

Wei Zhang

IBM T.J.Watson Research Center
Programming Technologies Department
1101 Kitchawan Rd
Office 07-157
Yorktown Heights, NY 10598, USA

Voice: 1-914-945-2747
Web: http://researcher.watson.ibm.com/researcher/view_pubs.php?person=us-weiz
Email: weiz@us.ibm.com

Research Interests

I am interested in big data, parallel programming, and concurrent software reliability.

Employment

- 2013 – Present *Research Staff Member in X10 group, Programming Technologies Department*
IBM T.J.Watson Research Center, Yorktown Heights, NY, USA.
- 2012 *Summer Research Intern under supervision of Dr. Vineet Kahlon*
NEC Laboratories America, Princeton, NJ, USA.
- 2006 – 2008 *Software Engineer (JAVA programmer), Integration X, Denmark.*
Developed software solution for newspaper and magazine workflow.

Education

- 2008 – 2013 Ph.D in Computer Sciences
University of Wisconsin, Madison, WI, USA.
Advisor: Shan Lu
- 2005 – 2008 MSc. in Informatics, June 2008.
Technical University of Denmark, Lyngby, Denmark
- 2001 – 2005 B.S. in Computer Science and Engineering, June 2005.
Beijing University of Technology, Beijing, China

Research Experience

- 2013 – Present *Research Staff Member in X10 group, Programming Technologies Department*
IBM T.J.Watson Research Center, Yorktown Heights, NY, USA.
Focus on applying the X10 language to scale-out computing and big data analysis.
- 2012 *Summer Research Intern under supervision of Dr. Vineet Kahlon*
NEC Laboratories America, Princeton, NJ, USA.
Focused on multi-variable atomicity violation concurrency bug detection.

Research Experience (continued)

2009 — 2013 *Research Assistant under supervision of Prof. Shan Lu*
University of Wisconsin, Madison, WI, USA.

Focused on how to make concurrent software more reliable. In particular, I did research on how to detect and tolerate concurrency bugs through an effect-oriented approach.

Publications

Olivier Tardieu, David Grove, Benjamin Herta, Tomio Kamada, Vijay Saraswat, Mikio Takeuchi, **Wei Zhang** *X10 for Productivity and Performance at Scale A Submission to the 2013 HPC Class II Challenge*

Dongdong Deng, **Wei Zhang**, Shan Lu *Efficient Concurrency-Bug Detection Across Inputs International Conference on Object-Oriented Programming, Systems, Languages & Applications 2013 (OOPSLA 2013)*

Wei Zhang, Marc de Kruijf, Ang Li, Shan Lu, Karthikeyan Sankaralingam *ConAir: Feather-weight Concurrency Bug Recovery Via Single-Threaded Idempotent Execution Eighteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2013)*

Wei Zhang, Chong Sun, Junghee Lim, Shan Lu, Thomas Reps *ConMem: Detecting Crash-Triggering Concurrency Bugs through an Effect-Oriented Approach. ACM Transactions on Software Engineering and Methodology (Volume 22, Issue 2, March 2013) (TOSEM)*

Guoliang Jin, **Wei Zhang**, Dongdong Deng, Ben Liblit, Shan Lu *Automated Concurrency-Bug Fixing. 10th USENIX Symposium on Operating Systems Design and Implementation (OSDI 2012)*

Dongdong Deng, **Wei Zhang**, Borui Wang, Peisen Zhao, Shan Lu *Understanding the Interleaving-Space Overlap across Inputs and Software Versions. 4th USENIX Workshop on Hot Topics in Parallelism (HotPar 2012)*

Guoliang Jin, Linhai Song, **Wei Zhang**, Shan Lu, Ben Liblit. *Automated Atomicity-Violation Fixing. Programming Language Design and Implementation 2011 (PLDI 2011).*

Won SIGPLAN CACM Research Highlights Nomination

Wei Zhang, Junghee Lim, Ramya Olichandran, Joel Scherpelz, Guoliang Jin, Shan Lu, Thomas Reps, Shan Lu. *ConSeq: Detecting Concurrency Bugs through Sequential Errors. Sixteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2011).*

Wei Zhang, Chong Sun, Shan Lu. *ConMem: Detecting Severe Concurrency Bugs through an Effect-Oriented Approach. Fifteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2010).*

Wei Zhang. *Parallel Multi-Objective Branch and Bound.* In *Master of Science thesis, IMM-M.Sc-2008-39, Kongens-Lyngby, 2008*

Publications (continued)

Zhe Ren, ZhiYong Yin, **Wei Zhang**, XiangZhong Xu. *Design of Automobile CAN bus controller*. In *Control and Automation, China, 2007 Vol.23 No.8*.

Academic Talks

- 2013 *ConAir: Featherweight Concurrency Bug Recovery Via Single-Threaded Idempotent Execution*
Eighteenth International Conference on Architectural Support for Programming Languages and Operating Systems. Houston, TX.

- 2012 *ConAir: Featherweight Concurrency Bug Recovery Via Single-Threaded Idempotent Execution*
Wisconsin Computer Architecture Affiliates Meeting. Madison, WI.

- 2012 *Understanding the Interleaving-Space Overlap across Inputs and Software Versions*
4th USENIX Workshop on Hot Topics in Parallelism. Berkeley, CA.

- 2011 *ConSeq: Detecting Concurrency Bugs through Sequential Errors*
Sixteenth International Conference on Architectural Support for Programming Languages and Operating Systems. Newport Beach, CA.

- 2010 *ConMem: Detecting Severe Concurrency Bugs through an Effect-Oriented Approach*
Fifteenth International Conference on Architectural Support for Programming Languages and Operating Systems. Pittsburgh, PA.

Teaching Experience

- 2009 Teaching Assistant for "Advanced Operating System"
Instructor: Shan Lu. (University of Wisconsin, Madison, CS 736)

- 2008 -- 2009 Teaching Assistant for "Problem Solving Using Computers."
Instructor: Deb Deppeler. (University of Wisconsin, Madison, CS 310)

- 2007 Teaching Assistant for "High Performance Computing."
Instructor: Bernd Dammann. (Technical University of Denmark, IMM 02614)

Skill Set

Programming Language: C/C++, JAVA
Scripting Language: shell, python
Operating System: Windows, Linux, MacOS
Parallel Programming related: X10, pthread, OpenMP, MPI, Intel TBB, Intel STM
Program Instrumentation: PIN, LLVM