

# Curriculum Vitae

Ethan L. Miller

August 26, 2005

Computer Science Department  
University of California, Santa Cruz  
1156 High Street  
Santa Cruz, CA 95064

PHONE: +1 (831) 345-4864  
FAX: +1 (815) 550-1178  
EMAIL: [elm@ethanmiller.com](mailto:elm@ethanmiller.com)  
<http://www.ethanmiller.com/>

## EMPLOYMENT HISTORY

2002– Associate Professor, Computer Science Department, University of California, Santa Cruz  
2000–2002 Assistant Professor, Computer Science Department, University of California, Santa Cruz  
1999 System Architect, Endeca, Cambridge, MA  
1994–2000 Assistant Professor, Computer Science and Electrical Engineering Department, University of Maryland Baltimore County  
1988–1994 Research Assistant, Computer Science Division, University of California at Berkeley  
1988–1990 Teaching Associate, Computer Science Division, University of California at Berkeley  
1987–1988 Software Engineer, BBN Laboratories, Cambridge, MA  
1986 Summer intern, GTE Government Systems, Rockville, MD

## EDUCATION

1995 Ph. D., University of California at Berkeley, Computer Science  
1990 M. S., University of California at Berkeley, Computer Science  
1987 Sc. B., Brown University, Computer Science, *magna cum laude*

## CONSULTING

2005– Veritas (now Symantec) Corporation  
2003 Hewlett Packard Laboratories  
2001–2005 Expert witness, Bartlit, Beck, Herman, Palenchar & Scott  
2000 Expert witness, Fish & Richardson  
1998–2001 Expert witness, Hopgood, Calimafde, Judlowe & Mondolino  
1998 Web site architect, Ambleside Logic

## HONORS

2005 Best Long Paper award, StorageSS, 2005.  
2004 Best Paper award, MASCOTS 2004.  
2001 Elevated to Senior Member, IEEE.  
1987 William Gaston Prize for Academic Excellence (award made to top graduating students at Brown University).  
1987 Elected to Sigma Xi, Brown University.

## RESEARCH FUNDING

### Grants

- 2005–2006 *Institute for Scientific Data Management*, Los Alamos National Laboratory, \$943,022 (with Darrell Long and Scott Brandt).
- 2005 *Trustworthy Computing Curriculum Development*, Microsoft, \$50,000 (with Ira Pohl, Martín Abadi, and Jim Whitehead).
- 2004 *Research in Storage and Networks*, Hewlett-Packard Laboratories, \$25,000.
- 2003 *Research in Storage and Networks*, Hewlett-Packard Laboratories, \$35,000.
- 2003–2006 *Building High-performance, Reliable Storage Systems Using Magnetic RAM*, National Science Foundation, \$414,000 (with Scott Brandt).
- 2002– Industry donations to the Storage Systems Research Center from Engenio, Hewlett-Packard, Hitachi Global Storage Systems, IBM, Intel, Microsoft, Network Appliance, Onstor, Overland Storage, Veritas, Yahoo, and others, averaging over \$150,000 annually (with Darrell Long and Scott Brandt).
- 2002–2005 *Scalable File Systems for High Performance Computing*, Department of Energy, \$900,000 (with Darrell Long, Scott Brandt, and Katia Obraczka).
- 2002 *Research in Storage and Networks*, Hewlett-Packard Laboratories, \$42,000.
- 2001–2002 *Building a High-Performance Storage System from Commodity Components*, Lawrence Livermore National Laboratory, \$65,000 (with Darrell Long and Scott Brandt).
- 2001 *Research in Storage and Networks*, Hewlett-Packard Laboratories, \$38,000.
- 1998–2001 Faculty Fellowship, University of Maryland Institute for Advanced Computer Studies, \$30,000.
- 1997–2001 *Center for Architectures for Data-Driven Information Processing*, Department of Defense, \$3,000,000 (with Charles Nicholas and David Ebert).
- 1997–1998 *Scalable Benchmarks for Mass Storage Systems*, NASA Ames Research Center, \$200,000.
- 1995–1997 *Scalability of the TELLTALE Dynamic Hypertext Environment*, Department of Defense, \$100,000 (with Charles Nicholas).
- 1995–1998 Faculty Fellowship, University of Maryland Institute for Advanced Computer Studies, \$30,000.
- 1989–1993 Graduate Fellowship, National Science Foundation.
- 1988–1989 Cal MICRO Fellowship, University of California at Berkeley.

### Pending Grant Proposals

- 2005–2006 *Adaptive Workload-Aware Algorithms for Heterogeneous Storage Systems*, UC MICRO, \$85,049 (includes \$45,000 gift from Veritas).
- 2005–2006 *Scalable File Systems for High Performance Computing*, Department of Energy, \$250,000 (with Scott Brandt, Darrell Long, and Martín Abadi).

## PUBLICATIONS

### Journals

- J8. Qin Xin, Thomas J. E. Schwarz, and Ethan L. Miller, “Availability in Global Peer-To-Peer Storage Systems,” *Proceedings in Informatics*, Carleton Scientific, to appear. Extended version of the WDAS 2004 workshop paper.

