

Polyvios Pratikakis

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EDUCATION

University of Maryland at College Park

Ph.D. in Computer Science

August 2008

M.Sc. in Computer Science

September 2004

Advisor: Michael Hicks

Coadvisor: Jeffrey S. Foster

National Technical University of Athens, Athens, Greece

Diploma of Electrical & Computer Engineering

September 2002

Diploma Thesis Advisor: Nektarios Kozyris

University of Oregon

Summer School on Software Security: Theory to Practice

Summer 2004

RESEARCH EXPERIENCE

Post-doctoral Researcher

September 2008 – September 2009

VERIMAG, CNRS, Grenoble, France *Advisor:* Radu Iosif

Worked on verification of concurrent programs with pointers, using separation logic, and model checking with counter automata. Developed model-checking tools for the verification of list programs (L2CA) and array programs (A2CA) using counter automata. Also worked on shared-memory semantics and compilation for component-based parallel systems.

Graduate Research Assistant

Spring 2007 – Spring 2008

Dept. of Computer Science, University of Maryland

Advisors: Michael Hicks, Jeffrey Foster

Worked on formalization and proof of soundness for Contextual Effects, and encoding and mechanization of proof in Coq.

Research Intern

Summer 2006

Singularity Group, Microsoft Research

Mentor: Chris Hawblitzel

Worked on a proof/type checker for the calculus of inductive constructions with linear types (CLIC), for verifying proofs of properties in low-level code. Worked on creating and encoding proofs for array bounds checks in CLIC.

Graduate Research Assistant

Summer 2003 – Spring 2006

Dept. of Computer Science, University of Maryland

Advisors: Michael Hicks, Jeffrey Foster

Worked on static analysis and qualifier inference for Java, implemented tool for supporting transparent futures in Java programs, formalized it and proved its soundness. Worked on Locksmith, a fast static analysis tool for race detection in C programs with formalization and proof of soundness for its correlation inference. Worked on support for existential

context sensitivity in cubic-time label flow (points-to) analysis for increased precision on recursive data structures, formalized the analysis and proved its soundness.

TEACHING EXPERIENCE

Guest Lecturer Introductory Course on Logic and Automata Theory, Verimag, Grenoble	Spring 2009
Guest Lecturer CMSC631: Program Analysis and Understanding, University of Maryland	Fall 2007
Guest Lecturer CMSC631: Program Analysis and Understanding, University of Maryland	Fall 2006
Graduate Teaching Assistant CMSC424: Database Design, University of Maryland	Spring 2003 Prof. Nick Roussopoulos
Graduate Teaching Assistant CMSC424: Database Design, University of Maryland	Fall 2002 Prof. Sudarshan Chawathe

REFEREED PUBLICATIONS

- [1] **Formalizing Soundness of Contextual Effects**
Polyvios Pratikakis, Jeffrey S. Foster, Michael Hicks, and Iulian Neamtiu
Theorem Proving in Higher Order Logics (**TPHOLs'08**), August 2008
- [2] **Type-Preserving Compilation for Realistic Object-Oriented Compilers**
Juan Chen, Chris Hawblitzel, Frances Perry, Mike Emmi, Jeremy Condit, Derrick Coetzee and Polyvios Pratikakis
Programming Language Design and Implementation (**PLDI'08**), June 2008
- [3] **Contextual Effects for Version-Consistent Dynamic Software Updating and Safe Concurrent Programming**
Iulian Neamtiu, Michael Hicks, Jeffrey S. Foster and Polyvios Pratikakis
Principles of Programming Languages (**POPL'08**), January 2008
- [4] **Existential Label Flow Inference via CFL Reachability**
Polyvios Pratikakis, Jeffrey S. Foster and Michael Hicks
Static Analysis Symposium (**SAS'06**), August 2006
- [5] **Lock Inference for Atomic Sections**
Michael Hicks, Jeffrey S. Foster and Polyvios Pratikakis
Workshop on Languages, Compilers, and Hardware Support for Transactional Computing (**TRANSACT'06**), June 2006
- [6] **Context-sensitive Correlation Analysis for Detecting Races**
Polyvios Pratikakis, Michael Hicks and Jeffrey S. Foster
Programming Language Design and Implementation (**PLDI'06**), June 2006
- [7] **Transparent Proxies for Java Futures**
Polyvios Pratikakis, Jaime Spacco and Michael Hicks
Object-Oriented Programming Languages, Systems, and Applications (**OOPSLA'04**), October 2004

