

# Kristen R. Walcott-Justice

---

112 Stadium Rd. #31  
Charlottesville, VA 22903  
Phone: (814) 573-1283

Fax: (434) 982-2214  
Email: [walcott@virginia.edu](mailto:walcott@virginia.edu)  
WWW: <http://www.cs.virginia.edu/walcott>

## Teaching Interests

---

Software Engineering, Software Testing and Reliability, Computer Architecture, Operating Systems

## Research Interests

---

**Software Engineering:** Software Testing, Debugging, Testing in Restricted Environments  
**Computer Architecture:** Transient Fault Prediction and Detection

## Education

---

**University of Virginia, Charlottesville, VA** **Aug 05 - Present**  
Ph.D. Student, Computer Science  
Expected Conferment: May 2012

Advisor: Mary Lou Soffa  
Topic: *Exploiting Hardware Mechanisms and Multicore Technology in Software Testing*

**University of Virginia, Charlottesville, VA** **Aug 05 - May 07**  
Master of Computer Science

Advisor: Sudhanva Gurumurthi  
Topic: *Dynamic Prediction of Architectural Vulnerability from Microarchitectural State*

**Allegheny College, Meadville, PA** **Aug 01 - May 05**  
Bachelor of Science, Computer Science and Mathematics, *magna cum laude*

Advisor: Gregory M. Kapfhammer (Computer Science)  
Topic: *Prioritizing Regression Test Suites for Time-Constrained Execution Using Genetic Algorithms*

Advisor: Tamara Lakins (Mathematics)  
Topic: *Analysis and Applications of Burnside's Theorem*

## Professional Experience

---

**Instructor, Department of Computer Science, University of Virginia** **Fall 2011**

- Responsible for the development and teaching of an intro-level undergraduate computer science class.
- Introduction to Information Technology, CS 1010 (Class size: 68)
- Teaching evaluations and student comments available upon request.

**Graduate Research Assistant** **May 06 – Present**

- Conduct research under the advisement of Dr. Mary Lou Soffa in software testing.

**Teaching Assistant, Dept. of Computer Science, University of Virginia** **Aug 05 – May 06**

- Information Assurance Graduate Seminar, CS 651
- Introduction to Computing, CS 101
- Computer Science from Ada and Euclid to Quantum Computing and the WWW, CS 150

**Teaching Assistant, Dept. of Computer Science, Allegheny College** **Aug 02 – May 05**

- Introduction to Computer Science I, CS 101
- Introduction to Computer Science II, CS 102

## **Refereed Publications**

---

Kristen Walcott-Justice and Mary Lou Soffa. "Hardware Monitoring Events for Testing Multithreaded Programs." To be submitted to the Symposium on the Foundations of Software Engineering (FSE). Research Triangle Park, North Carolina. November 2012.

Kristen Walcott-Justice and Mary Lou Soffa. "THEME: Testing by HardwarE Monitoring Events." To be submitted to the International Symposium on Software Testing and Analysis (ISSTA). Minneapolis, Minnesota. July 2012.

Kristen Walcott-Justice and Mary Lou Soffa. "Can Hardware Mechanisms and Multiple Cores Benefit Testing in Embedded Environments?" To be submitted to 2nd International Workshop on Software Engineering for Embedded Systems (SEES). Zurich, Switzerland. June 2012.

Kristen Walcott-Justice, Gregory M. Kapfhammer, and Mary Lou Soffa. "Prioritizing Test Suites for Time Constrained Execution." To be submitted to the Journal of Software Maintenance and Evolution.

Mary Lou Soffa, Kristen R. Walcott, and Jason Mars. "Exploiting Hardware Advances for Software Testing and Debugging (NIER Track)." In the Proceedings of the International Conference on Software Engineering (ICSE). Waikiki, Honolulu, HI, May 2011. (23% acceptance rate)

Sara Alspaugh, Kristen R. Walcott, Michael Belanich, Gregory M. Kapfhammer, and Mary Lou Soffa. "Efficient Time-Aware Prioritization with Knapsack Solvers." In the Proceedings of the ASE 2007 Workshop on Empirical Assessment of Software Engineering Languages and Technologies. Atlanta, Georgia, November 2007.

R. Peter Weistroffer, Kristen R. Walcott, Jason Lawrence, and Greg Humphreys. "Efficient Basis Decomposition for Scattered Reflectance Data." In the Proceedings of the Eurographics Symposium on Rendering. Grenoble, France, June 2007. (35% acceptance rate)

Kristen R. Walcott, Greg Humphreys, and Sudhanva Gurumurthi. "Dynamic Prediction of Architectural Vulnerability from Microarchitectural State." In the Proceedings of the International Symposium on Computer Architecture (ISCA), San Diego, California, June 2007. (22% acceptance rate)

Kristen R. Walcott, Gregory M. Kapfhammer, Robert Roos, and Mary Lou Soffa. "Time-Aware Test Suite Prioritization." In the Proceedings of the ACM SIGSOFT/SIGPLAN International Symposium on Software Testing and Analysis (ISSTA), Portland, Maine, July 2006. (28% acceptance rate)

Daniel Fiedler, Kristen R. Walcott, Thomas Richardson, Gregory M. Kapfhammer, Ahmed Amer, and Panos K. Chrysanthis. "Towards the Measurement of Tuple Space Performance." In ACM SIGMETRICS Performance Evaluation Review 33(3), December 2005.

## **Invited Presentations**

---

Kristen R. Walcott, Kristin Rozier, and Katie Panciera. "Choosing Your Building Blocks." Presented at the Grace Hopper Conference for Women in Computing, Keystone, CO, October 2008.

