Michael D. Bond

CONTACT INFORMATION

Department of Computer Sciences
The University of Texas at Austin
1 University Station C05000
Austin, TX 78712-0233 USA

E-mail: mikebond@cs.utexas.edu
Web: www.cs.utexas.edu/~mikebond
Office: (512) 232-7472

RESEARCH INTERESTS

Developing analyses and systems that help make increasingly complex and concurrent software dramatically more reliable, scalable, and secure than it is today. General areas: programming languages, runtime systems, compilers, and security.

EDUCATION

Ph.D., Computer Sciences, The University of Texas at Austin, 2008

- Title: Diagnosing and Tolerating Bugs in Deployed Systems
- Advisor: Professor Kathryn S. McKinley

M.C.S., Computer Science, University of Illinois at Urbana-Champaign, 2003

B.S., Computer Science, University of Illinois at Urbana-Champaign, 2002

AWARDS

ACM SIGPLAN Outstanding Doctoral Dissertation Award (2008)

Intel Ph.D. Fellowship (2006–2008)

Craziest idea (out of 10), Wild and Crazy Ideas session, ACM SIGPLAN International Symposium on Memory Management (ISMM) (2008)

Best Student Presenter, IEEE/ACM International Symposium on Code Generation and Optimization (CGO) (2004)

Microelectronics and Computer Development (MCD) Fellowship, The University of Texas at Austin (2003-2004)

REFEREED PUBLICATIONS

Indrajit Roy, Donald E. Porter, Michael D. Bond, Kathryn S. McKinley, and Emmett Witchel. Laminar: Practical Fine-Grained Decentralized Information Flow Control. *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, Dublin, June 2009.

Michael D. Bond and Kathryn S. McKinley. Leak Pruning. *ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Washington, DC, March 2009.

Michael D. Bond and Kathryn S. McKinley. Tolerating Memory Leaks. *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Nashville, TN, USA, October 2008.

Michael D. Bond and Kathryn S. McKinley. Probabilistic Calling Context. *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Montreal, October 2007.

Michael D. Bond, Nicholas Nethercote, Stephen W. Kent, Samuel Z. Guyer, and Kathryn S. McKinley. Tracking Bad Apples: Reporting the Origin of Null and Undefined Value Errors. *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Montreal, October 2007.

Byeongcheol Lee, Kevin Resnick, Michael D. Bond, and Kathryn S. McKinley. Correcting the Dynamic Call Graph Using Control Flow Constraints. *International Conference on Compiler Construction (CC)*, Braga, Portugal, March 2007.

Michael D. Bond and Kathryn S. McKinley. Bell: Bit-Encoding Online Memory Leak Detection. *ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, San Jose, CA, USA, October 2006.

Michael D. Bond and Kathryn S. McKinley. Continuous Path and Edge Profiling. *IEEE/ACM International Symposium on Microarchitecture (MICRO)*, Barcelona, November 2005.

Michael D. Bond and Kathryn S. McKinley. Practical Path Profiling for Dynamic Optimizers. *IEEE/ACM International Symposium on Code Generation and Optimization (CGO)*, San Jose, CA, USA, March 2005.

Rahul Joshi, Michael D. Bond, and Craig Zilles. Targeted Path Profiling: Lower Overhead Path Profiling for Staged Dynamic Optimization Systems. *IEEE/ACM International Symposium on Code Generation and Optimization (CGO)*, Palo Alto, CA, USA, March 2004.

In Preparation for Submission

Michael D. Bond, Katherine E. Coons, and Kathryn S. McKinley. Pacer: Proportional Data Race Detection. In preparation for submission to *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)* 2010.

Michael D. Bond, Graham Z. Baker, and Samuel Z. Guyer. Breadcrumbs: Efficient Context Sensitivity for Dynamic Bug Detection Analyses. In preparation for submission to *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)* 2010.

Technical Report

Michael D. Bond, Varun Srivastava, Kathryn S. McKinley, and Vitaly Shmatikov. Efficient, Context-Sensitive Detection of Semantic Attacks. Technical report TR-09-14, The University of Texas at Austin, 2009.

Professional Activities

Member of Program Committee, *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)* 2010

Member of External Review Committee, *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)* 2010

Member of Program Committee, *ACM SIGSOFT International Workshop on Multicore Software Engineering (IWMSE)* 2010

Reviewer for *ACM Transactions on Software Engineering and Methodology (TOSEM)* in 2009 and *Software: Practice and Experience (SPE)* in 2009

External reviewer for *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)* 2007 and 2008; *IEEE International Symposium on Performance Analysis of Systems and Software (ISPASS)* 2009; and *IEEE/ACM International Conference on Parallel Architectures and Compilation Techniques (PACT)* 2005 and 2006

Co-reviewer for *ACM Symposium on Principles of Programming Languages (POPL)* 2010; *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI)* 2009; *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)* 2007 and 2009; and *International Conference on Compiler Construction (CC)* 2007

SERVICE

Jikes RVM Team (2007–present)

Faculty Recruiting Committee, Department of Computer Sciences, The University of Texas at Austin (2007)

Co-chair of Graduate Student Faculty Recruiting Committee, Department of Computer Sciences, The University of Texas at Austin (2007)

