
Sudhanva Gurumurthi

Department of Computer Science
University of Virginia
151 Engineer's Way, P.O. Box 400740
Charlottesville, VA 22904
Homepage: <http://www.cs.virginia.edu/~gurumurthi>

Phone: (434) 982-2227 (Office)
Fax: (434) 982-2214
Email: gurumurthi@cs.virginia.edu

Research Interests

Computer Architecture

Education

- | | |
|---|-----------|
| PhD - Computer Science and Engineering
Thesis Title: Power Management of Enterprise Storage Systems
Advisor - Anand Sivasubramaniam
<i>Pennsylvania State University, University Park, PA, USA</i> | 2000-2005 |
| Bachelor of Engineering - Computer Science and Engineering
<i>College of Engineering Guindy, Anna University, Chennai, India</i> | 1996-2000 |

Work Experience

- **Fall 2005-Present**
Assistant Professor
Department of Computer Science
University of Virginia
Charlottesville, VA, USA
- **Spring-Summer 2004**
Graduate Intern
Intel Massachusetts
Hudson, MA, USA
- **Summer 2003**
Technical Co-Op
IBM Research
Austin, TX, USA
- **Fall 2001 - Spring 2003, Fall 2003, Fall 2004, Spring 2005**
Research Assistant
CSE Department, Pennsylvania State University
University Park, PA, USA
- **Fall/Spring 2001**
Teaching Assistant for an introductory C++ course.
CSE Department, Pennsylvania State University
University Park, PA, USA

Consulting Activities

- **February 2008 - Present**

Simulation and Pathfinding of Efficient And Reliable Systems (SPEARS) Group
Intel Massachusetts
Hudson, MA, USA

Awards/Honors

- Google Research Award, 2009
- Paper selected for IEEE Micro Top Picks from the Computer Architecture Conferences, 2009
- Google Research Award, 2008
- NSF CAREER Award, 2007
- Nominated by Penn State for the ACM Doctoral Dissertation Award, 2005
- CSE Research Assistant Award, 2004
- Robert M. Owens Memorial Scholarship, 2003
- VLDB'01 Paper - Selected by the Program Committee to be among the Top 5 Papers of VLDB 2001 and published in a special issue of the VLDB Journal.

Press Coverage and External Articles

- NSF FY 2010 Budget Request to Congress (Highlight), May 7, 2009.
- “U.Va. Engineering Professors’ Paper Recognized by IEEE and Google”, UVA Today, March 16, 2009.
- “Google University Research Awards”, Google Research Blog, January 28, 2009.
- “CAREER Award Enables Adaptive Active Storage Research”, UVA Research News, November 7, 2007.

Publications

NOTE:

- Many conferences in computer architecture and its related fields are highly competitive and have low acceptance rates (10%-25%). Manuscripts submitted to these conferences are rigorously peer-reviewed, with each paper receiving 5-7 reviews, and the acceptance decisions are made by a NSF-panel style program committee. Many top conferences also use rebuttals and shepherding as part of the peer-reviewing process. Papers published at these conferences are typically 10-12 pages in length, in double-column format, and appear in printed proceedings that are also archived in the IEEE and/or ACM digital libraries.
- **Five Most Cited Papers:**
 - S. Gurumurthi et al., ISCA 2003 - 184 Citations
 - S. Gurumurthi et al., HPCA 2002 - 80 Citations
 - S. Gurumurthi et al., IEEE Computer 2003 - 50 Citations
 - W. Zhang et al., DSN 2003 - 49 Citations
 - S. Gurumurthi et al., ISPASS 2003 - 46 Citations

In total, my papers have been cited more than **615 times**.

Citation information was obtained using Google Scholar™. (*Data last updated on: October 4, 2009*)

- University of Virginia student co-authors are underlined.

