

Apan Qasem

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EDUCATION	Rice University Ph.D. in Computer Science - Dissertation Topic: <i>Automatic Tuning of Scientific Applications</i> - Advisor: Ken Kennedy	Houston, TX Jan 2008
	Florida State University M.S. in Computer Science - Thesis Topic: <i>Using a Swap Instruction to Coalesce Loads and Stores</i> - Advisor: David Whalley	Tallahassee, FL May 2001
	Ohio Wesleyan University B.A. in Computer Science and Economics	Delaware, OH May 1998

RESEARCH INTERESTS	<ul style="list-style-type: none">- Software technology for high-performance computing- Optimizing compilers- Performance analysis- Computer architecture
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RESEARCH EXPERIENCE	Texas State University <i>Assistant Professor</i> - leading a research group in high-performance computing - developing software technology to exploit architectural features on multi-core systems for higher performance and lower power consumption	<i>Sep 2007- present</i>
	Rice University <i>Research Assistant</i> - developed a system for automatic tuning that combines compiler cost models and heuristic search - developed heuristic models for memory hierarchy transformations	<i>Aug 2002 - Aug 2007</i>
	Florida State University <i>Research Assistant</i> - developed a strategy for reducing memory traffic by exploiting special architectural instructions	<i>Jun 2000 - May 2001</i>

TEACHING
EXPERIENCE

Texas State University

Assistant Professor

Sep 2007 - present

- Crafting Compilers, Spring 2009
taught graduate compilers course, lectured via ITV
- Program Translators, Spring 2009
taught undergraduate compilers course
- Foundations of Computer Science, Fall 2008
taught introductory computer science course, enrollement 80
- Unix Systems Programming, Spring 2008
taught undergraduate course in systems programming
- Crafting Compilers, Spring 2008
taught graduate compilers course, lectured via ITV
- Program Translators, Spring 2008
taught undergraduate compilers course
- Foundations of Computer Science, Fall 2007
taught introductory computer science course, enrollement 78

Rice University

Teaching Assistant

Aug 2001 - May 2003

- Advanced Compiler Construction, Fall 2003
gave lectures, designed and graded lab assignments
- Theory of Automata and Formal Languages, Spring 2003
graded exams and assignments, prepared homework solutions
- Computer Organization, Fall 2002
gave lectures, lead lab sessions
- Applied Algorithms and Data Structures, Spring 2002
lead lab sessions, graded exams and assignments
- Intermediate Programming, Fall 2001
lead lab sessions, graded exams and assignments

North South University

Visiting Lecturer

May 2001 - Aug 2001

- Theory of Automata (2 sections, 35 students/section)
full teaching responsibility: designed syllabus, lectured, supervised TAs
- Compiler Construction (35 students)
full teaching responsibility: designed syllabus, lectured, supervised TAs

Florida State University

Lecture Instructor

Jan 2000 - May 2000

- Micro Applications for Business (2 sections, 150 students/section)
full teaching responsibility: lectured, supervised TAs

Teaching Assistant

Aug 1999 - Dec 1999

- Computer Literacy (5 sections, 20 students/section)
lead recitation sessions, graded lab assignments

Ohio Wesleyan University

Grader

Jan 1998 - May 1998

- Introduction to Computer Programming
graded programming assignments

GRANTS

“Investigating the Challenges of Mapping OR Algorithms on Multi-core Systems”, Texas State University Research Enhancement Program - \$10,707, Dec 2008.

“Balancing Data Locality and Parallelism for Improved Application Performance on CMPs”, **IBM Faculty Award**, Sep 2008.

“A Loop Transformation Tool for Improving Application Performance”, Rice University sub-contract from DOE - \$43,326, Jun 2008

“Software Support for Better Utilization of the Shared-cache Architecture on Multi-core Systems”, Texas State University Research Enhancement Program - \$8,000, Dec 2007.

PUBLICATIONS

Apan Qasem and Ken Kennedy, “Model-guided Empirical Tuning of Loop Fusion”, International Journal of High Performance Systems Architecture, Vol 1, Issue 3, Nov 2008.

Qing Yi and Apan Qasem, “Exploring the optimization space of dense linear algebra kernels”, In Proceedings of the 21st International Workshop on Languages and Compilers for Parallel Computing, (LCPC), Aug 2008.

Apan Qasem, “Evaluating an Early Stop Criterion and a Statistical Pruning Strategy of the Optimization Search Space”, International Conference on Parallel and Distributed Processing Techniques and Applications, Jul 2008.

Apan Qasem and Ken Kennedy, “Pruning the Optimization Search Space Using Architecture-aware Cost Models”, Proceedings of the First Workshop on Statistical and Machine Learning Approaches Applied to Architecture and Compilation (SMART07), Jan 2007

Apan Qasem and Ken Kennedy, “Profitable Loop Fusion and Tiling Using Model-driven Empirical Search”, Proceedings of the 20th ACM International Conference on SuperComputing (ICS06), Jun 2006.

Apan Qasem, Ken Kennedy and John Mellor-Crummey. “Automatic Tuning of Whole Applications Using Direct Search and a Performance-based Transformation System”, The Journal of Supercomputing, 36(2):183-196, (Special Issue on Computer Science Research Supporting High-Performance Applications, Rod Oldehoeft, guest editor.), May 2006.

Apan Qasem and Ken Kennedy. “A Cache-conscious Profitability Model for Empirical Tuning of Loop Fusion”, Proceedings of the 18th International Workshop on Languages and Compilers for Parallel Computing, Oct 2005.

Apan Qasem, Ken Kennedy and John Mellor-Crummey. “Automatic Tuning of Whole Applications Using Direct Search and a Performance-based Transformation System”, Proceedings of the Los Alamos Computer Science Institute 5th Annual Symposium, Oct 2004.

Robert Fowler, John Mellor-Crummey, Guohua Jin and Apan Qasem. “A Source-to-source Loop Transformation Tool”. Extended poster abstract. Proceedings of the Los Alamos Computer Science Institute 3rd Annual Symposium, Oct 2002.

Apan Qasem, David Whalley, Xin Yuan, and Robert van Engelen. “Using a Swap Instruction to Coalesce Loads and Stores” Proceedings of the European Conference on Parallel Computing, Aug 2001.

HONORS AND
AWARDS

Rice University Computer Science Department Fellowship
Presidential Scholarship at Ohio Wesleyan University
Florence Leas Prize for Excellence in Mathematics
Phi Kappa Phi
Upsilon Pi Epsilon - Computer Science Honor Society
Pi Mu Epsilon - Math Honor Society

2001
1994-1998
1995

REFERENCES

1. **John Mellor-Crummey**
Associate Professor
Department of Computer Science
Rice University
MS 132, P.O. Box 1892 Houston, TX 77251
(713) 348-5179
johnmc@cs.rice.edu
2. **David Whalley**
E. P. Miles Professor and Chair
Computer Science Department
Florida State University
160 Love Building, Tallahassee, FL 32306-4530
(850) 644-3506
whalley@cs.fsu.edu
3. **John Greiner** (Teaching Reference)
Lecturer
Department of Computer Science
Rice University
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