

Polyvios Pratikakis

ICS, FORTH, Heraklion, Greece

(+30) 281 039 1949

polyvios@ics.forth.gr

<http://www.ics.forth.gr/~polyvios>

CURRENT POSITION

Assistant Researcher, Foundation for Research and Technology–Hellas

Guest Instructor, University of Crete

EDUCATION

University of Maryland, College Park, Maryland. Ph.D. in Computer Science, 2008; M.Sc. in Computer Science, 2005.

National Technical University of Athens, Athens, Greece. Diploma of Electrical & Computer Engineering, 2003.

EMPLOYMENT

Assistant Researcher, Institute of Computer Science, Foundation for Research and Technology–Hellas. *2014–Present.*

Collaborating Researcher, Institute of Computer Science, Foundation for Research and Technology–Hellas. *2010–2014.*

Guest Instructor, Computer Science Department, University of Crete, *2010–2014.*

Aircraftman, Hellenic Air Force, Mandatory Military Service, *2009–2010.*

Post-doctoral Researcher, Laboratoire VERIMAG, CNRS, Grenoble. *2008–2009.*

Research Intern, Microsoft Research, Redmond, Washington. *Summer 2006.*

Graduate Research Assistant, Department of Computer Science, University of Maryland. *2003–2008.*

System Administration, Library of Electrical & Computer Engineering, National Technical University of Athens. *2001–2002.*

Applications Programming, Library of Electrical & Computer Engineering, National Technical University of Athens. *2001–2002.*

Applications Programming, Freelance developer, Operations Research Time and Resource Planning Application. *2001–2003.*

PUBLICATIONS

1. **DiSquawk: 512 cores, 512 memories, 1 JVM** Foivos S. Zakkak, Polyvios Pratikakis Proceedings of the 13th International Conference on Principles and Practices of Programming on the Java Platform: Virtual Machines, Languages, and Tools (**PPPJ'2016**), August 2016.
2. **Hierarchical Parallel Dynamic Dependence Analysis for Recursively Task-Parallel Programs**. Nikolaos Papakonstantinou, Foivos S. Zakkak, Polyvios Pratikakis. IEEE International Parallel and Distributed Processing Symposium (**IPDPS'16**), May 2016.
3. **TProf: An energy profiler for task-parallel programs**. Ioannis Manousakis, Foivos S. Zakkak, Polyvios Pratikakis, Dimitrios S. Nikolopoulos. Sustainable Computing: Informatics and Systems (**SUSCOM**), March 2015.
4. **Distributed region-based memory allocation and synchronization**. Christi Symeonidou, Polyvios Pratikakis, Dimitrios S. Nikolopoulos, Angelos Bilas. International Journal of High Performance Computing Applications (**IJHPCA**), November 2014.