Refereed Journal Papers

- IEEE Micro Top Picks** S. Gurumurthi, S. Sankar, M.R. Stan, Using Intradisk Parallelism to Build Energy Efficient Storage Systems, *IEEE Micro Special Issue on Top Picks from the Computer Architecture Conferences of 2008*, January/February 2009.
(Acceptance Rate: 15%)
- IEEE Transactions** S. Sankar, Y. Zhang, S. Gurumurthi, M.R. Stan, Sensitivity-Based Optimization of Disk Architecture, *IEEE Transactions on Computers*, 58(1):69-81, January 2009.
- ASME JEP** Y. Kim, J. Choi, A. Sivasubramaniam, S. Gurumurthi, Managing Thermal Emergencies in Disk-Based Storage Systems, *ASME Journal of Electronic Packaging*, 130(4), December, 2008.
Invited Paper
- ACM OSR** S. Gurumurthi, Should Disks be Speed Demons or Brainiacs? *ACM SIGOPS Operating Systems Review - Special Issue on File and Storage Systems*, 41(1):33-36, January 2007.
- IEEE Micro** S. Gurumurthi, Y. Kim, A. Sivasubramaniam, Using STEAM for Thermal Simulation of Storage Systems, *IEEE Micro - Special Issue on Computer Architecture Simulation and Modeling*, 26(4):43-51, July, 2006.
- ACM Transactions** S. Gurumurthi, A. Sivasubramaniam, Thermal Issues in Disk Drive Design: Challenges and Possible Solutions, *ACM Transactions on Storage*, 2(1):41-73, February, 2006.
- IEEE Computer** S. Gurumurthi, A. Sivasubramaniam, M. Kandemir, H. Franke, Reducing Disk Power Consumption in Servers with DRPM, *IEEE Computer - Special Issue on Power-Aware and Temperature-Aware Computing*, 36(12):59-66, December, 2003.
- VLDB Journal** N. An, S. Gurumurthi, A. Sivasubramaniam, N. Vijaykrishnan, M. Kandemir, M.J. Irwin, Energy-Performance Trade-Offs for Spatial Access Methods on Memory Resident Data, *The VLDB Journal - Special Issue on Best Papers of VLDB 2001*, 11(3):179-197, November, 2002.

Refereed Conference Papers

- DATE'10** V. Mohan, S. Gurumurthi, M.R. Stan, FlashPower: A Detailed Power Model for NAND Flash Memory, *Proceedings of the Design, Automation, and Test in Europe Conference*, Dresden, Germany, March 2010.
(Acceptance Rate: 30%)
- SEMITHERM'10** W. Huang, K. Skadron, S. Gurumurthi, R.J. Ribando, M.R. Stan, Exploring the Thermal Impact on Manycore Processor Performance, *Proceedings of the Annual Thermal Measurement, Modeling, and Management Symposium*, Santa Clara, CA, February 2010.
- SEMITHERM'10** W. Huang, K. Skadron, S. Gurumurthi, R.J. Ribando, M.R. Stan, Interaction of Scaling Trends in Processor Architecture and Cooling, *Proceedings of the Annual Thermal Measurement, Modeling, and Management Symposium*, Santa Clara, CA, February 2010.
- MASCOTS'09** T. Siddiqua, S. Gurumurthi, Balancing Soft Error Coverage with Lifetime Reliability in Redundantly Multithreaded Processors, *Proceedings of the International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems*, London, UK, pages 99-110, September, 2009.
(Acceptance Rate: 20%)