- J7. Ismail Ari, Ahmed Amer, Robert Gramacy, Ethan L. Miller, Scott A. Brandt, and Darrell D. E. Long, "ACME: Adaptive Caching Using Multiple Experts," *Proceedings in Informatics* **14**, Carleton Scientific, 2002, pp. 143–158. Extended version of the WDAS 2002 workshop paper.
- J6. Ethan Miller, Dan Shen, Junli Liu, and Charles Nicholas, "Performance and Scalability of a Large-Scale N-gram Based Information Retrieval System," *Journal of Digital Information* **1**(5), January 2000, 25 pages (online refereed journal).
- J5. Christopher Shaw, James Kukla, Ian Soboroff, David Ebert, Charles Nicholas, Amen Zwa, Ethan Miller, and D. Aaron Roberts, "Interactive Volumetric Information Visualization for Document Corpus Management," *International Journal on Digital Libraries* **2**(2–3), 1999, pp. 144–156.
- J4. Jeffrey Hollingsworth, Ethan Miller, and Kennedy Akala, "Binary Version Management for Computational Grids," *Parallel Processing Letters* **9**(2), June 1999, pp. 215–225.
- J3. Ethan Miller and Randy Katz, "RAMA: An Easy-To-Use, High-Performance Parallel File System," *Parallel Computing* **23**(4), July 1997, pp. 419–446.
- J2. David Ebert, Amen Zwa, Ethan Miller, Chris D. Shaw, and D. Aaron Roberts, "Two-handed Volumetric Document Corpus Management," *IEEE Computer Graphics and Applications* **17**(4), July 1997, pp. 60–62.
- J1. Peter Chen, Edward Lee, Ann Drapeau, Ken Lutz, Ethan Miller, Srinu Seshan, Ken Shirriff, David Patterson, and Randy Katz, "Performance and Design Evaluation of the RAID-II Storage Server," *Journal of Distributed and Parallel Databases* **2**(3), July 1994, pp. 243–260.

### Refereed Conference & Workshop Papers

- C58. Christopher Olson and Ethan L. Miller, "Secure Capabilities for a Petabyte-Scale Object-Based Distributed File System," *International Workshop on Storage Security and Survivability (StorageSS)*, held in conjunction with the *12<sup>th</sup> ACM Conference on Computer and Communications Security (CCS 2005)*, Washington, DC, November 2005, to appear. Received Best Paper award.
- C57. Qin Xin, Thomas J. E. Schwarz, S. J., and Ethan L. Miller, "Disk Infant Mortality in Large Storage Systems," *Proceedings of the 13<sup>th</sup> IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2005)*, Atlanta, GA, September 2005, to appear.
- C56. Qin Xin, Ethan L. Miller, and Thomas J. E. Schwarz, S. J., "Impact Of Failure On Interconnection Networks In Large Storage Systems," *Proceedings of the 22<sup>nd</sup> IEEE / 13<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2005)*, Monterey, CA, April 2005, pp. 189–196.
- C55. 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," *Proceedings of the 22<sup>nd</sup> IEEE / 13<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2005)*, Monterey, CA, April 2005, pp. 49–60.
- C54. Sage A. Weil, Kristal T. Pollack, Scott A. Brandt, and Ethan L. Miller, "Dynamic Metadata Management for Petabyte-scale File Systems," *Proceedings of SC2004*, Pittsburgh, PA: ACM, November 2004. Nominee, Best Student Paper.

- C53. Thomas J. E. Schwarz, S. J., Qin Xin, Ethan L. Miller, Darrell D. E. Long, Andy Hospodor, and Spencer Ng, "Disk Scrubbing in Large Archival Storage Systems," *Proceedings of the 12<sup>th</sup> IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2004)*, Volendam, Netherlands, October 2004, pp. 409–418. Received Best Paper award.
- C52. Nathan K. Edel, Deepa Tuteja, Ethan L. Miller, and Scott A. Brandt, "MRAMFS: A Compressing File System for Non-Volatile RAM," *Proceedings of the 12<sup>th</sup> IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2004)*, Volendam, Netherlands, October 2004, pp. 596–603.
- C51. Thomas J. E. Schwarz, Qin Xin, and Ethan L. Miller, "Availability in Global Peer-To-Peer Storage Systems," *6<sup>th</sup> Workshop on Distributed Data and Structures (WDAS 2004)*, Lausanne, Switzerland, July 2004.
- C50. 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," *Proceedings of the 2004 International Symposium on Performance Evaluation of Computer and Telecommunication Systems (SPECTS'04)*, San Jose, CA, July 2004.
- C49. Ismail Ari and Ethan L. Miller, "Caching Support for Push-Pull Data Dissemination using Data-snooping Routers," *Proceedings of the 10<sup>th</sup> International Conference on Parallel and Distributed Systems (ICPADS)*, Newport Beach, CA: IEEE, July 2004, pp. 101–108.
- C48. Qin Xin, Ethan L. Miller, and Thomas J. E. Schwarz, S. J. "Evaluation of Distributed Recovery in Large-Scale Storage Systems," *Proceedings of the 13<sup>th</sup> IEEE International Symposium on High Performance Distributed Computing (HPDC-13)*, Honolulu, HI: IEEE, June 2004, pp. 172–181.
- C47. Sage A. Weil, Scott A. Brandt, Ethan L. Miller, and Kristal T. Pollack, "Intelligent Metadata Management for a Petabyte-Scale File System," 2<sup>nd</sup> Intelligent Storage Workshop, University of Minnesota, May 2004.
- C46. Emilia Rosti and Ethan L. Miller, "Security Threats and Responses for Object-Based Storage Devices," 2<sup>nd</sup> Intelligent Storage Workshop, University of Minnesota, May 2004 (poster presentation).
- C45. R. J. Honicky and Ethan L. Miller, "Replication Under Scalable Hashing: A Family of Algorithms for Scalable Decentralized Data Distribution," *Proceedings of the 18<sup>th</sup> International Parallel and Distributed Processing Symposium (IPDPS 2004)*, Santa Fe, NM: IEEE, April 2004, 10 pages (published on CD-ROM).
- C44. 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 21<sup>st</sup> IEEE / 12<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2004)*, College Park, MD, April 2004, pp. 283–300.
- C43. Andy Hospodor and Ethan L. Miller, "Interconnection Architectures for High-Performance File Systems," *Proceedings of the 21<sup>st</sup> IEEE / 12<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2004)*, College Park, MD, April 2004, pp. 273–281.
- C42. 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," *Proceedings of the 21<sup>st</sup> IEEE / 12<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2004)*, College Park, MD, April 2004, pp. 139–152.