5. **JDMM: a java memory model for non-cache-coherent memory architectures.** Foivos S. Zakkak, Polyvios Pratikakis. International Symposium on Memory Management (**ISMM'14**), June 2014.
6. **Micro-checkpointing in fault tolerant runtimes.** Pavlos Katsogridakis, Polyvios Pratikakis. Proceedings of the 11th ACM Conference on Computing Frontiers (**CF'14**), May 2014.
7. **DRASync: Distributed Region-based memory Allocation and Synchronization.** Christi Symeonidou, Polyvios Pratikakis, Dimitrios S. Nikolopoulos, Angelos Bilas. European MPI Users' Group Meeting (**EuroMPI'13**), September 2013.
8. **Inference and Declaration of Independence in Task-Parallel Programs.** Foivos S. Zakkak, Dimitrios Chasapis, Polyvios Pratikakis, Angelos Bilas, Dimitrios S. Nikolopoulos. International Conference on Advanced Parallel Processing Technology (**APPT'13**), August 2013.
9. **BDDT: Block-level Dynamic Dependence Analysis for Task-Based Parallelism.** George Tzenakis, Angelos Papatriantafyllou, Hans Vandierendonck, Polyvios Pratikakis, Dimitrios S. Nikolopoulos International Conference on Advanced Parallel Processing Technology (**APPT'13**), August 2013.
10. **Efficient Runtime Support for Embedded MPSoCs.** Dimitris Theodoropoulos, Polyvios Pratikakis, Dionisios Pnevmatikatos. International Conference on Embedded Computer Systems: Architectures, Modeling and Simulation (**ICSAMOS'13**), July 2013.
11. **Practical Information Flow for Legacy Web Applications** Georgios Chinis, Polyvios Pratikakis, Elias Athanasopoulos, Sotiris Ioannidis. International Workshop on Implementation, Compilation, Optimization of Object-Oriented Languages, Programs and Systems (**ICOOOLPS'13**), July 2013.
12. **Towards Reliable Task Parallel Programs.** Dimitrios Skarlatos, Polyvios Pratikakis, Dionisios Pnevmatikatos. Workshop on Design for Reliability (**DFR'13**), January 2013.
13. **The Myrmics Memory Allocator: Hierarchical, Message-Passing Allocation for Global Address Spaces.** Spyros Lyberis, Polyvios Pratikakis, Dimitrios S. Nikolopoulos, Martin Schulz, Todd Gamblin, Bronis de Supinski. International Symposium on Memory Management (**ISMM'12**), June 2012.
14. **A Programming Model For Deterministic Task Parallelism.** Polyvios Pratikakis, Hans Vandierendonck, Spyros Lyberis, Dimitrios S. Nikolopoulos. Memory Systems Performance and Correctness (**MSPC'11**), June 2011.
15. **Parallel Programming of General-Purpose Programs Using Task-Based Programming Models.** Hans Vandierendonck, Polyvios Pratikakis, Dimitrios S. Nikolopoulos. Hot Topics in Parallelism (**HotPar'11**), May 2011.
16. **LOCKSMITH: Practical static race detection for C.** Polyvios Pratikakis, Jeffrey S. Foster and Michael Hicks. Transactions On Programming Languages And Systems (**TOPLAS**), January 2011.
17. **Formalizing Soundness of Contextual Effects.** Polyvios Pratikakis, Jeffrey S. Foster, Michael Hicks, Iulian Neamtiu. Theorem Proving in Higher Order Logics (**TPHOLs'08**), August 2008.
18. **Type-Preserving Compilation for Realistic Object-Oriented Compilers.** Juan Chen, Chris Hawblitzel, Frances Perry, Mike Emmi, Jeremy Condit, Derrick Coetzee, Polyvios Pratikakis. Programming Language Design and Implementation (**PLDI'08**), June 2008.
19. **Contextual Effects for Version-Consistent Dynamic Software Updating and Safe Concurrent Programming.** Iulian Neamtiu, Michael Hicks, Jeffrey S. Foster, Polyvios Pratikakis. Principles of Programming Languages (**POPL'08**), January 2008.
20. **Existential Label Flow Inference via CFL Reachability.** Polyvios Pratikakis, Jeffrey S. Foster, Michael Hicks. Static Analysis Symposium (**SAS'06**), August 2006.
21. **Lock Inference for Atomic Sections.** Michael Hicks, Jeffrey S. Foster, Polyvios Pratikakis. Workshop on Languages, Compilers, and Hardware Support for Transactional Computing (**TRANSACT'06**), June 2006.

22. **Context-sensitive Correlation Analysis for Detecting Races.** Polyvios Pratikakis, Michael Hicks, Jeffrey S. Foster. Programming Language Design and Implementation (**PLDI'06**), June 2006.
23. **Transparent Proxies for Java Futures.** Polyvios Pratikakis, Jaime Spacco, Michael Hicks. Object-Oriented Programming Languages, Systems, and Applications (**OOPSLA'04**), October 2004.

POSTERS, ABSTRACTS

24. **Inference and Declaration of Independence: Impact on Deterministic Task Parallelism.** Foivos S. Zakkak, Dimitrios Chasapis, Polyvios Pratikakis, Dimitrios S. Nikolopoulos, Angelos Bilas. International Conference on Parallel Architectures and Compilation Techniques (**PACT'12**), Poster abstract, September 2012.
25. **BDDT: Block-level Dynamic Dependence Analysis for Deterministic Task-based Parallelism.** George Tzenakis, Angelos Papatriantafyllou, John Kesapides, Polyvios Pratikakis, Hans Vandierendonck, Dimitrios S. Nikolopoulos. Principles and Practice of Parallel Programming (**PPoPP'12**), Poster abstract, February 2012.
26. **C source level transformations & optimizations for task-based parallelism.** Foivos S. Zakkak, Dimitrios Chasapis, Polyvios Pratikakis, Dimitrios S. Nikolopoulos and Angelos Bilas. International Symposium on Code Generation and Optimization (**CGO'11**), Poster presentation, April 2011.