- ISPASS'09** W. Huang, K. Skadron, S. Gurumurthi, R. Ribando, M.R. Stan, Differentiating the Roles of IR Measurement and Simulation for Power and Temperature-Aware Design, *Proceedings of the International Symposium on Performance Analysis of Systems and Software*, Boston, MA, pages 1-10, April 2009.
(Acceptance Rate: 28%)
- MASCOTS'08** S. Sankar, S. Gurumurthi, M.R. Stan, Sensitivity Based Power Management of Enterprise Storage Systems, *Proceedings of the International Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems*, Baltimore, MD, September 2008.
(Acceptance Rate: 38%)
- ISCA'08** S. Sankar, S. Gurumurthi, M. Stan, Intra-Disk Parallelism: An Idea Whose Time Has Come, *Proceedings of the International Symposium on Computer Architecture*, Beijing, China, pages 303-314, June 2008.
(Acceptance Rate: 14%)
- CF'08** C.W. Smullen, S.R. Tarapore, S. Gurumurthi, P. Ranganathan, M. Uysal, Active Storage Revisited: The Case for Power and Performance Benefits for Unstructured Data Processing Applications, *Proceedings of ACM International Conference on Computing Frontiers*, Ischia, Italy, May, 2008.
(Acceptance Rate: 27%)
- ISCA'07** K.R. Walcott, G. Humphreys, S. Gurumurthi, Dynamic Prediction of Architectural Vulnerability From Microarchitectural State, *Proceedings of the International Symposium on Computer Architecture*, San Diego, CA, pages 516-527, June 2007.
(Acceptance Rate: 22%)
- DAC'07** Y. Zhang, S. Gurumurthi, M. Stan, SODA: Sensitivity Based Optimization of Disk Architecture, *Proceedings of the Design Automation Conference*, San Diego, CA, pages 865-870, June 2007.
(Acceptance Rate: 23%)
- THETA'07** Y. Kim, J. Choi, A. Sivasubramaniam, S. Gurumurthi, Graceful Operation of Disk Drives Under Thermal Emergencies, *Proceedings of the International Conference on Thermal Issues in Emerging Technologies Theory and Application*, Cairo, Egypt, pages 119-125, January 2007.
- ASPLOS'06** A. Parashar, S. Gurumurthi, A. Sivasubramaniam, SlicK: Slice-Based Locality Exploitation for Efficient Redundant Multithreading, *Proceedings of the International Conference on Architectural Support for Programming Languages and Operating Systems*, San Jose, CA, pages 95-105, October 2006.
(Acceptance Rate: 24%)
- ITHERM'06** S. Gurumurthi, The Need for Temperature-Aware Storage Systems, *Proceedings of the Intersociety Conference on Thermal and Thermomechanical Phenomena in Electronic Systems*, San Diego, CA, pages 387-394, May 2006.
(Acceptance Rate: 61%)
- MSST'06** N. Paul, S. Gurumurthi, D. Evans, Thermal Attacks on Storage Systems, *Proceedings of the NASA Goddard/IEEE Conference on Mass Storage Systems and Technologies*, College Park, MD, pages 143-151, May 2006.
- HPCA'06** Y. Kim, S. Gurumurthi, A. Sivasubramaniam, Understanding the Performance-Temperature Interactions in Disk I/O of Server Workloads, *Proceedings of the International Symposium on High Performance Computer Architecture*, Austin, TX, pages 179-189, February 2006.
(Acceptance Rate: 15%)

- ISCA'05** S. Gurumurthi, A. Sivasubramaniam, V.K. Natarajan, Disk Drive Roadmap from the Thermal Perspective: A Case for Dynamic Thermal Management, *Proceedings of the International Symposium on Computer Architecture*, Madison, WI, pages 38-49, June 2005.
(Acceptance Rate: 23%)
- ISCA'04** A. Parashar, S. Gurumurthi, A. Sivasubramaniam, A Complexity-Effective Approach to ALU Bandwidth Enhancement for Instruction-Level Temporal Redundancy, *Proceedings of the International Symposium on Computer Architecture*, Munich, Germany, pages 376-386, June 2004.
(Acceptance Rate: 14%)
- DSN'03** W. Zhang, S. Gurumurthi, M. Kandemir, A. Sivasubramaniam, ICR: In-Cache Replication for Enhancing Data Cache Reliability, *Proceedings of the International Conference on Dependable Systems and Networks*, San Francisco, CA, pages 291-300, June 2003.
(Acceptance Rate: 21%)
- ISCA'03** S. Gurumurthi, A. Sivasubramaniam, M. Kandemir, H. Franke, DRPM: Dynamic Speed Control for Power Management in Server Class Disks, *Proceedings of the International Symposium on Computer Architecture*, San Diego, CA, pages 169-179, June 2003.
(Acceptance Rate: 20%)
- ISPASS'03** S. Gurumurthi, J. Zhang, A. Sivasubramaniam, M. Kandemir, H. Franke, N. Vijaykrishnan, M.J. Irwin, Interplay of Energy and Performance for Disk Arrays Running Transaction Processing Workloads, *Proceedings of the International Symposium on Performance Analysis of Systems and Software*, Austin, TX, pages 123-132, March 2003.
(Acceptance Rate: 35%)
- IPDPS'03** S. Gurumurthi, N. An, A. Sivasubramaniam, N. Vijaykrishnan, M. Kandemir, M.J. Irwin, Energy-Performance Considerations in Work Partitioning for Mobile Spatial Queries, *Proceedings of the International Parallel and Distributed Processing Symposium*, Nice, France, April 2003.
(Acceptance Rate: 29%)
- HPCA'02** S. Gurumurthi, A. Sivasubramaniam, M.J. Irwin, N. Vijaykrishnan, M. Kandemir, T. Li, L.K. John, Using Complete Machine Simulation for Software Power Estimation: The SoftWatt Approach, *Proceedings of the International Symposium on High Performance Computer Architecture*, Boston, MA, pages 141-150, February 2002.
(Acceptance Rate: 20%)
- VLDB'01** N. An, A. Sivasubramaniam, N. Vijaykrishnan, M. Kandemir, M.J. Irwin, S. Gurumurthi, Analyzing Energy Behavior of Spatial Access Methods for Memory-Resident Data, *Proceedings of the International Conference on Very Large Data Bases*, Rome, Italy, pages 411-420, September 2001.
(Acceptance Rate: 17%)