- C41. 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," *Proceedings of the 11<sup>th</sup> IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2003)*, Orlando, FL, October 2003, pp. 104–113.
- C40. Ismail Ari, Bo Hong, Ethan L. Miller, Scott A. Brandt and Darrell D. E. Long, "Managing Flash Crowds On The Internet," *Proceedings of the 11<sup>th</sup> IEEE/ACM International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2003)*, Orlando, FL, October 2003, pp. 246–249.
- C39. R. J. Honicky and Ethan L. Miller, "A Fast Algorithm for Online Placement and Reorganization of Replicated Data," *Proceedings of the 17<sup>th</sup> International Parallel and Distributed Processing Symposium*, Nice, France: IEEE, April 2003, 10 pages (published on CD-ROM). Also available as Technical Report UCSC-CRL-02-36.
- C38. Qin Xin, Ethan L. Miller, Thomas Schwarz, Scott A. Brandt, Darrell D. E. Long, and Witold Litwin, "Reliability Mechanisms for Very Large Storage Systems," *Proceedings of the 20<sup>th</sup> IEEE / 11<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2003)*, San Diego, CA: IEEE, April 2003, pp. 146–156.
- C37. Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long, and Lan Xue, "Efficient Metadata Management in Large Distributed File Systems," *Proceedings of the 20<sup>th</sup> IEEE / 11<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST 2003)*, San Diego, CA: IEEE, April 2003, pp. 290–298.
- C36. Ying Lin, Scott A. Brandt, Darrell D. E. Long, and Ethan L. Miller, "Power Conservation Strategies for MEMS-based Storage Devices," *Proceedings of the 10<sup>th</sup> International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS 2002)*, Fort Worth, TX: IEEE, October 2002, pp. 53–62.
- C35. Scott A. Banachowski, Zachary N. J. Peterson, Ethan L. Miller, and Scott A. Brandt, "Intra-file Security for a Distributed File System," *Proceedings of the 19<sup>th</sup> IEEE Symposium on Mass Storage Systems and Technologies*, College Park, MD: IEEE, April 2002, pp. 153–163.
- C34. Ismail Ari, Ahmed Amer, Ethan Miller, Scott Brandt, and Darrell Long. "Who is more adaptive? ACME: adaptive caching using multiple experts," *Workshop on Distributed Data and Structures (WDAS 2002)*, Paris, France, March 2002.
- C33. Ethan L. Miller, Darrell D. E. Long, William E. Freeman, and Benjamin C. Reed, "Strong Security for Network-Attached Storage," *Proceedings of the First Conference on File and Storage Technologies (FAST)*, Monterey, CA: Usenix, January 2002, pp. 1–13.
- C32. Ethan L. Miller, Scott A. Brandt and Darrell D. E. Long, "HeRMES: High-Performance Reliable MRAM-Enabled Storage," *Proceedings of the 8<sup>th</sup> IEEE Workshop on Hot Topics in Operating Systems (HotOS-VIII)*, Elmau, Germany: IEEE, May 2001, pp. 83–87.
- C31. Lee Butler, Travis Atkison, and Ethan Miller, "Comparing CPU Performance Between and Within Processor Families," *Proceedings of the 25<sup>th</sup> Annual International Conference on Computer Measurement and Performance (CMG 2000)*, Orlando, FL, December 2000, pp. 421–430.

