

# Michael I. Gordon

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**Interests** Compilers, computer architecture, programming languages, and parallelization.

**Education** **Massachusetts Institute of Technology** Cambridge, MA  
*September 2002 - Present*

Candidate for PhD in *Electrical Engineering and Computer Science* with minor in History. Advised by Saman Amarasinghe. Expected date of graduation September, 2007.

**Massachusetts Institute of Technology** Cambridge, MA  
*September 2000 - August 2002*

Master of Engineering in *Electrical Engineering and Computer Science*, August, 2002.  
*Cumulative Graduate GPA: 5.0/5.0*

**Rutgers University** New Brunswick, NJ  
*September 1996 - May 2000*

Bachelor of Science in *Computer Science*, May, 2000.  
*Cumulative Undergraduate GPA: 3.98/4.0*  
*Cumulative Undergraduate GPA in major: 4.0/4.0*

**Research Experience** **MIT Computer Science and Artificial Intelligence Laboratory** Cambridge, MA  
*Research Assistant: May 2001 - Present*

Researching language and compiler technology for streaming programming languages. Participated in the design and evolution of the StreamIt programming language and compiler. Investigating novel algorithms for mapping StreamIt to parallel architectures (clusters, multicores, GPUs). Implemented a fully-automated parallelizing compiler for StreamIt targeting MIT's Raw multicore microprocessor.

**MIT Computer Science and Artificial Intelligence Laboratory** Cambridge, MA  
*Research Assistant: September 2000 - May 2001*

Investigated novel SIMD/VLIW hybrid micro-architectures enabled by compiler technology developed at MIT. Implemented a parameterized simulator to model simple hybrid SIMD/VLIW machines and a backend for the SUIF compiler infrastructure that targeted this simulator.

**Rutgers University, Computer Science Department** Piscataway, NJ  
*Research Assistant: May 1999 - August 2000*

Investigated areas of optimization in Java concerning exception handling. Designed and implemented a tool for statically and dynamically examining the usage patterns of user thrown exceptions in Java source code. Completed a study of exceptional program behavior.

**Publications & Presentations** Michael I. Gordon, William Thies, and Saman Amarasinghe. **Exploiting Coarse-Grained Task, Data, and Pipeline Parallelism in Stream Programs.** *Architectural Support for Programming Languages and Operating Systems*, San Jose, CA USA, October, 2006.

Jiawen Chen, Michael I. Gordon, William Thies, Matthias Zwicker, Kari Pulli, and Fredo Durand. **A Reconfigurable Architecture for Load-Balanced Rendering.** *Graphics Hardware 2005*, Los Angeles, CA USA, August, 2005.

Michael I. Gordon, William Thies, Michal Karczmarek, Jasper Lin, Ali S. Meli, Chris Leger, Andrew A. Lamb, Jeremy Wong, Henry Hoffman, David Z. Maze, and Saman Amarasinghe. **A Stream Compiler for Communication-Exposed Architectures.** *Architectural Support for Programming Languages and Operating Systems*, San Jose, CA USA, October, 2002.

Michael I. Gordon. **StreamIt on Raw.** *Presented at MIT Computer Architecture Workshop.* September 2002.

Michael I. Gordon. **A Stream-Aware Compiler for Communication-Exposed Architectures.** *S.M. Thesis, Massachusetts Institute of Technology*, August, 2002.

William Thies, Michal Karczmarek, Michael I. Gordon, David Z. Maze, Jeremy Wong, Henry Hoffman, Matthew Brown, and Saman Amarasinghe. **A Common Machine Language for Grid-Based Architectures.** *ACM SIGARCH Computer Architecture News*, June, 2002.

Michael I. Gordon. **The StreamIt Compiler.** *Presented at Student Oxygen Workshop.* June 2002.

William Thies, Michal Karczmarek, Michael I. Gordon, David Z. Maze, Jeremy Wong, Henry Hoffman, Matthew Brown, and Saman Amarasinghe. **StreamIt: A Compiler for Streaming Applications.** *MIT/LCS Technical Memo LCS-TM-622*, December, 2001.

Barbara G. Ryder, Donald Smith, Ulrich Kremer, Michael I. Gordon, Nirav Shah. **A Static Study of Java Exceptions Using JESP.** *Ninth Annual International Conference on Compiler Construction*, Berlin, Germany, pp 67-81, March 2000.

## Work Experience

### Reservoir Labs

New York, NY

*Intern: May 2004 - September 2004*

Implemented an optimized translation from StreamIt to the intermediate representation of Reservoir Labs' compiler. Implemented a static analysis to convert a StreamIt channel expression into an array access indexed by an affine function of enclosing induction variables.

### Pitney Bowes

Mount Laurel, NJ

*Technical Consultant: June 1995 - January 1998*

Responsibilities included CAD, database programming, and system administration.

## Professional Activities

- *Organizer:* MIT Student Architecture Workshop (2004).
- *Reviewer:* Conference on Architectural Support for Programming Languages and Operating Systems (2006); ACM SIGPLAN Conference on Programming Language Design and Implementation (2004, 2005); IEEE/ACM International Symposium on Code Generation and Optimization (2003).
- *Judge:* MIT 6.189 Multicore Programming Primer course projects (January 2007).

## Teaching Experience

### Massachusetts Institute of Technology

Cambridge, MA

*Teaching Assistant for 6.035 Computer Language Engineering: Fall 2006*

Responsibilities included developing and delivering recitation lectures, preparing tests, and modifying course project.

*Research Supervisor: Fall 2004 - Present*

Directly supervised the research progress of two MIT Master's students who were contributing to the development of the StreamIt compiler infrastructure.

**Proficiencies**

- *Programming Languages:* C/C++, Java, Perl, Scheme, Prolog.
- *Operating Systems:* Unix, Linux, Windows.
- *Other:* SQL, Matlab.

**Personal**

- Big Brother, Big Brother Massachusetts Bay: Summer 2004 - Present
- Enjoy an active lifestyle, including sports, outdoor activities, and travel.
- Play various stringed musical instruments (guitar, banjo, mandolin).