Refereed Workshop Papers

- SELSE'09** A. Biswas, N. Soundararajan, S.S. Mukherjee, S. Gurumurthi, Quantized AVF: A Means of Capturing Vulnerability Variations over Small Windows of Time, *IEEE Workshop on Silicon Errors in Logic - System Effects*, Stanford University, CA, March 2009.
- SELSE'09** T. Siddiqua, S. Gurumurthi, NBTI-Aware Dynamic Instruction Scheduling, *IEEE Workshop on Silicon Errors in Logic - System Effects*, Stanford University, CA, March 2009.
- SELSE'09** B.C. Sutton, S. Gurumurthi, Single-Threaded Mode AVF Prediction During Redundant Execution, *IEEE Workshop on Silicon Errors in Logic - System Effects*, Stanford University, CA, March 2009.

- MoBS'08** S.R. Tarapore, C.W. Smullen, S. Gurumurthi, MIDAS: An Execution-Driven Simulator for Active Storage Architectures, *Proceedings of the Workshop on Modeling, Benchmarking, and Simulation (Held in conjunction with ISCA)*, Beijing, China, June 2008.
(Acceptance Rate: 60%)
- CATARS'08** N. George, J. Lach, S. Gurumurthi, Towards Transient Fault Tolerance for Heterogeneous Computing Platforms, *Proceedings of the Workshop of Compiler and Architectural Techniques for Application Reliability and Security (Held in conjunction with DSN)*, Anchorage, AK, June 2008.
- SNAPI'07** C.W. Smullen, S.R. Tarapore, S. Gurumurthi, A Benchmark Suite for Unstructured Data Processing, *Proceedings of the International Workshop on Storage Network Architecture and Parallel I/Os (Held in conjunction with MSST)*, San Diego, CA, September 2007.
(Acceptance Rate: 35%)
- HPCRI'05** S. Gurumurthi, A. Parashar, A. Sivasubramaniam, SOS: Using Speculation for Memory Error Detection, *Proceedings of the Workshop on High Performance Computing Reliability Issues (Held in conjunction with HPCA)*, San Francisco, CA, February 2005.
- CAECW'05** V. Natarajan, S. Gurumurthi, A. Sivasubramaniam, Is Traditional Power Management + Prefetching == DRPM for Server Disks?, *Proceedings of the Workshop on Computer Architecture Evaluation Using Commercial Workloads (Held in conjunction with HPCA)*, San Francisco, CA, February 2005.

Other Publications

- USENIX Security'06** A. Felt, N. Paul, D. Evans, S. Gurumurthi, Taking Virus Detection to the Next Level (Down), *USENIX Security Symposium - Work-in-Progress Abstract*, July 2006.
- COBASSA'05** N. Paul, S. Gurumurthi, D. Evans, Towards Disk-Level Malware Detection, *Proceedings of the Workshop on Code Based Software Security Assessment (Held in conjunction with WCRE)*, November 2005.
- DAC'02** S. Gurumurthi, Energy Efficient Software Design: The Resource-Constrained and Resource-Rich Perspectives, *Design Automation Conference - PhD Forum Poster*, June 2002.

Patents

1. S. Gurumurthi, A. Biswas, J. Emer, S.S. Mukherjee, *Detecting Errors in Directory Entries*, U.S. Patent (Number: 7,475,321), January, 2009.