- C30. Ethan Miller and Jon Squire, “esim: A Structural Design Language and Simulator for Computer Architecture Education,” *2000 Workshop on Computer Architecture Education (WCAE 2000)*, Vancouver, Canada: ACM & IEEE, June 2000, pp. 42–48.
- C29. William Freeman and Ethan Miller, “Design for A Decentralized Security System For Network Attached Storage,” *Proceedings of the 8<sup>th</sup> Goddard Conference on Mass Storage Systems and Technologies / 17<sup>th</sup> IEEE Symposium on Mass Storage Systems*, College Park, MD, March 2000, pp. 361–373.
- C28. Timothy Gibson and Ethan Miller, “An Improved Long-Term File Usage Prediction Algorithm,” *Proceedings of the 25<sup>th</sup> Annual International Conference on Computer Measurement and Performance (CMG '99)*, Reno, NV: CMG, December 1999, pp. 639–648.
- C27. William E. Freeman and Ethan L. Miller, “An Experimental Analysis of Cryptographic Overhead in Performance-Critical Systems,” *Proceedings of the 7<sup>th</sup> International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS '99)*, College Park, MD: IEEE, October 1999, pp. 348–357.
- C26. Ethan Miller, Dan Shen, Junli Liu, Charles Nicholas, and Ting Chen, “Techniques for Gigabyte-Scale N-gram Based Information Retrieval on Personal Computers,” *Proceedings of the 1999 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA '99)*, Las Vegas, NV, June 1999, pp. 1410–1416.
- C25. Michael Shapiro and Ethan Miller, “Managing Databases with Binary Large Objects,” *Proceedings of the 16<sup>th</sup> IEEE Mass Storage System Symposium*, San Diego, CA: IEEE, March 1999, pp. 185–193.
- C24. Timothy Gibson, Ethan L. Miller and Darrell D. E. Long. “Long-term File Activity and Inter-reference Patterns,” *Proceedings of the 24<sup>th</sup> Annual International Conference on Computer Measurement and Performance (CMG '98)*, Anaheim, CA: CMG, December 1998, pp. 976–987.
- C23. Kennedy Akala, Ethan Miller, and Jeff Hollingsworth, “Using Content-Derived Names for Package Management in Tcl,” *Proceedings of the 6<sup>th</sup> Annual Tcl/Tk Conference*, San Diego, CA: Usenix, September 1998, pp. 171–179.
- C22. Theodore Johnson and Ethan Miller, “Performance Measurements and Models of Tertiary Storage Devices,” *Proceedings of the 1998 Conference on Very Large Databases (VLDB '98)*, New York, NY: VLDB Foundation, August 1998, pp. 50–61.
- C21. Jem Y. Fan, Xiangjun Zhao, J. P. Zhang, Fow-Sen Choa, Yanjie Chai, Jye-Hong Chen, Ethan Miller, Howard Motteler, Pao-Lo Liu, Tawee Tanbun-Ek, Patrick Wisk, Won-Tien Tsang, George J. Zyzdik, and Charles A. Burrus, “Wavelength-division-multiplexed (WDM) data block switching for parallel computing and interconnect,” *SPIE International Conference on Applications of Photonic Technology*, Ottawa, Canada: SPIE, July 1998, vol. 3491, pp. 634–638.
- C20. Steven Gribble, Gurmeet Singh Manku, Drew Roselli, Eric Brewer, Timothy Gibson, and Ethan Miller, “Self-Similarity in File Systems,” *Proceedings of the SIGMETRICS '98 / PERFORMANCE '98 Joint International Conference on Measurement and Modeling of Computer Systems*, Madison, WI: ACM, June 1998, pp. 141–150.
- C19. Timothy J. Gibson and Ethan Miller, “Long-Term File Activity Patterns in a UNIX Workstation Environment,” *Proceedings of the 6<sup>th</sup> Goddard Conference on Mass Storage Systems and Technologies / 15<sup>th</sup> IEEE Symposium on Mass Storage Systems*, College Park, MD: IEEE, March 1998, pp. 355–372.

- C18. Theodore Johnson and Ethan Miller, "Benchmarking Tape Systems Performance," *Proceedings of the 6<sup>th</sup> Goddard Conference on Mass Storage Systems and Technologies / 15<sup>th</sup> IEEE Symposium on Mass Storage Systems*, College Park, MD: IEEE, March 1998, pp. 95–112.
- C17. R. Scott Cost, Jeegar Lakhani, Ian Soboroff, Tim Finin, Ethan Miller, and Charles Nicholas, "TKQML: A Scripting Tool for Building Agents," *Proceedings of the 1997 Conference on Agent Theories and Agent Languages (ATAL97)*, Newport, RI: AAAI, July 1997, pp. 339–343.
- C16. R. Scott Cost, Jeegar Lakhani, Ian Soboroff, Tim Finin, Ethan Miller, and Charles Nicholas, "Agent Development Support for Tcl," *5<sup>th</sup> Annual Tcl/Tk Workshop '97*, Boston, MA: Usenix, July 1997, pp. 177–178.
- C15. Jeff Hollingsworth and Ethan Miller, "Using Content-Derived Names for Configuration Management," *Proceedings of the 1997 Symposium on Software Reusability (SSR '97)*, Boston, MA: IEEE, May 1997, pp. 104–109.
- C14. David Ebert, Chris Shaw, Amen Zwa, Ethan Miller, and D. A. Roberts, "Interactive Volume Visualization for Document Corpus Management," *Proceedings of Graphics Interface*, Kelowna, BC, Canada: Canadian Human-Computer Communications Society, May 1997, pp. 121–128.
- C13. Timothy Gibson and Ethan Miller, "The Case for Personal Computers as Workstations," *Proceedings of the 22<sup>nd</sup> Annual International Conference on Computer Measurement and Performance (CMG '96)*, San Diego, CA: CMG, December 1996, pp. 644–652.
- C12. Amen Zwa, David Ebert, and Ethan Miller, "Multiresolution Document Analysis with Wavelets," *Proceedings of the 1996 Conference on Information and Knowledge Management, Workshop on New Paradigms in Information Visualization and Manipulation*, Rockville, MD: ACM, December 1996, pp. 50–53.
- C11. David Ebert, Chris Shaw, Amen Zwa, and Ethan Miller, "Minimally-immersive Interactive Volumetric Information Visualization," *Proceedings of IEEE Information Visualization '96*, San Francisco, CA: IEEE, October 1996, pp. 66–68.
- C10. Ethan Miller, "Towards Scalable Benchmarks for Mass Storage Systems," *5<sup>th</sup> NASA Goddard Space Flight Center Conference on Mass Storage Systems and Technologies*, College Park, MD: IEEE & NASA, September 1996, pp. 515–528.
- C9. Ethan Miller and Randy Katz, "RAMA: Easy Access to a High-Bandwidth Massively Parallel File System," *Proceedings of the Winter 1995 USENIX Conference*, New Orleans, LA: Usenix, January 1995, pp. 59–70.
- C8. Ann Drapeau, Peter Chen, John Hartman, Edward Lee, Ethan Miller, Ken Shirriff, Srinu Seshan, Randy Katz, Garth Gibson, and David Patterson, "RAID-II: A Scalable Storage Architecture for High-Bandwidth Network File Service," *Proceedings of the 21<sup>st</sup> International Symposium on Computer Architecture*, Chicago, IL: ACM, April 1994, pp. 234–244.
- C7. Peter Chen, Edward Lee, Ann Drapeau, Ken Lutz, Ethan Miller, Srinu Seshan, Ken Shirriff, David Patterson, and Randy Katz, "Performance and Design Evaluation of the RAID-II Storage Server," *Proceedings of the International Parallel Processing Symposium Workshop on I/O in Parallel Computer Systems*, Newport Beach, CA: IEEE, April 1993, pp. 110–120.

