

MICHAEL W. BOYER

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EDUCATION

- **University of Virginia**, Charlottesville, VA
Ph.D. student, Computer Engineering
GPA: 3.92 overall
- **Union College**, Schenectady, NY
B.S. *magna cum laude* in Computer Engineering, Minor in Math, June 2006
GPA: 3.65 overall, 3.98 final 10 trimesters

HONORS AND AWARDS

- UVA: SRC GRC Fellowship, 2008-2012
Fellowship Enhancement for Outstanding Doctoral Candidates, 2006-2009
Dean's Fellowship, 2006-2009
- Union: George Williams Prize, 2006, for excellence in Computer Science
Loughry Prize, 2006, for best senior project in Computer Engineering
Goldwater Scholar Nominee, 2005
Dean's List, 2004, 2005, 2006
Presidential Scholarship, 2002-2006
- Honor Societies: Eta Kappa Nu, Sigma Xi, Tau Beta Pi

PUBLICATIONS

- **M. Boyer**, D. Tarjan, and K. Skadron. "Federation: Boosting Per-Thread Performance of Throughput-Oriented Manycore Architectures." *ACM Transactions on Architecture and Code Optimization (TACO)*, 7(4):1-38, Dec. 2010.
- **M. Boyer**, D. Tarjan, S. T. Acton, and K. Skadron. "Accelerating Leukocyte Tracking using CUDA: A Case Study in Leveraging Manycore Coprocessors." In *Proceedings of the International Parallel and Distributed Processing Symposium (IPDPS)*, May 2009.
- **M. Boyer**, K. Skadron, and W. Weimer. "Automated Dynamic Analysis of CUDA Programs." In *Third Workshop on Software Tools for MultiCore Systems (STMCS)*, April 2008.
- S. Che, J. W. Sheaffer, **M. Boyer**, L. G. Szafaryn, L. Wang, and K. Skadron. "A Characterization of the Rodinia Benchmark Suite with Comparison to Contemporary CMP Workloads." In *Proceedings of the IEEE International Symposium on Workload Characterization (IISWC)*, Dec. 2010.
- S. Che, **M. Boyer**, J. Meng, D. Tarjan, S. Lee, J. W. Sheaffer, and K. Skadron. "Rodinia: A Benchmark Suite for Heterogeneous Computing." In *Proceedings of the IEEE International Symposium on Workload Characterization (IISWC)*, Oct. 2009.
- S. Che, **M. Boyer**, J. Meng, D. Tarjan, J. W. Sheaffer, and K. Skadron. "A Performance Study of General-Purpose Applications on Graphics Processors using CUDA." *Journal of Parallel and Distributed Computing (JPDC)*, 68(10):1370-1380, June 2008.
- D. Tarjan, **M. Boyer**, and K. Skadron. "Federation: Repurposing Scalar Cores for Out-of-Order Instruction Issue." In *Proceedings of the 45th annual conference on Design Automation (DAC)*, June 2008.

RESEARCH EXPERIENCE

- **Research Assistant, University of Virginia**, Charlottesville, VA, 8/06 - 5/07, 8/07 - Present
Currently performing research with Professor Kevin Skadron on enabling a CPU and GPU to collaboratively execute a kernel to improve utilization and performance. Past research involved studying the performance and power impact of dynamically modulating the number, complexity, and instruction issuing policy (in-order versus out-of-order) of cores in a many-core system in order to make a dynamic tradeoff between aggregate throughput and single-thread latency.
- **Intern, Intel Corporation: SPEARS Research Group**, Hillsboro, OR, 5/07 - 8/07
Performed research on memory controller design. Studied the performance and power impact of modifying memory controller behavior based on contextual information about program execution provided by the cores. Received an overall rating of *Exceeds Expectations*.
- **Intern, Intel Corporation: Enterprise Microprocessor Group**, Hillsboro, OR, 6/05 - 8/05, 6/06 - 8/06
Supported timing clean up and convergence efforts in the MLPM and BEAR sections of the Nehalem project. Helped improve interconnect quality, built and debugged section timing models, and developed numerous Perl scripts to automate the timing analysis process. Received overall ratings of *Exceeds Expectations* and *Outstanding*.
- **Senior Project, Union College**, Schenectady, NY, 3/05 - 6/06
Designed and built a handheld tour guide system that uses signals from cell towers for real-time indoor localization and GPS for outdoor localization.
- **Undergraduate Researcher, Union College**, Schenectady, NY, 6/04 - 8/04
Performed SRC- and IBM-funded research on the verification of asynchronous circuits with Professor Cherrice Traver. Presented the results at the SRC Graduate Fellowship Program Annual Conference, one of only five undergraduates to do so.

TEACHING EXPERIENCE

- **Volunteer Tutor, Computer Science Help Desk**, Union College, 10/04 - 6/06
Helped college students with coursework from computer science classes. Beginning 9/05, also acted as coordinator, organizing schedules and providing feedback to professors.
- **Writing Tutor, Writing Center**, Union College, 9/05 - 6/06
Helped students improve both the process and product of writing. Specialized in technical writing, but worked with students from all disciplines.
- **Volunteer Instructor, Girls Inc.**, Schenectady, NY, 1/05 - 6/06
Taught courses in basic computer programming and robotics to underprivileged girls. Developed and implemented my own lesson plans.
- **Volunteer Instructor, Union College Robot Camp**, Union College, 6/04 - 7/04
Helped local middle and high school students build, test, and program robots.

COMPUTER SKILLS

Languages: C, C++, CUDA, OpenCL, Assembly, Perl, Java, VHDL, SQL, Python, Scheme, HTML, LaTeX, Visual Basic.

Operating Systems: Unix/Linux, Windows, Mac OS, PalmOS.

Programs: SimpleScalar, Cadence Virtuoso & Spectre, ModelSim, MaxPlus, Matlab, MySQL, Access, Excel, Word, PowerPoint, Visio, FrontPage, Inkscape, Photoshop.

GRADUATE COURSEWORK

Computer Organization, Advanced Computer Architecture, Parallel and Multicore Architecture, Non-Volatile Memory Systems, VLSI, Dark Silicon, Compilers, Operating Systems, Programming Languages, Parallel Programming, Algorithms, Statistics