External Funding

- *Energy-Efficient Storage Architectures for Data Centers*
Sponsor: Google Research Award
Amount: \$80,000
Date: 01/01/2009
Sole PI
- *Reliability Sensors at the Circuit and Architecture Levels*
Sponsor: Intel Corporation

Amount: \$35,000
Dates: 09/01/2008 (Renewable Yearly)
Co-PI; PI: Mircea Stan (ECE)

- *Research Experiences for Undergraduates Supplement*
Sponsor: National Science Foundation
(Supplement to *CRI: Comprehensive, Industry-Strength System-Level Thermal Modeling*)
Amount: \$12,763
Dates: 05/01/2008 - 04/30/2009
Co-PI; PI: Kevin Skadron. Other Co-PIs: Mircea Stan (ECE) and Robert J. Ribando (MAE) (Allocated Funds 25%)
- *Novel Disk Drive Architectures for Efficient Processing of Unstructured Datasets*
Sponsor: Google Research Award
Amount: \$40,000
Date: 12/21/2007
Sole PI
- *Storage-Centric Architectures*
Sponsor: Hewlett-Packard Company
Amount: \$35,000
Date: 06/29/2007
Sole PI
- *Research Experiences for Undergraduates Supplement*
Sponsor: National Science Foundation
(Supplement to *CT-ISG: Disk-Level Malware Detection and Response*)
Amount: \$12,000
Dates: 06/01/2007 - 07/31/2007
Co-PI; PI: David Evans (Allocated Funds 50%)
- *Research Experiences for Undergraduates Supplement*
Sponsor: National Science Foundation
(Supplement to *CAREER: Architectural Techniques and Tools for Adaptive Active Storage Systems*)
Amount: \$12,000
Dates: 04/01/2007 - 03/31/2008
Sole PI
- *CAREER: Architectural Techniques and Tools for Adaptive Active Storage Systems (Award #: 0643925)*
Sponsor: National Science Foundation
Amount: \$400,000
Dates: 04/01/2007 - 03/31/2012
Sole PI
- *CT-ISG: Disk-Level Malware Detection and Response (Award #: 0627527)*
Sponsor: National Science Foundation
Amount: \$400,000
Dates: 09/01/2006 - 08/31/2009
Co-PI; PI: David Evans (Allocated Funds 50%)
- *Processor Support for Platform Level Security*
Sponsor: Intel Corporation
Amount: \$83,456.00
Dates: (First Payment: 07/27/2006; Second Payment: 05/15/2007)
Sole PI
- *CRI: Comprehensive, Industry-Strength System-Level Thermal Modeling (Award #: 0551630)*
Sponsor: National Science Foundation
Amount: \$485,000
Dates: 05/15/2006 - 04/30/2009
Co-PI; PI: Kevin Skadron. Other Co-PIs: Mircea Stan (ECE) and Robert J. Ribando (MAE) (Allocated Funds 25%)

Talks

Colloquium/Seminar Talks

- “Intra-Disk Parallelism: A Green Storage Solution for Data Centers”, Cambridge University, Cambridge, UK, September 2009.
- “Intra-Disk Parallelism: A Green Storage Solution for Data Centers”, University of California at Santa Cruz, Santa Cruz, CA, September 2008.
- “Intra-Disk Parallelism”, Google, Mountain View, CA, July 2008.
- “Disk-Level Behavioral Malware Detection”, Intel Corporation, Hillsboro, OR, August 2007.
- “Disk-Level Behavioral Malware Detection”, Georgia Institute of Technology, Atlanta, GA, April 2007.
- “Disk-Level Behavioral Malware Detection”, VMWare, Palo Alto, CA, March 2007.
- “Power Management of Enterprise Storage Systems”, HP Labs, Palo Alto, CA, October 2006.
- “Processor Support for Platform Level Security”, Intel Corporation, Hudson, MA, September 2006.
- “Virtual Redundant Threading”, University of Virginia, Charlottesville, VA, April 2005.
- “Power Management of Enterprise Storage Systems”, University of Virginia, Charlottesville, VA, April 2005.
- “Power Management of Enterprise Storage Systems”, Purdue University, West Lafayette, IN, April 2005.
- “Power Management of Enterprise Storage Systems”, Rutgers University, New Brunswick, NJ, April 2005.
- “Virtual Redundant Threading”, University of Rochester, Rochester, NY, March 2005.
- “Power Management of Enterprise Storage Systems”, University of Rochester, Rochester, NY, March 2005.
- “Virtual Redundant Threading”, University of Massachusetts – Amherst, Amherst, MA, February 2005.
- “Power Management of Enterprise Storage Systems”, University of Massachusetts – Amherst, Amherst, MA, February 2005.
- “Power Management of Enterprise Storage Systems”, University of Minnesota – Twin-Cities, Minneapolis, MN, February 2005.
- “Power Management of Enterprise Storage Systems” Princeton University, Princeton, NJ, February 2005.
- “Thermal Issues in Disk Drive Design: Challenges and Solutions”, Seagate Research Center, Pittsburgh, PA, March 2005.
- “A Complexity-Effective Approach to ALU Bandwidth Enhancement for Instruction-Level Temporal Redundancy”, Intel Corporation, Hudson, MA, June 2004.
- “Power-Aware Design of the Main-Memory System in Servers”, IBM Research, Austin, TX, August 2003.