- C6. Ethan Miller and Randy Katz, "RAMA: A Filesystem for Massively Parallel Computers," *Digest of Papers, 12<sup>th</sup> IEEE Symposium on Mass Storage Systems*, Monterey, CA: IEEE, April 1993, pp. 163–168.
- C5. Randy Katz, Peter Chen, Ann Drapeau, Edward Lee, Ethan Miller, Srinu Seshan, and David Patterson, "RAID-II: Design and Implementation of a Large Scale Disk Array Controller," *Proceedings of the VLSI System Design Conference*, Seattle, WA: IEEE, March 1993.
- C4. Ethan Miller and Randy Katz, "An Analysis of File Migration in a UNIX Supercomputing Environment," *Proceedings of the Winter 1993 USENIX Conference*, San Diego, CA: Usenix, January 1993, pp. 421–433.
- C3. Randy H. Katz, David A. Patterson, Ann Chervenak-Drapeau, Joel Fine, and Ethan Miller, "An Approach to Cost-Effective Terabyte Memory Systems," *Digest of Papers, Comcon Spring '92, 37<sup>th</sup> IEEE Computer Society International Conference*, San Francisco, CA: IEEE, February 1992, pp. 395–400.
- C2. Ethan Miller and Randy Katz, "Input/Output Behavior of Supercomputing Applications," *Proceedings of Supercomputing '91*, Albuquerque, NM: IEEE, November 1991, pp. 567–576.
- C1. Ethan Miller and Randy Katz, "Analyzing the I/O Behavior of Supercomputing Applications," *Digest of Papers, 11<sup>th</sup> IEEE Symposium on Mass Storage Systems*, Monterey, CA: IEEE, October 1991, pp. 51–55.

### Chapters in Books

- CH1. Claudia Pearce and Ethan Miller, "The TELLTALE Dynamic Hypertext Environment: Approaches to Scalability," in *Advances in Intelligent Hypertext*, J. Mayfield and C. Nicholas, eds. *Lecture Notes in Computer Science*, Springer-Verlag, October 1997, pp. 109–130.

### Invited Articles

- I2. Ethan L. Miller, "Dealing with Long-Lived Data in High Performance Storage Systems," *Storage on the Lunatic Fringe: Beyond Peta-Scale Storage Systems*, workshop at Supercomputing 2003, Phoenix, AZ, November 2003.
- I1. Ethan Miller, Darrell Long, William Freeman, and Benjamin Reed, "Strong Security for Distributed File Systems," *Proceedings of the 20<sup>th</sup> IEEE International Performance, Computing, and Communications Conference (IPCCC 2001)*, Phoenix, AZ: IEEE, April 2001, pp. 34–40.

### Technical Reports

- T5. Geoff Kuenning and Ethan L. Miller, "Anonymization Techniques for URLs and Filenames," Technical Report UCSC-CRL-03-05, Storage Systems Research Center, University of California, Santa Cruz, September 2003.
- T4. 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.
- T3. Timothy J. Gibson and Ethan L. Miller, "Long-Term File Activity in Diverse UNIX Environments," Technical Report TR-CS-97-07, University of Maryland Baltimore County, October 1997.



- T2. R. Scott Cost, Ian Soboroff, Jeegar Lakhani, Tim Finin, Ethan Miller, and Charles Nicholas, “TKQML: A KQML Extension to Tcl,” Technical Report TR-CS-97-04, University of Maryland Baltimore County, July 1996.
- T1. Ethan Miller and Jeffrey Hollingsworth, “Using Content-Derived Names for Caching and Software Distribution,” Technical Report TR-CS-96-08, University of Maryland Baltimore County, July 1996. Also available as UMIACS Technical Report TR-96-55.

