 (Advisor: Prof. J.J. Garcia-Luna)
- **Cintia Marga**, 2004 (Advisor: Prof. Katia Obraczka)
- **Caixue Lin**, 2004 (Advisor: Prof. Scott Brandt)
- **Scott Banachowski**, 2003 (Advisor: Prof. Scott Brandt)

- **Qin Xin**, 2003 (Advisor: Prof. Ethan Miller)
- **Bo Hong**, 2003 (Advisors: Profs. Scott Brandt and Darrell Long)
- **Feng Wang**, 2003 (Advisor: Prof. Scott Brandt)
- **Ismail Ari**, 2002 (Advisor: Prof. Ethan Miller)
- **Ahmed Amer**, 2002 (Advisor: Prof. Darrell Long)
- **Tsozen Yeh**, 2001 (Advisor: Prof. Darrell Long)

Master of Science Reading Committee Member

- **Jyotsna Gangwar**, M.S., 2008 (Advisor: Prof. Alkis Polyzotis)
- **Robert Kelbley**, M.S., 2006 (Advisor: Prof. Gabriel Elkaim)
- **Weining Zhou**, M.S., 2005 (Advisor: Prof. Bruno Sanso)
- **Joerg Meyer**, M.S., 2005 (Advisor: Prof. Darrell Long)
- **Deepavali Bhagwat**, M.S., 2005 (Advisor: Prof. Alkis Polyzotis)
- **Chengyu Sung**, M.S., 2005 (Advisor: Prof. Ethan Miller)
- **Christian Westerhoff**, M.S., 2005 (TU Darmstadt, Advisor: Prof. Dr. Peter Buxmann)
- **Garima Tripathi**, M.S., 2004 (Advisor: Prof. Katia Obraczka)
- **Richard Honicky**, M.S., 2004 (Advisor: Prof. Ethan Miller)
- **Karl Brandt**, M.S., 2004 (Advisor: Prof. Darrell Long)
- **Ian Brown**, M.S., 2003 (Advisor: Prof. Darrell Long)
- **Robert Gramacy**, M.S., 2003 (Advisor: Prof. Manfred Warmuth)
- **Karen Glocer**, M.S., 2003 (Advisor: Prof. Darrell Long)
- **Vaibhav Bandari**, M.S., 2003 (Advisor: Prof. Luca de Alfaro)
- **Hui Miao**, M.S., 2002 (Advisor: Prof. Manfred Warmuth)
- **Zachary Peterson**, M.S., 2002 (Advisor: Prof. Darrell Long)
- **Ying Ling**, M.S., 2002 (Advisor: Prof. Darrell Long)
- **John Walther**, M.S., 2001 (Advisor: Prof. Suresh Lodha)
- **Pu Yang**, M.S., 2000 (Advisor: Prof. Darrell Long)
- **A. David McNab**, M.S., 2000 (Advisor: Prof. Darrell Long)
- **Leon Atkinson-Derman**, M.S., 2000 (Advisor: Prof. Jane Wilhelms)
- **Steven Barnes**, M.S., 2000 (Advisor: Prof. Ira Pohl)

Current Research Assistants and Advisees

- **Rosie Wacha** (Ph.D. candidate, entered 2002)
- **David Bigelow** (Ph.D. student, entered 2006)
- **Roberto Pineiro** (Ph.D. student, entered 2006)
- **Andrew Shewmaker** (Ph.D. student (@LANL), entered 2007)
- **Greg Levin** (Ph.D. student, entered 2007)
- **Jan Pieper**, (Ph.D. student, entered 2008)
- **Joe Buck**, (Ph.D. student, entered 2008)
- **Noah Watkins**, (Ph.D. student, entered 2008)
- **Latchesar Ionkov**, (Ph.D. student (@LANL), entered 2008)