ACCEPTED FOR PUBLICATION

- [8] **LOCKSMITH: Practical static race detection for C** Polyvios Pratikakis, Jeffrey S. Foster and Michael Hicks
Accepted for publication, Transactions On Programming Languages And Systems (**TOPLAS**)

TECHNICAL REPORTS

- [9] **Contextual Effects for Version-Consistent Dynamic Software Updating and Safe Concurrent Programming**
Iulian Neamtiu, Michael Hicks, Jeffrey S. Foster, Polyvios Pratikakis, 2007
- [10] **Context-sensitive Correlation Analysis for Detecting Races**
Polyvios Pratikakis, Jeffrey S. Foster and Michael Hicks, 2006
- [11] **Existential Label Flow Inference via CFL Reachability**
Polyvios Pratikakis, Michael Hicks and Jeffrey S. Foster, 2005
- [12] **Transparent Proxies for Java Futures**
Polyvios Pratikakis, Jaime Spacco, and Michael Hicks, 2004

DISSERTATIONS

- [13] **Sound, precise and efficient static race detection for multi-threaded programs**
Ph.D. Dissertation, University of Maryland, 2008
- [14] **Transparent proxies for Java futures**
M.Sc. Thesis, University of Maryland, 2004
- [15] **Automatic parallelization of nested loops**
Diploma Thesis, National Technical University of Athens, 2002

RELEASED SOFTWARE

Locksmith

<http://www.cs.umd.edu/projects/PL/locksmith/>
A static analysis tool for finding races in C programs.

ProxyC

<http://www.cs.umd.edu/~polyvios/proxyc/>
A compiler that supports Java with asynchronous method calls and transparent futures.

WORK EXPERIENCE

Mandatory Military Service Hellenic Armed Forces	2009–2010
System Administration Library of Electrical & Computer Engineering National Technical University of Athens	2001–2002

Applications Programming 2001–2002
Library of Electrical & Computer Engineering
National Technical University of Athens
Developed a library management application for use by the Departmental Library.

Applications Programming 2001-2003
National Technical University of Athens
Developed a time and resource planning application for an Operations Research project of the Civil Engineering department.

OTHER TALKS

Extending L2CA for the verification of multi-threaded programs May 2009
Laboratoire LIAFA, UNIVERSITE Paris Diderot - Paris7
Laboratoire VERIMAG, Grenoble

Context-sensitive Correlation Analysis for Detecting Races March 2008
Department of Computer Science, Aristotle University of Thessaloniki
Foundation for Research and Technology-Hellas (FORTH), Irakleio
Department of Computer Science, Athens University of Economics and Business

Formalizing Soundness of Contextual Effects March 2008
SoftLab, Department of Electrical and Computer Engineering, National Technical University of Athens

Finding Data Races in C programs using Static Analysis September 2007
Dean's Lecture Seminar, Department of Computer Science, University of Maryland, College Park

Context-sensitive Correlation Analysis for Detecting Races December 2006
SoftLab Programming Languages Seminar, National Technical University of Athens, Greece

Locksmith: Finding Data Races in C programs using Static Analysis November 2006
Maryland Software Day, University of Maryland, College Park

SERVICE

External reviewer: ECOOP 2008, ISMM 2008, OOPSLA 2007, CCS 2008, POPL 2009, VMCAI 2009, ESOP 2009, CAV 2009, IPDPS 2010, TOPLAS

University of Maryland, Incoming student mentor: 2004, 2007

AWARDS

Department of Computer Science Fellowship, University of Maryland, 2002–2004

2007–2008 University of Maryland Dean's Fellowship award for student research.

REFERENCES

Michael Hicks

Assistant Professor
Department of Computer Science
University of Maryland at College Park
College Park, MD 20742
Tel: +1 301 405 2710
Email: mwh@cs.umd.edu

Jeffrey Foster

Assistant Professor
Department of Computer Science
University of Maryland at College Park
College Park, MD 20742
Tel: +1 301 405 2751
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Radu Iosif

Researcher
Verimag
Centre Equation – 2 Avenue de Vignate
38610, Gieres, France
Email: Radu.Iosif@imag.fr