### Miscellanea

- M1. Randy Katz, John Ousterhout, David Patterson, Peter Chen, Ann Chervenak, Rich Drewes, Garth Gibson, Edward Lee, Ken Lutz, Ethan Miller, and Mendel Rosenblum, “A Project on High-Performance I/O Subsystems,” *Computer Architecture News* **17**(5):24–31, September 1989.

### Submitted

- S1. Bo Hong, Scott A. Brandt, Darrell D. E. Long, Ethan L. Miller, and Ying Lin, “Using MEMS-Based Storage in Computer Systems—MEMS Storage Device Modeling and Management,” submitted to *ACM Transactions on Storage*.
- S2. Alexander Ames, Nikhil Bobb, Carlos Maltzahn, Ethan L. Miller, Scott A. Brandt, Mark Storer, Kevin Greenan, and Owen Hofmann, “LiFS: An Attribute-Rich File System for Storage Class Memories,” submitted to the 4<sup>th</sup> Conference on File and Storage Technologies (FAST 2005).
- S3. Sage A. Weil, Feng Wang, Qin Xin, Scott A. Brandt, Ethan L. Miller, Darrell D. E. Long, and Carlos Maltzahn, “Ceph: A Scalable Object-Based Storage System,” submitted to the 4<sup>th</sup> Conference on File and Storage Technologies (FAST 2005).

### SOFTWARE

1. DLXOS: A CPU simulator and operating system used in undergraduate operating systems classes at the University of California, Santa Cruz, Purdue, the University of Maryland Baltimore County, and elsewhere.
2. *esim*: A simple digital logic design language and simulator. Used for teaching computer architecture at the University of Maryland Baltimore County and elsewhere.

### PROFESSIONAL ACTIVITIES

#### Service to Professional Societies

- 2001–           Chair, *IEEE Technical Committee on Operating Systems and Applications Environments*.
- 1996–           Member, Executive Committee, *IEEE Technical Committee on Mass Storage Systems*.
- 1995–2000    University Liaison for the Usenix Association.

#### Conference Organization

- 2006           Program Committee: 23<sup>rd</sup> IEEE / 14<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST2006); 7<sup>th</sup> Workshop on Distributed Data and Structures (WDAS 2006).

- 2005 Program Committee: 13<sup>th</sup> Conference on Measurement and Simulation of Computer and Telecommunication Systems (MASCOTS 2005); 22<sup>nd</sup> IEEE / 13<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST2005). International Symposium on Emergence of Globally Distributed Data (publications chair); International Workshop on Software Support for Portable Storage (IWSSPS 2005); ACM Workshop on Storage Survivability and Security (StorageSS); 3<sup>rd</sup> International IEEE Security in Storage Workshop; Invited Talks co-chair, 2005 USENIX Technical Conference.
- 2004 Program Committee: 21<sup>st</sup> IEEE / 12<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST2004); 2<sup>nd</sup> Intelligent Storage Workshop; 6<sup>th</sup> Workshop on Distributed Data and Systems (WDAS 2004); 12<sup>th</sup> Conference on Measurement and Simulation of Computer and Telecommunication Systems (MASCOTS 2004), publications chair; Supercomputing (SC) 2004.
- 2003 Program Committee: 20<sup>th</sup> IEEE / 11<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies (MSST2003), publications chair; 2<sup>nd</sup> International IEEE Security in Storage Workshop.  
Steering Committee: HotOS-IX: Ninth Workshop on Hot Topics in Operating Systems.
- 2002 Program Committee: 1<sup>st</sup> File and Storage Technologies Conference (publications chair); 19<sup>th</sup> IEEE Mass Storage System Symposium / 10<sup>th</sup> NASA Goddard Mass Storage and Technologies Conference; 1<sup>st</sup> International IEEE Security in Storage Workshop; IEEE International Performance, Computing, and Communications Conference.
- 2001 Program Committee: 18<sup>th</sup> IEEE Mass Storage System Symposium / 9<sup>th</sup> NASA Goddard Mass Storage and Technologies Conference.
- 2000 Program Committee: 17<sup>th</sup> IEEE Mass Storage System Symposium / 8<sup>th</sup> NASA Goddard Mass Storage and Technologies Conference.
- 1999 Program Committee: 16<sup>th</sup> IEEE Mass Storage System Symposium / 7<sup>th</sup> NASA Goddard Mass Storage and Technologies Conference (publications chair).
- 1998 Program Committee: 15<sup>th</sup> IEEE Mass Storage System Symposium / 6<sup>th</sup> NASA Goddard Mass Storage and Technologies Conference.
- 1996 Program Committee: Workshop on I/O in Parallel and Distributed Systems (IOPADS).

### Reviewer of Technical Papers and Proposals

- 2005 *IEEE Transactions on Computers*; 4<sup>th</sup> Conference on File and Storage Technologies; 19<sup>th</sup> International Symposium on Distributed Computing (DiSC 2005); National Science Foundation (CISE panel).
- 2004 3<sup>rd</sup> Conference on File and Storage Technologies; Conference on Dependable Systems and Networks; 6<sup>th</sup> Symposium on Operating Systems Design and Implementation (OSDI); *Software—Practice and Experience*; *ACM Transactions on Computer Systems*; National Science Foundation (CISE panel).
- 2003 *IEEE Transactions on Parallel and Distributed Systems*; Usenix Technical Conference; 2<sup>nd</sup> Conference on File and Storage Technologies; SC2003; National Science Foundation (SBIR panel).
- 2002 *IEEE Transactions on Computers*, *IEEE Transactions on Parallel and Distributed Systems*, Conference on Architectural Support for Programming Languages and Operating Systems, 5<sup>th</sup> Symposium on Operating Systems Design and Implementation (OSDI), Usenix Annual Technical Conference, National Science Foundation (SBIR panel).

