## Ross Tate

Contact

Department of Computer Science and Engineering

Information

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RESEARCH INTERESTS Language Design, Program Optimization, Type Theory, Semantics, Program Analysis

EDUCATION

University of California, San Diego, CA USA

Ph.D., Computer Science and Engineering (expected graduation date: June 2012)

- Advisor: Associate Professor Sorin LernerConcentration: Programming Languages
- California Polytechnic State University, San Luis Obispo, CA USA

B.S., Mathematics, June 2006 B.S., Computer Science, June 2006

Publications

Ross Tate, Alan Leung, and Sorin Lerner. Taming Wildcards in Java's Type System. *PLDI '11: Proceedings of the conference on Programming Language Design and Implementation*.

Ross Tate, Mike Stepp, Zachary Tatlock, and Sorin Lerner. Equality Saturation: a new Approach to Optimization. LMCS-7(1:10) '11: Logical Methods in Computer Science.

Mike Stepp, Ross Tate, and Sorin Lerner. Equality-based Translation Validator for LLVM. CAV '11: Proceedings of the conference on Computer Aided Verification.

Ross Tate, Juan Chen, and Chris Hawblitzel. Inferable Object-Oriented Typed Assembly Language. *PLDI '10: Proceedings of the conference on Programming Language Design and Implementation*.

Ross Tate, Mike Stepp, and Sorin Lerner. Generating Compiler Optimizations from Proofs. *POPL '10: Proceedings of the symposium on Principles of Programming Languages*.

Ross Tate, Mike Stepp, Zachary Tatlock, and Sorin Lerner. Equality Saturation: a new Approach to Optimization. POPL '09: Proceedings of the symposium on Principles of Programming Languages.

## INDUSTRY COLLABORATION

## Red Hat

Type-System Advisor for Ceylon programming-language design and implementation team

The Ceylon team at Red Hat is designing a new industry-directed statically typed object-oriented programming language, attempting to incorporate the years of experience proffered by languages such as Java, C#, and Scala. They contacted me due to my work on wildcards in Java, adapting the declaration-site variant of my solution into their own language. From that, I started a collaboration with them in which I review their type system and language specification, identify problems and opportunities, and discuss solutions, which is leading to interesting new type theories and new algorithms for type checking and type inference while still maintaining simplicity for users of the language.

AWARDS Microsoft Research Fellowship, 2009

INDUSTRY Microsoft Research, Redmond, WA USA

Research Integrating Effects into Functional Programming Languages

EXPERIENCE Research Intern August 2009 to November 2009

Mentored by Daan Leijen

Microsoft Research, Redmond, WA USA

Type Inference over Assembly Code from Object-Oriented Programs

Research Intern July 2008 to October 2008

Mentored by Juan Chen and Chris Hawblitzel

Teaching Instructor for CSE-130: Undergraduate Programming Languages

EXPERIENCE

10-Lecture Seminar on Category Theory and Applications to Computer Science

Teaching Assistant for Ranjit Jhala for CSE-130: Programming Languages

Guest Lecturer for Sorin Lerner for CSE-130: Programming Languages

Student Lecture at Cal Poly SLO for Math-541: Topology II

INDUSTRY **Treyarch**, Santa Monica, CA USA EXPERIENCE Console Video Game Developer

Programming Intern on Spider-Man Web of Shadows July 2007 to Sept. 2007

Game-Play Engineer Intern on Spider-Man 3 June 2005 to Sept. 2005

CustomFlix, San Luis Obispo, CA USA

Independent and User Film Production and Marketing Website

Junior Software Engineer May 2004 to November 2004