

# PETER DILLINGER

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## Research Interest

I am interested in developing tools and techniques that aid in the development of correct, reliable software systems. With a breadth of knowledge in analysis, verification, languages, and compilers, I have focused on improving formal verification algorithms and tools--so that these might become equally as capable as they are essential to the production of complex, reliable software.

## Education

- 8/2003 - Present    *Doctor of Philosophy in Computer Science* (in progress)  
At Georgia Institute of Technology, 2003 - 2007;  
Northeastern University, 2007 - present  
*Thesis research:* Algorithms and data structures that improve the efficiency and usability of explicit-state model checking tools.
- 8/2002 - 8/2003    *Master of Science in Computer Science* · Georgia Institute of Technology  
Areas of focus: Compilers, Languages, Program Analysis and Verification, and Formal Methods
- 8/1999 - 8/2002    *Bachelor of Science in Computer Science* · Georgia Institute of Technology  
Specialization areas: Compilers, Operating Systems, Artificial Intelligence, Theory

## Work Experience

*Research assistant* · Georgia Tech and Northeastern University

- 1/2005 - present (most terms)    Research with Prof. Manolios on an NSF project to make the ACL2 theorem proving system more accessible to beginners, so that it could be introduced in undergraduate courses. The current tool is available as a plug-in to Eclipse called "ACL2s: The ACL2 Sedan"; it has been used quite successfully in several graduate courses and a large undergraduate course.
- 8/2004 - 12/2004,  
5/2003 - 5/2004,  
5/2001 - 8/2001    Other projects with Prof. Manolios and Prof. Harrold.

*Industry Research Intern* · NASA Ames Laboratory/Mission Critical Technologies

- 5/2006 - 7/2006    Summer intern with the Robust Software Engineering group, working with Willem Visser, Corina Pasareanu, and Peter Mehltz. I made significant advancements to

the Java PathFinder (JPF) model checker. Most notably, I retooled the state hashing and matching system to be much faster and provide highly configurable and customizable state abstractions. Along with integrating this and other improvements, I gained a reputation for being able to track down and isolate deep bugs in JPF itself.

*Industry Research Intern* · NASA/Caltech Jet Propulsion Laboratory

5/2004 - Summer intern at the Laboratory for Reliable  
7/2004 Software, working with Gerard Holzmann and Rajeev Joshi.

- Integrated some of my enhancements to the SPIN model checker into an official release.
- Worked on specification and implementation of automaton-based static checkers.
- Developed a unique preprocessor for C that supports program analysis.

*Instructor* · Georgia Governor's Honors Program

6/2005 - Math instructor for the six week program, which gives  
7/2005, enrichment in mathematics to about a hundred of the  
6/2007 - state's most talented, most interested high school  
7/2007 juniors and seniors.

- Developed my own curricula for courses based on Math that is not offered in high schools.
- Gave daily lectures and supervised student research projects.
- Taught courses on Cryptography, Logic, Theory of Computation, Functional Programming, and Introductory Programming.

*Teaching assistant* · Georgia Tech and Northeastern University

1/2008 - 5/2008 (NEU), Assisted in undergraduate Computer  
8/2002 - 5/2003 (GT), Science courses by giving recitations,  
5/2000 - 5/2002 (GT) providing one-on-one help, grading work, and developing entire tests and programming assignments.

**Publications**

- Peter C. Dillinger and Panagiotis Manolios. Enhanced Probabilistic Verification with 3Spin and 3Murphi. Tool paper in proc. of 12th International SPIN Workshop (2005). Volume 3639 of Springer LNCS.
- Peter C. Dillinger and Panagiotis Manolios.

Bloom Filters in Probabilistic Verification.  
In Proc. of Formal Methods in Computer-Aided Design  
(FMCAD), 2004.  
Volume 3312 of Springer LNCS.

- Peter C. Dillinger and Panagiotis Manolios.  
Fast and Accurate Bitstate Verification for SPIN.  
In Proc. of 11th International SPIN Workshop (2004).  
Volume 2989 of Springer LNCS.

## **Honors**

- *Highest Honors* designation on undergraduate degree (3.70 / 4.00 GPA).
- *Honorable Mention* for 2004 NSF Graduate Research Fellowship competition.

## **References**

- Panagiotis (Pete) Manolios, Associate Professor, Northeastern University  
pete@ccs.neu.edu  
617-373-3694
- Willem Visser, Senior Software Engineer, SEVEN Networks  
(Formerly a contractor at NASA/Ames)  
willem@gmail.com
- Mary Jean Harrold, Professor, Georgia Institute of Technology  
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404-385-0612
- *More references available upon request.*