Invited Conference Talks

- “Intra-Disk Parallelism: A Green Storage Solution for Data Centers”, Storage Developer Conference, Santa Clara, CA, September 2008.
- “Towards Hybrid Enterprise Storage Systems”, SNIA Summer Symposium, San Jose, CA, July 2008.

Other Conference Talks

- “Sensitivity Based Power Management of Enterprise Storage Systems”, MASCOTS, Baltimore, MD, September 2008.
- “Intra-Disk Parallelism: An Idea Whose Time Has Come”, ISCA, Beijing, China, June 2008.
- “Dynamic Prediction of Architectural Vulnerability from Microarchitectural State”, ISCA, San Diego, CA, June 2007.

- “The Need for Temperature-Aware Storage Systems”, IITHERM, San Diego, CA, June 2006.
- “Disk Drive Roadmap from the Thermal Perspective: A Case for Dynamic Thermal Management”, ISCA, Madison, WI, June 2005.
- “DRPM: Dynamic Speed Control for Power Management in Server Class Disks”, ISCA, San Diego, CA, June 2003.
- “Energy-Performance Considerations in Work Partitioning for Mobile Spatial Queries”, IPDPS, Nice, France, April 2003.
- “Interplay of Energy and Performance for Disk Arrays Running Transaction Processing Workloads”, ISPASS, Austin, TX, March 2003.
- “Using Complete Machine Simulation for Software Power Estimation: The SoftWatt Approach”, HPCA, Cambridge, MA, February 2002.

Other Talks

- “Disk Level Malware Detection”, NSF Cybertrust PI Meeting, Atlanta, GA, January, 2007.

Graduate Students Directed

Current Advisees

- Vidyabhushan Mohan (since Spring 2009)
- Taniya Siddiqua (since Spring 2008)
- Clinton Wills Smullen (since Fall 2006)

Graduated Students

- Blake Carey Sutton
MCS, May 2009
Project Title: *Single-Threaded Mode AVF Prediction During Redundant Execution*
- Sriram Sankar
MS, August 2008
Thesis Title: *Intra-Disk Parallelism*
- Kristen Rachelle Walcott
MCS, May 2007
Project Title: *Dynamic Prediction of Architectural Vulnerability From Microarchitectural State*

Doctoral Committees

- Adam Cabe (*ECE*)
Advisor: Mircea Stan
- Randy Mann (*ECE*)
Thesis Title: Interactions of Technology and Design in Nano-Scale SRAM
Advisor: Benton Calhoun
- Hao Huang (*CS*)
PhD Defense Completed in June 2008
Thesis Title: *Storage@desk: A New Mass Storage System with Quality of Service Guarantees for Large Organizations*
Advisor: Andrew Grimshaw

