MICHELLE LAUREN MCDANIEL

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OBJECTIVE

To obtain an internship position that leverages my current research in the effects of code alignment on performance and my background in dynamic profiling and performance analysis.

EDUCATION

UNIVERSITY OF VIRGINIA *Charlottesville, VA*

- Master of Computer Science. Advised by Dr. Kim Hazelwood. (Expected May 2012)
  Master's Project: "Assessing the Opportunities for Reactive Code Alignment"

- PhD Student, Computer Science. Advised by Dr. Kim Hazelwood. (Expected May 2014)

UNIVERSITY OF GEORGIA *Athens, GA*

- Bachelor of Science, Cum Laude with Honors, Computer Science. May 2009. 3.65 GPA.

GRADUATE COURSES

Computer Architecture, Compilers, Operating Systems, Dark Silicon, Special Topics in Programming Languages, Software Engineering, Database Systems, Theory of Computation

PUBLICATIONS

Workshops:

Michelle McDaniel and Kim Hazelwood. Runtime adaptation: a case for reactive code alignment. *International Workshop on Adaptive Self-Tuning Computing Systems for the Exaflop Era* (EXADAPT) March 2012. (to appear)

Technical Reports and Posters:

Michelle McDaniel and Kim Hazelwood. Performance characterization of mobile-class nodes: why fewer bits is better. *International Symposium on Performance Analysis of Systems and Software* (ISPASS) April 2011. (poster)

Ben Kreuter, Ryan Layer, Michelle McDaniel, Gabriel Robins, and Kevin Skadron. Accelerating genomic analyses using parallel sliding windows. Technical Report. November 2010.

PROJECTS

Current Research

- Using genetic algorithms to improve compiler heuristics. Using a genetic programming approach, we evolve compiler heuristics, including the simplification order function used in register allocation, in order to discover better heuristics that lead to improved performance of applications.
- Dynamic code alignment. I am researching the effects of code alignment on performance. I have developed a metric to score programs based on the alignment of the code that, along with dynamic profiling information, can be used to realign the code for better performance.

Operating Systems *Spring 2010*

- 64-bit operating systems vs. 32-bit operating systems on the Intel Atom processor. I found that performance on the Intel Atom processor did not improve by moving to a 64-bit processor like performance on server-class processors does.

Compilers *Spring 2010*

- Compiling for Intel Atom processors. I found that the performance trends across the varying optimization levels on the Intel Atom processor did not correspond to performance trends on more powerful processors.

Computer Architecture *Fall 2009*

- Parallelizing genomic analyses. We converted a sequential genomic analysis algorithm that identifies structural variations to CUDA, Cell B/E and multicore CPU to compare the performance of the three platforms and identify which platform was best for this algorithm and others like it.

TEACHING

University of Virginia: August 2009 – May 2010

- CS 2110 – Software Development Methods (Fall 2009)
- CS 2150 – Program and Data Representation (Spring 2010)
- CS 3330 – Computer Architecture (Fall 2009)
- CS 4501 – Special Topics in Computer Science: Game Design (Spring 2010)
- CS 4810 – Introduction to Computer Graphics (Spring 2010)

WORK EXPERIENCE

Microsoft—Software Development Engineer Intern *Microsoft Corporation; Redmond, WA*

May 2011 – August 2011: Interned with the Midori team working on the Phoenix compiler. Developed a genetic programming framework that evolves compiler heuristics using crossover and mutation in order to discover better versions of those heuristics. Discovered a compiler bug and worked to identify where in the compiler the bug manifested. Programmed in C#. Gave a presentation at the end to describe the summer's work.

Alltel Wireless—Intern *Alltel Wireless; Alpharetta, GA*
May 2008 – August 2008: Interned with the automated testing team. Designed test cases for the internal billing service. Programmed in VBScript and SQL. Worked with the Quick Test Professional suite to run test suites. Interacted with the development team to fix code that failed test cases.

PROFESSIONAL ACTIVITES

ACM-W, *University of Virginia Chapter*, Graduate Chair, 2010-2012.
ACM, Student Member
IEEE, Student Member
Alpha Phi Omega, *National Service Fraternity*, Life Member