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Laura M. Grupp[1]

OBJECTIVE

Laura's research interests bridge the divide between hardware and software, with a current focus on flash-based storage systems. She characterizes flash chips to find unpublished behaviors and trends, and then designs ways to exploit these characteristics to address application-specific requirements for performance, energy efficiency and reliability.

EDUCATION

University of California, San Diego **San Diego, CA** **2007 – Present** **GPA: 3.73 on 4.0 scale**
Degree: Doctor of Philosophy, Computer Engineering **Expected Graduation: June 2013**
Candidate of Philosophy, Computer Engineering **Conferred: June 2011**
Master of Science, Computer Science **Conferred: March 2011**

Course Work Includes: Algorithms; Compilers; Complexity Theory; Databases; Operating Systems; Computer Security; Principles of, Parallel & Advanced Computer Architecture

University of Washington **Seattle, WA** **2004 – 2007** **GPA: 3.85 on 4.0 scale**
Degree: Bachelor of Science, Electrical Engineering (Magna cum Laude) **Conferred: June 2007**

Course Work Includes: Devices and Circuits I & II, Design of Computer Subsystems, Microcomputer Systems, Digital Circuits and Systems, Computer Design and Organization.

PUBLICATIONS

Laura M. Grupp, John D. Davis, Steven Swanson. The Harey Tortoise: Managing Heterogeneous Write Performance in SSDs. *To Appear In: USENIX Annual Technical Conference*, 2013.

Hung-Wei Tseng, Laura M. Grupp, Steven Swanson. Underpowering NAND Flash: Profits and Perils. *50th Design Automation Conference (DAC 2013)*, June 2013.

Vidyabhushan Mohan, Trevor Bunker, Laura M. Grupp, Sudhanva Gurumurthi, Mircea R. Stan, Steven Swanson. Modeling Power Consumption of NAND Flash Memories using FlashPower. *Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 2013.

Ryan Gabrys, Eitan Yaakobi, Laura M. Grupp, Steven Swanson, Lara Dolecek. Tackling Intracell Variability in TLC Flash through Tensor Product Codes. *Proceedings of the IEEE International Symposium on Information Theory*, 2012.

Laura M. Grupp, John D. Davis, Steven Swanson. The Bleak Future of NAND Flash Memory. *Proceedings of the 10th USENIX Conference on File and Storage Technologies*, 2012.

Pravin Prabhu, Ameen Akel, Laura M. Grupp, Wing-Key Yu, G. Edward Suh, Edwin Kan, Steven Swanson. Extracting Device Fingerprints from Flash Memory Exploiting Physical Variations. *Proceedings of the 4th International Conference on Trust and Trustworthy Computing*, 2011.

Hung-Wei Tseng, Laura M. Grupp, Steven Swanson. Understanding the Impact of Power Loss on Flash Memory. *48th Design Automation Conference (DAC 2011)*, June 2011.

[1] Legal Name: Laura M. Caulfield

Joel Coburn, Adrian M. Caulfield, Ameen Akel, Laura M. Grupp, Rajesh K. Gupta, Steven Swanson. NV-Heaps: Making Persistent Objects Fast and Safe with Next-Generation, Non-Volatile Memories. *Proceedings of the Sixteenth International Conference on Architectural Support for Programming Languages and Operating Systems,* 2011.

Michael Wei, Laura M. Grupp, Fredrick E. Spada, Steven Swanson. Reliably Erasing Data From Flash-Based Solid State Drives. *Proceedings of the 9th USENIX Conference on File and Storage Technologies*, 2011.

Laura M. Grupp, Adrian M. Caulfield, Joel Coburn, John D. Davis, Steven Swanson. Beyond the Datasheet: Using Test Beds to Probe Non-volatile Memories' Dark Secrets. *IEEE Global Communications*, December 2010.

Eitan Yaakobi, Jing Ma, Laura M. Grupp, Paul H. Siegel, Steven Swanson, Jack K. Wolf. Error Characterization and Coding Schemes for Flash Memories. *IEEE Global Communications*, December 2010.

Laura M. Grupp, Adrian M. Caulfield, Joel Coburn, Eitan Yaakobi, Steven Swanson, Paul H. Siegel, Jack K. Wolf. Characterizing Flash Memory: Anomalies, Observations, and Applications. *MICRO '09: Proceedings of the 42nd Annual International Symposium on Microarchitecture, IEEE/ACM, 2009.*

Adrian M. Caulfield, Laura M. Grupp, Steven Swanson. An Improved Architecture for Data-Intensive Applications. *Micro Top Picks '09: IEEE Micro Top Picks from Computer Architecture Conferences, ACM, 2009.*

Adrian M. Caulfield, Laura M. Grupp, Steven Swanson. Gordon: Using Flash Memory to Build Fast, Power-efficient Clusters for Data-intensive Applications. *ASPLOS '09: Proceedings of the 14th International Conference on Architectural Support for Programming Languages and Operating Systems, ACM, 2009, 217-228.*

RESEARCH AND TEACHING EXPERIENCE

Meta Teaching Assistant, University of California at San Diego
Winter 2012
Course Instructor: Christine Alvarado
Description: Assist in training new teaching assistants the skills needed to lead discussion sections and describe complex computer science topics.

