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Department of Computer Science  
Colgate University  
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**Research  
Interests**

I am interested in understanding and improving how novices learn to program.

**Education**

*University of Maryland, College Park, MD.*  
Ph.D., Computer Science, December 2006.  
M.S., Computer Science, May 2002.

*Haverford College, Haverford, PA.*  
BA in Computer Science/English Literature, May 1998.

**Teaching  
Experience**

**Department of Computer Science**  
*Visiting Assistant Professor*

Colgate University  
**2006-2007 Academic Year**

In Fall 2006, I am teaching a senior-level Computer Networks course and a sophomore-level Computer Architecture course. In Spring, I will teach CS-1. In addition, I will advise one or two honors' theses for graduating seniors.

**Department of Computer Science**  
*CMSC 433: Programming Language Technologies  
and Paradigms*

University of Maryland  
**Spring 2001**

The primary responsibilities for this course were grading projects— most notably two multi-threaded Java projects— and answering questions during office hours and over email.

**Department of Computer Science**  
*CMSC 330: Organization of Programming  
Languages*

University of Maryland  
**Fall 2000**

My main responsibility was teaching two 30 student discussion sections twice per week. I prepared my own lecture material for discussion sections, during which I taught students to program in Java. Additional duties included grading exams and answering students' questions during office hours and over email.

**Department of Computer Science**  
*CMSC 106: Introduction to C Programming*

University of Maryland  
**Spring 2000**

My main responsibility was teaching two 30 student discussion sections twice per week. Additional duties included grading exams, grading weekly quizzes, as well as answering students' questions during office hours and over email. I was also chosen by the instructors to conduct review sessions for midterms and exams.

**Department of Computer Science**  
*CMSC 330: Organization of Programming  
Languages*

University of Maryland  
**Fall 1999**

My main responsibility was teaching two 30 student discussion sections twice per week. I prepared my own lecture material for discussion sections, during which I taught students to program in Java. Additional duties included grading exams and answering students' questions during office hours and over email.

**The Meadows School**  
*Teaching Internship*

Las Vegas, NV  
**August 1998 thru July 1999**

Taught an introductory course on web page construction at a private secondary school in Las Vegas. In addition, I maintained the network, coached three sports, and taught several lessons in the English department.

## Research Experience

### *Visiting Professor at Colgate University, 2006-2007 Academic Year:*

- **Analysis of Social Networks:** I am working with some of my students on analyzing social networking web sites such as Flickr ([www.flickr.com](http://www.flickr.com)) and Facebook ([www.facebook.com](http://www.facebook.com)). We plan to analyze the basic graph structure of the connections between Flickr users by computing standard metrics such as the shortest path between all pairs of nodes, as well as apply Google's PageRank algorithm to the graph. Some of these algorithms may be too big to calculate using one machine, so we will distribute these algorithms onto Colgate's supercomputer cluster as necessary.
- **Sports Data Mining and Analysis:** Along with a student at Colgate and a graduate student at the University of Maryland, I am analyzing the tendencies of referees in the National Basketball Association. Thus far, we've found evidence of some very interesting disparities between referees, and are currently building a model to predict how referees will call games.
- **Digital Art:** I am working with a student and her advisor in the Fine Arts department on a variety of projects that combine computer science and digital art.

### *Research Assistant at the University of Maryland, Summer 2001 until present:*

- **Marmoset, Summer 2004 until graduation:** Developed and implemented Marmoset, an automated project snapshot, submission and testing system. Marmoset provides two novel features not generally available to the myriad other automated testing systems: a token-based incentive system students use for viewing test results, and an Eclipse plugin that transparently captures project snapshots to a central CVS repository every time students save their files. At Maryland during the Fall 2006 semester, Marmoset will serve 9 programming courses and over 700 students; in addition, Marmoset has been deployed at University of Waterloo in Canada and at Colgate University, with plans to expand to additional institutions in the Spring 2007 semester. This work has culminated in several publications and made up the bulk of my dissertation.
- **J2EE Benchmarking:** I experimented with RUBiS (the Rice University Bidding System), a J2EE benchmark, and learned first-hand of the many difficulties in installing, configuring and running enterprise applications. This work was published at the Middleware Benchmarking Workshop at OOPSLA '04.
- **Transparent Proxies:** I worked on a project that added "transparent proxies" to Java. We modified the points-to analysis in McGill University's Soot framework and used our modified analysis to perform bytecode re-writing at compile time. The resulting specialized compiler adds a number of powerful language features to Java such as multilisp-style futures, lazy method evaluation, and asynchronous RMI. This work culminated in a paper that appeared at OOPSLA '04.
- **MPJava:** Using java.nio we built a pure Java message-passing framework similar to MPI. Our encouraging results demonstrated that Java can potentially provide performance competitive with widely available free implementations of MPI and Fortran for high-performance scientific codes. This work was published in LCPC '03.
- **Atomic Instructions in Java:** I worked on a project to add the atomic Compare-And-Swap (CAS) instruction to the pre-1.5 JVMs in use at the time. The wait-free data structures we implemented using our CAS-enabled JVM outperformed the best alternatives that relied on normal Java synchronization. This work was published in ECOOP '02.