Barbara Ryder and Kristen R. Walcott. "Finding a Research Topic." Presented at the CRA-W Graduate Student Cohort, Seattle, WA, March 2008.

Diane Litman and Kristen R. Walcott. "Finding Academic Year Funding." Presented at the CRA-W Graduate Student Cohort, San Francisco, CA, March 2007.

Kristen R. Walcott. "Research Opportunities in Computer Science." Presented at Allegheny College, Meadville, PA, February 2007.

## Technical Reports

---

Kristen R. Walcott, Greg Humphreys, and Sudhanva Gurumurthi. "Dynamic Prediction of Architectural Vulnerability from Microarchitectural State." CS-2007-05. Department of Computer Science, University of Virginia. November 2006.

Kristen R. Walcott. "Prioritizing Regression Test Suites for Time-Constrained Execution Using a Genetic Algorithm." CS05-11. Department of Computer Science, Allegheny College, May 2005.

Kristen R. Walcott. "Analysis and Applications of Burnside's Theorem." Department of Mathematics, Allegheny College, December 2004.

## Research Posters

---

Kristen R. Walcott. "Exploiting Hardware Advances in Software Testing and Debugging." Poster. International Conference on Software Engineering. Waikiki, Honolulu, Hawaii, May 26, 2011.

Kristen R. Walcott. "Dynamic Prediction of Architectural Vulnerability." Poster. CRA-W Graduate Student Cohort, March 2007.

Kristen R. Walcott. "Time-Aware Test Suite Prioritization." Poster. University of Virginia Computer Science Day Celebration, February 2006.

## Awards

---

NSF Graduate Research Fellowship, April 2006 – 2009.

Google-Anita Borg Memorial Scholarship for Women in Computing Winner, April 2006.

Ford Foundation Predoctoral Fellowship Honorable Mention, April 2006 and May 2007.

Dean's Fellowship, University of Virginia, 2005 - 2008.

Allegheny College Department of Computer Science Faculty Prize for the Best Senior Thesis, May 2005.

Allegheny College Department of Computer Science and ACM Student Chapter Prize, May 2005.

Allegheny College Department of Mathematics James C. Doyle Prize for Excellence in Mathematics, May 2005.

Google-Anita Borg Memorial Scholarship for Women in Computing Finalist, May 2004.

Doane Scholar (2002, 2003, 2004) – Award for being one of the top ten in the class.

## Professional Activities

---

### Conference/Journal Peer Reviewer

- Programming Language Design and Implementation (PLDI) 2010.
- International Conference on Software Testing (ICST) 2010.
- IEEE Transactions on Software Engineering 2008.

### UVA Computer Science Graduate Student Group Steering Committee

Apr 06 – June 07

- Facilitated interaction between the graduate student and faculty communities.

### ACM-W, University of Virginia

Aug 05 – Present

- Served as **publicity chair** January 2006 to January 2008.

**Google Ambassador Program**

- University of Virginia, graduate representative.
- Allegheny College, undergraduate representative.

**Aug 05 – Aug 08**

**Aug 04 – May 05**

**Association for Computing Machinery (ACM), Allegheny College**

**Aug 01 – May 05**

- Served as **chair** from 2003-2005.

**Graduate Courses**

---

CS 654	Computer Organization	CS 793	Ind. Study in Computer Graphics
CS 661	Design & Analysis of Algorithms	CS 851	Data-Driven Models in Graphics
CS 696	Computer Science Perspectives	MATH 553	Number Theory
CS 771	Compilers	CS 647	Image Synthesis
ENGR 897	Graduate Teaching Instruction	CS 656	Operating Systems
CS 660	Theory of Computation	CS 615	Programming Languages
CS 851	Adv Tech: Architecture and Storage	CS 8561	Special Topics: Programming Languages

**References**

---

**Dr. Mary Lou Soffa (Advisor)**

Department Chair  
Owens R. Cheatham Professor of Science  
Department of Computer Science  
University of Virginia  
85 Engineer's Way, P.O. Box 400740  
Charlottesville, VA 22904-4740

Phone: (434) 982-2277  
Fax: (434) 982-2214  
Email: [soffa@virginia.edu](mailto:soffa@virginia.edu)  
WWW: <http://www.cs.virginia.edu/~soffa>

**Dr. Gregory M. Kapfhammer**

Associate Professor  
Department of Computer Science  
Allegheny College  
Box Q  
520 North Main Street  
Meadville, PA 16335

Phone: (814) 332-2880  
Fax: (814) 332-6237  
Email: [gkapfham@allegheny.edu](mailto:gkapfham@allegheny.edu)  
WWW: <http://www.cs.allegheny.edu/sites/gkapfham>

**Dr. Sudhanva Gurumurthi**

Associate Professor  
Department of Computer Science  
University of Virginia  
85 Engineer's Way, P.O. Box 400740  
Charlottesville, VA 22904-4740

Phone: (434) 982-2227  
Fax: (434) 982-2214  
Email: [gurumurthi@virginia.edu](mailto:gurumurthi@virginia.edu)  
WWW: <http://www.cs.virginia.edu/~gurumurthi>

**Dr. Aaron Bloomfield**

Associate Professor  
Department of Computer Science  
University of Virginia  
85 Engineer's Way, P.O. Box 400740  
Charlottesville, VA 22904-4740

Phone: (434) 982-2215  
Fax: (434) 982-2214  
Email: [aaron@virginia.edu](mailto:aaron@virginia.edu)  
WWW: <http://www.cs.virginia.edu/~asb>