- 2001 Usenix Annual Technical Conference; *IEEE Transactions on Computers*; National Science Foundation (ITR panel, SBIR panel).
- 1990–2000 National Science Foundation (panel reviewer); *ACM Transactions on Computer Systems*; *IEEE Computer*; International Symposium on Computer Architecture; *Journal of Parallel and Distributed Computing*; Conference on Architectural Support for Programming Languages and Operating Systems; Symposium on Operating Systems Design and Implementation; USENIX Annual Technical Conference.

### Reviewer for Publishers

- 1997 Oxford University Press

### Membership in Professional Associations

- Senior Member, IEEE Computer Society.  
Member, Association for Computing Machinery.  
Member, Usenix Association.  
Member, Sigma Xi.

### Invited Talks

- 2005 “Object-Based Storage Systems,” Yahoo.
- 2005 “Ensuring Reliability for Petabyte-Scale Storage Systems,” Hewlett Packard Laboratories.
- 2004 “Is Massive Election Computer Fraud Possible?” panel discussion on *Voices*, Santa Cruz Community Television.
- 2004 “Dynamic Metadata Management for Large Distributed Storage Clusters,” Sandia National Laboratory.
- 2003 Panel member, “Roadmaps, Research Thrusts, and More Visibility For Storage Issues,” *Storage on the Lunatic Fringe: Beyond Peta-Scale Storage Systems*, Supercomputing 2003 workshop.
- 2003 “Storage Research in the UCSC Storage Systems Research Center,” Veritas Corporation.
- 2003 “RUSH: A Family of Algorithms for the Placement of Objects in Distributed Object Storage Devices,” Hewlett Packard Laboratories.
- 2003 Panel member, “Emerging Object/Active-Storage Technologies,” 20<sup>th</sup> IEEE / 11<sup>th</sup> NASA Goddard Conference on Mass Storage Systems and Technologies.
- 2001 “Improving File System Performance Using Magnetic RAM (MRAM),” Hewlett Packard Laboratories.
- 2001 “Strong Security for Network-Attached Storage,” IBM Research.
- 2000 “RAMA: A Reliable High-Performance Scalable File System,” Army Research Lab.
- 2000 “RAMA: A Reliable High-Performance Scalable File System,” University of California, Santa Cruz.
- 1999 “Building Large Scalable File Systems,” Lawrence Livermore National Laboratory.
- 1999 “Scaling TELLTALE from Megabytes to Gigabytes,” Department of Defense.
- 1998 “Content-Derived Names: Security, Distribution, and Version Management,” University of Wisconsin, Milwaukee.
- 1997 “Challenges in Mass Storage,” Silicon Graphics.
- 1996 “RAMA: An Easy-to-Use, Scalable High Performance Parallel File System,” Sandia National Laboratory.

**UNIVERSITY SERVICE****Departmental and School Service**

- 2004–05 Chair, School of Engineering Computing Infrastructure Committee; Computer Science Dept. Faculty Recruiting Committee; Computer Science Dept. Personnel Committee (chaired 2 reviews); Computer Science Dept. Computing Committee.
- 2003–04 Chair, School of Engineering Computing Infrastructure Committee; Chair, Computer Science Dept. Computing Committee; Computer Science Dept. Faculty Recruiting Committee.
- 2002–03 Chair, School of Engineering Computing Infrastructure Committee.
- 2001–02 School of Engineering Computing Infrastructure Committee; Computer Science Dept. Faculty Recruiting Committee.
- 2000–01 Computer Science Dept. Faculty Recruiting Committee.

**University Committees**

- 2004–05 Chair, Committee on Computing and Telecommunications.
- 2003–04 Committee on Computing and Telecommunications (Winter & Spring).
- 2003 Information Technology Vision Committee.

**System-Wide Committees**

- 2004–05 Committee on Information Technology and Telecommunications Policy.

**COMMUNITY SERVICE**

- 2003–05 Member, Santa Cruz Hillel Board of Directors
- 2002– Alumni interviewer, Brown University

**ADVISING****Advisor to Continuing Graduate Students**

Sasha Ames	Ph. D.
Nathan K. Edel	M. S.
Kevin Greenan	Ph. D.
Christopher Olson	Ph. D.
Mark Storer	Ph. D.

