

MIN ZHAO

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Research Interests

Static and dynamic program analysis, compilers, programming languages, and software engineering tools.

Education

Ph.D., Computer Science, University of Pittsburgh, Summer 2006, expected.
Thesis: A Model-based Framework for Exploring the Application of Optimizations.
Co-advisors: Dr. Mary Lou Soffa and Dr. Bruce R. Childers.

M.S., Computer Science, University of Pittsburgh, May 2001.
Project: Sentient Map: A New Paradigm for Human-Computer Interface.
Advisor: Dr. Shi-kuo Chang.

M.S., Computer Science and Engineering, Xi'an Jiaotong University, P.R.China, April 1999.
Thesis: Fault-tolerance Strategies for Analog Signals in a Substation Automatic Monitoring System
Advisor: Professor Degen Shan.

B.E., Computer Science and Engineering, Xi'an Jiaotong University, P.R.China, July 1996.

Awards and Honors

Andrew Mellon Predoctoral Fellowship, 2003.

Finalist of 4th Annual Graduate Research Competition, Department of Computer Science, University of Pittsburgh, 2003.

Excellent Graduate, Xi'an Jiaotong University, P.R. China, 1999.

Huawei Fellowship, Xi'an Jiaotong University, P. R. China, 1998.

Research Experience

Research Assistant, University of Pittsburgh **Fall 2001 – present**
Developed an innovative framework for studying important properties of code optimizations.

- Designed and implemented the first practical technique for automatically determining the enabling and disabling interactions among optimizations, which is very useful for finding a good order to apply optimizations.
- Developed a novel model-based framework for accurately predicting the profitability of optimizations without actually applying them. Based on the predictions, the optimizer can intelligently select the profitable optimizations to apply.

Research Assistant, University of Pittsburgh **Spring 2000 – Summer 2001**
Developed a novel gesture-enhanced user interface.

- Co-designed and implemented a smart sentient map system, which can sense a user's input and generate the appropriate reactions such as retrieving and presenting the relevant information to the user. It provides a new paradigm for the human computer interface.

Research Assistant, Xi'an Jiaotong University

Fall 1997 – Spring 1999

- Involved in the design and implementation of a substation automatic monitoring system, focusing on its communication networks.
- Designed, implemented and evaluated different strategies for improving the fault-tolerance of analog signals in the substation automatic monitoring system.

Teaching and Advising Experience

Teaching Assistant

University of Pittsburgh

- CS 2310, Graduate-level Software Engineering, Spring 2001.
- CS 2550, Graduate-level Principles of Database Systems, Fall 2000.
- CS 1631, Undergraduate Software Engineering, Spring 2001.
- CS 1555, Undergraduate Database Management Systems, Fall 2000, Fall 1999.
- CS 401, Undergraduate Introduction to Programming with C++, Spring 2000, Fall 1999.

Taught lab sections for CS 401, co-designed and graded assignments, maintained software and instructions for course projects and held office hours for all courses.

Guest Lectures

University of Pittsburgh

- Implementing a code generator for Cool language for Implementation of Programming Languages (CS 2210), Fall 2002.
- Developing Multimedia Information Custom Engineering (MICE) applications for Software Engineering (CS 2310), Spring 2001.
- Data storage for Database Management Systems (CS 1555), Fall 2000.

Informal Undergraduate Advising

University of Pittsburgh

- Co-advised Jason Mars on continuous compilation project from summer 2004. Jason is currently a graduate student in the Department of Computer Science at the University of Pittsburgh.

Journal Publications

Min Zhao, Bruce R. Childers and Mary Lou Soffa, "Profit-driven Scalar Optimizations", *ACM Transactions on Architecture and Compiler Optimization (TACO)*, submitted May 2005, conditionally accepted October 2005, revised paper submitted November 2005.

Min Zhao and Degen Shan, "Communication Networks in a Substation Automatic Monitoring System", *Transactions on Industrial Automatic Control Systems*, September 1998.

Conference Publications

When known, the acceptance rates are listed.

Min Zhao, Bruce R. Childers and Mary Lou Soffa, "Automatically Determining Optimization Interactions", under review for *ACM/SIGPLAN Conference on Programming Language Design and Implementation (PLDI)*, November 2005.

Min Zhao, Bruce R. Childers and Mary Lou Soffa, "A Model-based Framework: an Approach for Profit-driven Optimization", *ACM/IEEE International Symposium on Code Generation and Optimization (CGO)*, San Jose, California, March 2005. (The acceptance rate is 25/75.)

Min Zhao, Bruce R. Childers and Mary Lou Soffa, "Predicting the Impact of Optimizations for Embedded Systems", *ACM SIGPLAN Symposium on Languages, Compilers, and Tools for Embedded Systems (LCTES)*, San Diego, California, June 2003. (The acceptance rate is 29/128.)

Shi-Kuo Chang, Min Zhao and Xuan Zou, "A Sentient Map as a New Paradigm for Human-Computer Interface", *First International Conference on Universal Access in Human-Computer Interaction*, New Orleans, Louisiana, August 2001.

Technical Reports

Min Zhao, Bruce R. Childers and Mary Lou Soffa, "Profit-driven Optimizations", *University of Pittsburgh, Department of Computer Science, Technical Report, TR-05-129, December 2005.*

Min Zhao, Bruce R. Childers and Mary Lou Soffa, "FPO: A Framework for Predicting the Impact of Optimizations", *University of Pittsburgh, Department of Computer Science Technical Report, TR-02-02, December 2002.*

Presentations

"A Model-based Framework: an Approach for Profit-driven Optimization". *ACM/IEEE International Symposium on Code Generation and Optimization*, San Jose, California, March 2005.

"FPO: A Framework for Predicting the Impact of Optimizations", *4th Annual Graduate Research Competition*, Department of Computer Science, University of Pittsburgh, April 2003.

"Predicting the Impact of Optimizations for Embedded Systems". *ACM SIGPLAN Symposium on Languages, Compilers, and Tools for Embedded Systems*, San Diego, California, June 2003.

Reviewing

Severed as a reviewer for CGO'04, LCTES'03, Static Analysis Symposium'03 and Workshop on Exploring the Trace Space for Dynamic Optimization Techniques'03.

Associations

Association for Computing Machinery (ACM)

ACM Special Interest Group on Programming Languages (SIGPLAN)

References

Mary Lou Soffa

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