- Nathanael R. Paul (CS)
Defense Completed, PhD Completed in May 2008
Thesis Title: *Disk-Level Malware Detection and Response*
Advisor: David Evans
- Jeremy Sheaffer (CS)
Defense Completed, PhD Completed in August 2007
Thesis Title: *Physical Challenges in Reliable Graphics Hardware Design*
Advisor: Kevin Skadron
- Yan Zhang (ECE)
PhD Completed in August 2006
Thesis Title: *Temperature-Aware Power Modeling and Optimization in Deep Submicron CMOS*
Advisor: Mircea Stan
- Tibor Horvath (CS)
PhD Completed in May 2008
Thesis Title: *Energy Management in Real-Time Multi-Tier Internet Services*
Advisor: Kevin Skadron
- Angshuman Parashar (Penn State CSE)
PhD Completed in May 2007
Thesis Title: *Redundancy and Parallelism Tradeoffs for Reliable, High-Performance Architectures*
Advisor: Anand Sivasubramaniam
- David Tarjan (CpE)
PhD in Progress
Thesis Title: *Efficient Throughput Cores for Asymmetric Manycore Processors*
Advisor: Kevin Skadron
- Yingmin Li (CS)
PhD Completed in August 2006
Thesis Title: *Physically Constrained Architecture for Chip Multiprocessors*
Advisor: Kevin Skadron

Masters Committees

- Taniya Siddiqua (CS)
MS Expected in December 2009
Thesis Title: *Balancing Soft Error Coverage with Lifetime Reliability in Redundantly Multithreaded Processors*
Advisor: Sudhanva Gurumurthi
- Shuai Che (CpE)
MS Expected in January 2010
Thesis Title: *Benchmarking GPUs for General Purpose Applications*
Advisor: Kevin Skadron
- Steven Christopher Jocke (ECE)
MS Completed in May 2009
Thesis Title: *Design and Application of a Sub-Threshold Core Using a Customized Synthesis Flow*
Advisor: Benton Calhoun
- Clinton Wills Smullen, IV (CS)
MCS Completed in December 2008
Project Title: *Revisiting Active Storage for Unstructured Data Processing Applications*
Advisor: Sudhanva Gurumurthi
- Jiayuan Meng (CS) - *Committee Chair*
MCS Completed in August 2007
Project Title: *Temporal and Spatial Streaming on a General Purpose MIMD Manycore Chip*
Advisor: Kevin Skadron

- Chris White (CS)
MCS Completed in May 2007
Project Title: *Managing Data Locality in Hardware with Fractal*
Advisor: Kevin Skadron
- David Tarjan (CpE)
MS Completed in January 2007
Thesis Title: *Merging Path, Global, and Local Indexing in Perceptron Branch Prediction*
Advisor: Kevin Skadron

Undergraduate Students and Student Theses Supervised

- Daniel Stephen Lee, March 2008
Thesis Title: *Performance Evaluation of I/O Virtualization in the Xen Architecture*
- Sean Michael Talts (Summer 2007 REU Student)
Research Topic: *Prototyping and Performance Evaluation of Disk-Level Malware Detection*

Teaching

NOTE:

- The course and instructor ratings are out of 5.0.

Course	Semester	Enrollment	Course Rating	Instructor Rating
CS 654 (Graduate) Computer Architecture	Fall 2005	23	4.10	4.43
CS 851 (Graduate) Advanced Techniques in Computer Architecture and Storage Systems	Spring 2006	8	4.52	4.74
CS 654 (Graduate) Computer Architecture	Fall 2006	29	4.01	4.15
CS 414 (Undergraduate) Operating Systems	Spring 2007	58	4.16	4.18
CS 654 (Graduate) Computer Architecture	Fall 2007	15	4.13	4.36
CS 433 (Undergraduate) Advanced Computer Architecture	Spring 2008	20	3.77	4.15
CS 654 (Graduate) Computer Architecture	Fall 2008	30	4.14	4.26
CS 101E (Undergraduate) Introduction to Computer Science	Spring 2009	88	3.65	3.81

Professional Service

Computer Science Department

- Graduate Admissions Committee, 2005, 2007, 2008
- *Chair*, PhD Qualifying Exam, Computer Architecture Reading List Ad-Hoc Committee, 2007
- CS Graduate Curriculum Committee, 2006, 2009
- CpE Graduate Committee, 2009
- Systems Infrastructure Committee, 2005, 2007

Workshop Organization

- **Workshop Co-Organizer** with Bhuvan Urgaonkar (Penn State), First Workshop on Integrating Solid-State Memory into the Storage Hierarchy (WISH), in conjunction with the International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), 2009.

Tutorials

- Phase Change Memories: A Systems Perspective, with Moinuddin Qureshi (IBM Research) and Bipin Rajendran (IBM Research), to be held in conjunction with the International Symposium on High Performance Computer Architecture (HPCA), 2010.

