

## Michelle Goodstein

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### CONTACT INFORMATION

Computer Science Department  
Gates Hillman Center 7010  
Carnegie Mellon University  
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### RESEARCH INTERESTS

Algorithms and tools for dynamically monitoring parallel programs for bugs and security exploits without assuming specialized hardware or sequential consistency, focusing on the Log-Based Architecture (LBA) project as a platform for testing.

### EDUCATION

**Carnegie Mellon University**, Pittsburgh, Pennsylvania USA

Ph.D. Candidate, Computer Science  
Advisor: Todd Mowry  
PhD Expected: May 2012  
Thesis Title: *Parallel Dynamic Dataflow Analysis for Monitoring Parallel Programs*  
M.S., Computer Science, May 2008

**University of Washington**, Seattle, WA USA

B.S., Computer Science, June 2005  
Magna Cum Laude with College Honors in Computer Science  
B.S., Mathematics, June 2005  
Magna Cum Laude

### SELECTED HONORS AND AWARDS

- Intel Graduate Fellowship, 2011-2012
- Intel Research Pittsburgh/CMU Summer Fellowship, 2010
- Intel Research Pittsburgh/CMU Summer Fellowship, 2008
- Clare Booth Luce Graduate Fellowship Recipient, 2005-2007
- Outstanding Graduating B.S. in Mathematics Award (Standard Major), 2005
- Phi Beta Kappa, 2003
- University of Washington Sophomore Medalist, 2001-2002  
Highest academic achievement among sophomores, awarded to one individual per year

### RESEARCH EXPERIENCE

*Graduate Student* **January 2008-present**  
Advised by: Todd Mowry

Adapted static dataflow analysis techniques to dynamic parallel program monitoring to detect errors and security risks, in a framework called *Butterfly Analysis*. Extending Butterfly Analysis to incorporate high level synchronization-based happens-before arcs to improve precision.

*Graduate Student* **August 2005-December 2007**  
Advised by: Manuel Blum

Created a game with a strategy-proof game to detect web spam based on webpage content and implemented an online demo.

*Undergraduate Research* **September 2004-June 2005**  
Advised by: Anna Karlin

Researched the use of spectral techniques to improve collaborative filtering recommendations and empirically tested the quality of results returned by our algorithm.

## SERVICE

**Carnegie Mellon University**, Pittsburgh, Pennsylvania USA

*Graduate Student Ombudsperson, Computer Science Department* **Fall 2010 - present**  
Act as a confidential resource for graduate students in the Computer Science Department, listening and offering advice when approached.

*Member, ASPLOS 2011 Organizing Committee* **Summer 2010 - Winter 2011**  
Program Committee Webmaster

*Student Representative, Handshake Committee* **Fall 2010**  
Served as the student representative on the Handshake Committee, which pairs advisors with new students in the PhD program of the Computer Science Department.

*Student Member, Speaking Skills Committee* **Spring 2008 - present**  
Attend, judge and give feedback to students attempting to fulfill the Speaking Skills requirement necessary for obtaining a PhD in Computer Science.

**University of Washington**, Seattle, Washington USA

*Undergraduate Student Rep., Undergraduate Curriculum Committee* **Fall 2004 - Spring 2005**  
Serve as one of two undergraduate student representatives.

TEACHING  
EXPERIENCE

**Carnegie Mellon University**, Pittsburgh, Pennsylvania USA

*Teaching Assistant, Graduate Architecture* **September, 2009 - December 2009**  
Helped design and grade student homeworks, evaluated final projects and held weekly office hours.

*Teaching Assistant, Undergraduate Algorithms* **January, 2007 - May, 2007**  
Led weekly recitation section, managed course website, graded student homework and exams, and held weekly office hours.

**University of Washington**, Seattle, Washington USA

*Student Lab Assistant, Introduction to Digital Design* **March 2004 - June 2005**  
Assisted students with their weekly labs, helped prepare assignments and assisted with lab upkeep.

## PUBLICATIONS

Michael P. Ashley-Rollman, Padmanabhan S. Pillai, and **Michelle L. Goodstein**. Simulating multi-million-robot ensembles. In *IEEE International Conference on Robotics and Automation (ICRA 2011)*, May 2011.

**Michelle L. Goodstein**, Evangelos Vlachos, Shimin Chen, Phillip B. Gibbons, Michael A. Kozuch, and Todd C. Mowry. Butterfly Analysis: Adapting Dataflow Analysis to Dynamic Parallel Monitoring. In *Proceedings of the Fifteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2010)*, March 2010.

Evangelos Vlachos, **Michelle L. Goodstein**, Michael A. Kozuch, Shimin Chen, Babak Falsafi, Phillip B. Gibbons, and Todd C. Mowry. ParaLog: Enabling and Accelerating Online Parallel Monitoring of Multithreaded Applications. In *Proceedings of the Fifteenth International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2010)*, March 2010.

TECHNICAL  
REPORTS

Evangelos Vlachos, **Michelle Goodstein**, Michael Kozuch, Shimin Chen, Babak Falsafi, Phillip B. Gibbons, Todd C. Mowry, and Olatunji Ruwase. Parallel LBA: Coherence-based Parallel Monitoring of Multithreaded Applications. Carnegie Mellon University Technical Report CMU-CS-09-108, March 2009.

**Michelle Goodstein**, Evangelos Vlachos, Shimin Chen, Phillip Gibbons, Michael Kozuch, and Todd C. Mowry. The Butterfly Model: Theoretical Foundations. Carnegie Mellon University Technical Report CMU-CS-08-170, February 2009.

**Michelle Goodstein** and Virginia Vassilevska. A Two Player Game To Combat Web Spam. Carnegie Mellon University Technical Report CMU-CS-07-134, June 2007.

CONFERENCE  
POSTER

Arvind Ramanathan\*, **Michelle Goodstein**\*, Robert Sedgewick, and Dannie Durand. Models of Network Evolution. In 4th Annual RECOMB Satellite on Regulatory Genomics, 2007.

\*First two authors contributed equally.