### *Other Research Experience*

- **DIODE: Delivery In One Direction Ethernet:** My semester project for a network security graduate seminar in Fall 2000 was to implement a more secure credit-card processing system. Normal internet traffic was allowed into the DIODE system, but the only information allowed back out were ACK packets and yes/no responses to authorization requests.
- **Summer 2000, Intern at NAI Labs:** Worked on a system for automated network vulnerability detection. The system scanned a host's ports for known network vulnerabilities and logged the results to a database.
- **Time Skewing:** As an undergraduate, I worked on Time-Skewing, a compiler technique that uses the Omega Calculator to perform loop tiling along the time axis, enabling scientific programs to keep useful data in higher levels of memory.

## Refereed Publications

- [1] Jaime Spacco, Titus Winters, and Tom Payne. Inferring use cases from unit testing. In *AAAI Workshop on Educational Data Mining*, New York, NY, USA, July 2006. ACM Press.
- [2] Jaime Spacco, David Hovemeyer, William Pugh, Fawzi Emad, Jeffrey K. Hollingsworth, and Nelson Padua-Perez. Experiences with marmoset. In *11th Annual SIGCSE/SIGCUE Conference on Innovation and Technology in Computer Science Education*, Universita di Bologna, Bologna, Italy, June 2006.
- [3] Jaime Spacco, David Hovemeyer, and William Pugh. Tracking defect warnings across versions. In *Proceedings of the Mining Software Repositories Workshop (MSR 2006)*, Shanghai, China, May 2006.
- [4] David Hovemeyer, Jaime Spacco, and Bill Pugh. Evaluating and tuning a static analysis to find null pointer bugs. In Michael D. Ernst and Thomas Jensen, editors, *ACM SIGPLAN/SIGSOFT Workshop on Program Analysis for Software Tools and Engineering (PASTE 2005)*, Lisbon, Portugal, September 5–6, 2005. ACM.
- [5] Jaime Spacco, Jaymie Strecker, David Hovemeyer, and William Pugh. Software repository mining with Marmoset: An automated programming project snapshot and testing system. In *Proceedings of the Mining Software Repositories Workshop (MSR 2005)*, St. Louis, Missouri, USA, May 2005.
- [6] Polyvios Pratikakis, Jaime Spacco, and Michael Hicks. Transparent proxies for java futures. In *OOPSLA '04: Proceedings of the 19th annual ACM SIGPLAN Conference on Object-oriented programming, systems, languages, and applications*, pages 206–223, New York, NY, USA, 2004. ACM Press.
- [7] William Pugh and Jaime Spacco. Rubis revisited: why j2ee benchmarking is hard. In John M. Vlissides and Douglas C. Schmidt, editors, *Companion to the 19th Annual ACM SIGPLAN Conference on Object-Oriented Programming, Systems, Languages, and Applications, OOPSLA 2004, October 24-28, 2004, Vancouver, BC, Canada*, pages 204–205. ACM, 2004.
- [8] Jaime Spacco, David Hovemeyer, and William Pugh. An eclipse-based course project snapshot and submission system. In *3rd Eclipse Technology Exchange Workshop (eTX)*, Vancouver, BC, October 24, 2004.
- [9] Konstantin Berlin, Jun Huan, Mary Jacob, Garima Kochhar, Jan Prins, William Pugh, P. Sadayappan, Jaime Spacco, and Chau-Wen Tseng. Evaluating the impact of programming language features on the performance of parallel applications on cluster architectures. In Lawrence Rauchwerger, editor, *LCPC '03: Languages and Compilers for Parallel Computing, 16th International Conference*, volume 2958 of *Lecture Notes in Computer Science*, pages 194–208. Springer, 2003.
- [10] William Pugh and Jaime Spacco. Mpjava: High-performance message passing in java using java.nio. In Lawrence Rauchwerger, editor, *LCPC '03: Languages and Compilers for Parallel Computing, 16th International Conference*, Lecture Notes in Computer Science, pages 323–339. Springer, 2003.
- [11] David Hovemeyer, William Pugh, and Jaime Spacco. Atomic instructions in java. In *ECOOP '02: Proceedings of the 16th European Conference on Object-Oriented Programming*, pages 133–154, London, UK, 2002. Springer-Verlag.

## Refereed Poster Sessions

- [1] William Pugh, David Hovemeyer and Jaime Spacco. Marmoset: An automated snapshot, submission and testing system. SigCSE Poster Session, St Louis, MO, 2005.
- [2] William Pugh and Jaime Spacco. RUBiS Revisited: Why J2EE Benchmarking is Hard. OOPSLA Poster Session, Vancouver, BC, Canada, 2004.
- [3] William Pugh and Jaime Spacco. Using Java.nio for High-Performance Message Passing. Java-Grande Poster Session, Seattle, WA, 2002.
- [4] William Pugh, David Hovemeyer and Jaime Spacco. Marmoset: An automated snapshot, submission and testing system. SigCSE Poster Sessin, St Louis, MO, 2005.

**Awards**

2006 University of Maryland Innovation in Teaching with Technology (UMITT) Award winner.

**Leadership and Service**

*Organizer and Volunteer of the SCORE Study Groups.* SCORE provides mentoring and study-skills help as well as tutoring for students in the Computer Science major, with a special focus on helping members of under-represented groups stay in the major.

*Member of the Executive Council of CS Graduate Students, August 1999 until May 2004.*

*President of Executive Council, January 2002 until May 2003.* Organized weekly coffee hours for faculty and graduate students to interact, end-of-semester parties each semester, and a department TShirt.

*Department Representative to Graduate Student Government, Summer 2002 until Fall 2003.*

*Graduate Representative to Education Committee, Fall 2002 to Spring 2003.*