Conference Activities

- **Program Committee**, Workshop on Emerging Storage class memory Technologies (**WEST**), 2010.
- **Program Committee**, USENIX Workshop on Sustainable Information Technology (**SustainIT**), 2010.
- **Program Committee**, USENIX Conference on File and Storage Technologies (**FAST**), 2010.
- **Program Committee**, IEEE Micro Top Picks from Computer Architecture Conferences (**Top Picks**), 2009.
- **Program Committee**, International Symposium on Computer Architecture (**ISCA**), 2009.
- **Program Committee**, International Symposium on Performance Analysis of Systems and Software (**ISPASS**), 2009.
- **Web Chair**, International Conference on Architectural Support for Programming Languages and Operating Systems (**ASPLOS**), 2009.
- **Program Committee**, ACM SIGMETRICS Conference on Measurement and Modeling of Computer Systems (**SIGMETRICS**), 2008.
- **Program Committee**, International Symposium on Performance Analysis of Systems and Software (**ISPASS**), 2008.
- **Program Committee**, International Conference on Architectural Support for Programming Languages and Operating Systems (**ASPLOS**), 2008.
- **Program Committee**, IEEE International Symposium on Workload Characterization (**IISWC**), 2007.
- **Program Committee**, International Conference on Parallel and Distributed Computing and Networks (**PDCN**), 2007.
- **Program Committee**, Reconfigurable and Adaptive Architecture Workshop (**RAAW**), 2006.
- **Program Committee**, Workshop on the Interaction Between Operating System and Computer Architecture (**WIOSCA**), 2006.
- **Program Committee**, International Conference on Parallel Architectures and Compilation Techniques (**PACT**), 2006.
- **Publications Chair**, International Conference on Parallel Architectures and Compilation Techniques (**PACT**), 2006.

Invited Technical Panels and Meetings

- **Invited Participant**, Storage Networking Industry Association (SNIA) Solid-State Devices (SSD) Forum Meeting, SNIA Summer Symposium, July 2008.
- **Organizer and Moderator**, Technical Panel: *Benchmarking for the Web 2.0 Era*, held at the IEEE International Symposium on Workload Characterization (**IISWC**), September 2007.

Funding Panels

- National Science Foundation (NSF) Panels - 2009(1 panel); 2008(2 panels); 2007(2 panels)

Grant Proposal Peer-Reviewing Activities

- National Science Foundation, 2009
- US-Israel Binational Science Foundation, 2009
- Swiss National Science Foundation, 2007
- University of California Energy Institute, 2006

Conference and Journal Peer-Reviewing Activities

- *Selected Conferences:* International Symposium on Computer Architecture (ISCA), International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), International Symposium on High Performance Computer Architecture (HPCA), USENIX Conference on File and Storage Technologies (FAST), International Conference on Dependable Systems and Networks (DSN), International Symposium on Performance Analysis of Systems and Software (ISPASS), ACM SIGPLAN/SIGBED Conference on Languages, Compilers, and Tools for Embedded Systems (LCTES), International Parallel and Distributed Processing Symposium (IPDPS), International Conference on Supercomputing (ICS)
- *Journals:* IEEE Spectrum, IEEE Transactions on Knowledge and Data Engineering, Elsevier Computer Networks, IEEE Transactions on Dependable and Secure Computing, IEEE Computer Architecture Letters, IEEE Transactions on Very Large Scale Integration Systems, ACM/Springer Multimedia Systems Journal, ACM Transactions on Architecture and Code Optimization, ACM Transactions on Storage, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Computers, GEOINFORMATICA Journal

Textbook Reviewing Activities

- *Computer Systems: An Integrated Approach to Architecture and Operating Systems* by Umakishore Ramachandran (*Georgia Tech*), Addison-Wesley Publishing, 2008.
- *Computer Architecture: A Quantitative Approach* (Fourth Edition) by John Hennessy (*Stanford U.*) and David Patterson (*UC Berkeley*), Morgan Kaufmann Publishers/Elsevier, 2006.
- *Architecture Design for Soft Errors* by Shubhendu Mukherjee (*Intel Corporation*), Morgan Kaufmann Publishers/Elsevier, 2006/2007.

Professional Society Memberships

- ACM SIGARCH
- IEEE Computer Society