**Masters of Science Advisor**

2005	Christopher Olson	non-thesis
2005	Chengyu Sung	<i>Integrating Pictorial Identity into Secure Email</i>
2005	Sasha Ames	non-thesis
2004	R. J. Honicky	<i>Object Placement Algorithms for OBSD Systems</i>
2001	Kennedy Akala	non-thesis
2000	Vivekand Krishnamoorthi	<i>A Comparison of Long Term File Migration Algorithms</i>
1999	Ting Chen	non-thesis
1998	Junli Liu	non-thesis
1998	Mikhail Chapiro	non-thesis
1998	Dan Shen	<i>Experiments with Large-Scale N-gram Based Information Retrieval</i>
1998	Changgong Zhang	non-thesis
1997	Eric Robertson	non-thesis
1996	Arun C. Mahendran	non-thesis
1996	Amen Zwa	non-thesis

**Masters of Science Thesis Reading Committee Member**

- 2003 Suruchi Malapture *Prof. Scott Brandt*  
 2003 Karen Glocer *Prof. Darrell Long*

**Masters Project Reading Committee Member**

- 2004 Svetlana Kagan *Prof. Darrell Long*  
 2004 Deepa Tuteja *Prof. Scott Brandt*  
 2003 Ravindra Vaishampayan *Prof. J. J. Garcia-Luna*  
 2003 Caixue Lin *Prof. Scott Brandt*  
 1996 Greg Sylvain *Prof. Tim Finin (UMBC)*  
 1996 Chetan Shah *Prof. Charles Nicholas (UMBC)*  
 1996 Scott Stewart *Prof. Tim Finin (UMBC)*

**Doctoral Advisor**

- 2005 Qin Xin *Understanding and Coping with Failures in Large-Scale Storage Systems*  
 2004 Ismail Ari *Design and Management of Globally-Distributed Network Caches*  
 2002 Naomi Avigdor *Building a Scalable and Reliable Parallel File System Using Commodity Computers*  
 2000 William Freeman *Decentralized Security for Network-Attached Storage*  
 1998 Timothy Gibson *Long-term UNIX File System Activity and the Efficacy of Automatic File Migration*

**Doctoral Dissertation Reading Committee Member**

- 2005 Feng Wang *Prof. Scott Brandt*  
 2005 Bo Hong *Profs. Darrell Long and Scott Brandt*  
 2005 Scott Banachowski *Prof. Scott Brandt*  
 2002 Ahmed Amer *Prof. Darrell Long*  
 2002 Tsozen (Frank) Yeh *Prof. Darrell Long*  
 2000 Ian Soboroff *Prof. Charles Nicholas (UMBC)*

**Doctoral Qualifying Exam Committee Member**

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

- 2005 David Pease *Prof. Darrell Long*  
 2004 Guozheng Ge\* *Prof. E. James Whitehead*  
 2004 Damian Cieslicki *Prof. Thomas Schwarz (Santa Clara University)*  
 2003 Scott Banachowski *Prof. Scott Brandt*  
 2003 Qin Xin *Prof. Ethan Miller*  
 2003 Bo Hong *Prof. Darrell Long*  
 2003 Feng Wang *Prof. Scott Brandt*  
 2002 Ismail Ari *Prof. Ethan Miller*  
 2001 Tsozen Yeh *Prof. Darrell Long*  
 1999 Naomi Avigdor *Prof. Ethan Miller (UMBC)*  
 1999 William Freeman *Prof. Ethan Miller (UMBC)*  
 1998 Ian Soboroff *Charles Nicholas (UMBC)*  
 1997 Timothy Gibson *Prof. Ethan Miller (UMBC)*  
 1995 Vincent Marier *Prof. Deepinder Sidhu (UMBC)*

**COURSES TAUGHT**

Note that classes from Fall 1994 through Spring 2000 are semester classes, and classes from Fall 2000 onward are quarter classes.

**Undergraduate**

Winter 2005 Computer Security  
Fall 2004 Operating Systems  
Spring 2004 Computer Security  
Fall 2003 Operating Systems  
Spring 2003 Computer Security  
Winter 2003 Operating Systems  
Winter 2002 Introduction to Data Structures  
Fall 2001 Operating Systems  
Fall 2000 Operating Systems  
Fall 1999 Operating Systems  
Spring 1999 Operating Systems  
Fall 1997 Computer Architecture  
Spring 1997 Computer Architecture  
Spring 1996 Computer Architecture  
Spring 1995 Computer Architecture  
Fall 1994 Computer Architecture

**Graduate**

Spring 2005 Distributed Systems  
Winter 2004 Storage Systems  
Fall 2002 Operating Systems  
Spring 2002 Distributed Systems  
Spring 2001 Computer Security  
Spring 2000 Computer Architecture  
Spring 2000 Storage Systems  
Fall 1998 Computer Architecture  
Spring 1998 Storage Systems  
Fall 1997 Computer Architecture  
Spring 1997 Operating Systems  
Fall 1996 Computer Architecture  
Fall 1995 Computer Architecture

Ethan L. Miller. Professor, Computer Science & Engineering Dept. Information. CV. NSF IUCRC Center for Research in Storage Systems. Storage Systems Research Center. Pubs on Google Scholar. Wiki Targeted (Entertainment). Do you like this video? Play Sound. Sheriff Ethan, Ethan Miller or Deputy Miller was a Deputy later promoted to the rank of Sheriff of Smallville. He was good friends with the Kents and as a sheriff, was well-liked by the community. He served the community since at least the 1989 meteor shower through Suspect. In Season Two, Ethan was doing private work for Lionel Luthor. When Ethan couldn't reconcile Lionel's demands with his own conscience, he tried to break-off the Ethan L. Miller is a Professor in the Computer Science and Engineering Department at the University of California, Santa Cruz, where he holds the Veritas Presidential Chair in Storage. He was the Director of the NSF IUCRC Center for Research in Storage Systems (CRSS) from 2013-2020, and was a founding member of the Storage Systems Research Center (SSRC) at UC Santa Cruz. He is a Fellow of the IEEE and an ACM Distinguished Scientist, and his publications have received multiple Best Paper awards. Prof.