System administrator for my research group's experimental machines (2005–present)

STUDENTS CO-ADVISED

Varun Srivastava, master's student (co-advised with Kathryn McKinley and Vitaly Shmatikov, 2008–present)

Graham Baker, Ph.D. student, Tufts University (co-advised with Samuel Guyer, 2008–2009)

Rudy Depena, master's student (co-advised with Kathryn McKinley, 2008–2009)

Stephen Kent, undergraduate student (co-advised with Kathryn McKinley, 2007–2008)

WORK EXPERIENCE

Postdoctoral fellow at The University of Texas at Austin (2009–present)

Research assistant at The University of Texas at Austin (2003–2008)

Research intern at Intel Corporation in Hillsboro, Oregon (2005)

Research assistant for David Padua and Craig Zilles at University of Illinois at Urbana-Champaign (2003)

Teaching assistant for Combinatorial Algorithms (CS 373) at University of Illinois at Urbana-Champaign (2002)

Software engineering intern at Edge Technologies (summers 2000–2002)

Assistant teacher for computer science course at Thomas Jefferson High School for Science and Technology (summers 1997–1999)

SOFTWARE ARTIFACTS

Laminar, Jikes RVM Research Archive,[1] 2009

[1] `http://www.jikesrvm.org/Research+Archive`

Leak Pruning, Jikes RVM Research Archive, 2008

Bad Apples Suite,[2] 12 real null pointer exception bugs (with Stephen W. Kent), 2008

Melt: Memory Leak Tolerance, Jikes RVM Research Archive, 2008

Probabilistic Calling Context, Jikes RVM Research Archive, 2007

- Richard Jones and Chris Ryder used this implementation for context-sensitive allocation sites in their 2008 paper in *ACM SIGPLAN International Symposium on Memory Management (ISMM)*.

Origin Tracking for Null References, Jikes RVM Research Archive, 2007

- Co-author Nick Nethercote implemented origin tracking for undefined values in Valgrind's Memcheck tool. It is available as a branch in the Valgrind Source Code Repository.[3]

Sleigh: A Memory Leak Detection Tool, Jikes RVM Research Archive, 2006

- Yan Tang, Qi Gao, and Feng Qin modified my leak detector for their 2008 paper in *USENIX Annual Technical Conference*.

PEP: Continuous Path and Edge Profiling, Jikes RVM Research Archive, 2006

Practical and Targeted Path Profiling, part of the Scale compiler,[4] 2005

- Kapil Vaswani, Aditya Nori, and Trishul Chilimbi modified the path profiling implementation for their 2007 papers in *ACM Symposium on Principles of Programming Languages (POPL)* and *ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE)*.

PRESENTATIONS

"Making Software Robust in Deployed Systems"

- University of Michigan at Ann Arbor, April 6, 2009
- Duke University, March 4, 2009
- University of Nebraska at Lincoln, February 24, 2009

"Leak Pruning," *ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Washington, DC, March 2009

"Tolerating Memory Leaks," *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Nashville, TN, USA, October 2008

"Deployed Software: An Ideal Environment for Fixing Bugs?"

- University of Illinois at Urbana-Champaign, July 9, 2008
- University of Washington, June 30, 2008
- University of Oregon, June 25, 2008
- Stanford University, June 23, 2008

[2] `http://www.cs.utexas.edu/~mikebond/bad-apples-suite`
[3] `svn://svn.valgrind.org/valgrind/branches/ORIGIN_TRACKING`
[4] `http://www-ali.cs.umass.edu/Scale/`

- University of California at Santa Cruz, June 20, 2008
- University of California at Berkeley, June 19, 2008
- University of California at San Diego, June 17, 2008
- Texas A & M University, June 3, 2008

"Bounding Leaky Programs," Wild and Crazy Ideas Session, *ACM SIGPLAN International Symposium on Memory Management (ISMM)*, Tucson, AZ, USA, 2008

- Awarded craziest idea (out of 10)
- Runner-up for most worthy of implementation

"Probabilistic Calling Context," *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Montreal, October 2007

"Tracking Bad Apples: Reporting the Origin of Null and Undefined Value Errors," *ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA)*, Montreal, October 2007

"Improving Software Reliability at Production Time"

- IBM Research, Hawthorne, NY, USA, October 18, 2007
- IBM Corporation, Austin, TX, USA, October 12, 2007
- Intel Corporation, Hillsboro, OR, USA, June 1, 2007

"Bell: Bit-Encoding Online Memory Leak Detection," *ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, San Jose, CA, USA, October 2006

"Continuous Path and Edge Profiling," *IEEE/ACM International Symposium on Microarchitecture (MICRO)*, Barcelona, November 2005

"Practical Path Profiling for Dynamic Optimizers," *IEEE/ACM International Symposium on Code Generation and Optimization (CGO)*, San Jose, CA, USA, March 2005

"Targeted Path Profiling: Lower Overhead Path Profiling for Staged Dynamic Optimization Systems," *IEEE/ACM International Symposium on Code Generation and Optimization (CGO)*, Palo Alto, CA, USA, March 2004

- Best Student Presenter

REFERENCES

Available on request