Teaching Assistant, University of California at San Diego
Fall 2012
Course Instructor: Christine Alvarado
Description: Lead TA for first of two-quarter intro to Java course (CSE 8A). Organize weekly staff meeting of about 43 tutors, one other TA and three instructors to smoothly run three lectures, eight lab sections and six discussion sections for about 500 mostly freshman students. Hold three office hours, design, teach two discussion sections and write the lab and quiz every week. Regularly respond to student questions through email and class forum.

Non-Volatile Systems Lab, University of California at San Diego
September 2007 – Present
Advisor: Professor Steven Swanson
Description: Lead on empirical characterization of flash memory and commercial interfaces in order to improve the way we interact with them. Study and build models of Flash Memory, Spin Torque Transfer Memory and Phase Change Memory. Construct the Mongo flash translation layer simulator.

The Summer Science Program (SSP)
Summer 2003; Summer 2007
Supervisor: Dr. Tracy Furatani and Dr. Michael Faison; Dr. Ran Sivron and Dr. David Reitzel
Description: As student, then TA: Determined an asteroid's ephemeris, and submitted data for archival to the Minor Planet Center at the Harvard-Smithsonian Center for Astrophysics

Eta Kappa Nu Tutoring Center
March 2006-June 2007
Supervisor: Evan Goldstein
Description: Tutor students enrolled in introductory Electrical Engineering coursework.

University of Washington Autonomous Robotics and Controls Laboratory
June 2005 – September 2005
Supervisor: Andy Crick
Description: Worked on the development team for an autonomous ground vehicle for the 2005 DARPA Competition. Designed and implemented two programs to improve the interface with the GPS receivers.

University of Washington Nonlinear Dynamics and Controls Laboratory
June 2004 – June 2005
Supervisor: Professor Kristi Morgansen
Description: Improved and created components of a robotic fish. Components include the depth sensor amplifier circuit, radio transmitters and the compass.

PROFESSIONAL SERVICE

External Reviewer for Transactions on Computers	2012
Program Committee Member for CWIC-SoCal	2012
External reviewer for Embedded Systems Letters	2012
External reviewer for HPCA	2011, 2012

PROFESSIONAL EXPERIENCE

Fluke Corporation
Summer 2006
Supervisor: John Lund, Principal Engineer
Description: Twelve week internship spent designing and implementing a communication scheme between a digital multimeter and a current probe. The communications were sent over the pre-existing measurement leads. Worked with supervisor to modify pre-existing digital and analog hardware as well as C code.

LEADERSHIP ROLES AND VOLUNTEER ACTIVITIES

Women in Computing
January 2010 – June 2011, Role: President
June 2011 – Present, Role: Advisory
Description: Work with the Computer Science and Engineering department's staff and faculty as one of four officers to organize social activities designed to strengthen the community among female graduate students. These activities include mentoring programs, attending the Grace Hopper Celebration of Women in Computing and a variety of social events.

Graduate Student Association
June 2007 – September 2009
Role: Social Committee Member
Description: Work with the Computer Science and Engineering department's staff and faculty as one of three students to organize quarterly social activities for graduate students, staff and faculty. These activities include BBQs, potlatches and skit nights.

Iota Upsilon Chapter of Eta Kappa Nu
June 2004 – June 2007
Roles: Secretary, President
Description: Worked with the Electrical Engineering department's staff and faculty as one of five officers to organize social activities, academic support programs and career development opportunities for the department's student body. These include BBQs, a tutoring center, tutorial sessions and a unique, casual setting for students, teachers and industry representatives to spend an evening together.

MEMBERSHIPS AND AFFILIATIONS

Association for Computing Machinery	member since 2009
Society of Women Engineers	member since 2005
Institute of Electrical and Electronics Engineers	member since 2004
Eta Kappa Nu (HKN), Electrical and Computer Engineering Honor Society	inducted June 2005
President, Iota Upsilon Chapter	June 2006-June 2007
Secretary and President-Elect, Iota Upsilon Chapter	June 2005-June 2006
Student Advisory Board, UW Department of EE	Sept 2005-June 2007
Women in Science and Engineering (WiSE)	Sept 2004-June 2007
Tau Beta Pi, Engineering Honor Society	inducted Dec 2005
Girl Scouts of the USA	Lifetime Member

HONORS AND AWARDS

Microsoft Research Graduate Women's Scholar	2009
UW College of Engineering Emerging Leaders Scholar Award	2004-2007
Wayne C. & Grace M. Stanley Scholarship	2006-2007
SWE Outstanding Undergraduate Female Award	2006
Karl Ellerbeck Electrical Engineering Scholarship	2005-2006
NASA Space Grant Undergraduate Scholar	2004-2006
UW Undergraduate Scholar Award	2004-2006
NASA Summer Undergraduate Research Program Award	2004, 2005
US Marine Corps "Semper Fidelis" Award for Musical Excellence	2004
Essentially Ellington Contest Finalist, performing in Lincoln Center, New York	2003
Girl Scout Silver Award	2000

REFERENCES

Available On Request