TECHNICAL REPORTS

27. **Myrmics: Scalable, Dependency-aware Task Scheduling on Heterogeneous Manycores** Spyros Lyberis, Polyvios Pratikakis, Iakovos Mavroidis, Dimitrios S. Nikolopoulos. At arXiv preprint arXiv:1606.04282. ©2013, released 2016.
28. **BDDT-SCC: A Task-parallel Runtime for Non Cache-Coherent Multicores** Alexandros Labrineas, Polyvios Pratikakis, Dimitrios S Nikolopoulos, Angelos Bilas. At arXiv preprint arXiv:1606.04288, ©2013, released 2016.
29. **BDDT: Block-level Dynamic Dependence Analysis for Deterministic Task-Based Parallelism.** George Tzenakis, Angelos Papatriantafyllou, Foivos S. Zakkak, Hans Vandierendonck, Polyvios Pratikakis, Dimitrios S. Nikolopoulos. 2012.
30. **Practical Information Flow for Legacy Web Applications.** Georgios Chinis, Polyvios Pratikakis, Elias Athanasopoulos, Sotiris Ioannidis, 2012.
31. **Contextual Effects for Version-Consistent Dynamic Software Updating and Safe Concurrent Programming.** Iulian Neamtiu, Michael Hicks, Jeffrey S. Foster, Polyvios Pratikakis, 2007.
32. **Context-sensitive Correlation Analysis for Detecting Races.** Polyvios Pratikakis, Jeffrey S. Foster, Michael Hicks, 2006.
33. **Existential Label Flow Inference via CFL Reachability.** Polyvios Pratikakis, Michael Hicks, Jeffrey S. Foster, 2005.
34. **Transparent Proxies for Java Futures.** Polyvios Pratikakis, Jaime Spacco, Michael Hicks, 2004.

DISSERTATIONS AND BOOKS

35. **Parallel Programming.** Hans Vandierendonck, Dimitrios S. Nikolopoulos, Polyvios Pratikakis. Encyclopedia of Software Engineering, January 2013.
36. **Sound, precise and efficient static race detection for multi-threaded programs.** Ph.D. Dissertation, University of Maryland, 2008.
37. **Transparent proxies for Java futures.** M.Sc. Thesis, University of Maryland, 2004.
38. **Automatic parallelization of nested loops.** Diploma Thesis (in Greek), National Technical University of Athens, 2002.

OTHER TALKS, TUTORIALS, REPORT PRESENTATIONS

- **The Formic Architecture and the Myrmics Runtime System.** ENCORE & PEPPER Workshop on Programmability and Portability for Emerging Architectures (**EPoPPEA'13**), January 2013.
- **Distributed Region-Based Memory Management.** University of Maryland, College Park, Maryland, August 2012.
- **Understanding scalability and performance requirements of I/O intensive applications on future multicore servers.** International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (**MASCOTS'12**), August 2012.
- **Inference and Declaration of Independence.** SoftLab Programming Languages Seminar, National Technical University of Athens, Greece, December 2011.
- **A Programming Model for Deterministic Task Parallelism.** University of Maryland, College Park, Maryland, June 2011.
- **Trends in Computer Science Education.** Task Force on Education, HiPEAC 2011 Cluster Meetings, Chamonix, France, April 2011.
- **Extending L2CA for the verification of multi-threaded programs.** Laboratoire LIAFA, UNIVERSITE Paris Diderot - Paris7, May 2009.
- **Context-sensitive Correlation Analysis for Detecting Races.** 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, March 2008.
- **Formalizing Soundness of Contextual Effects.** SoftLab, Department of Electrical and Computer Engineering, National Technical University of Athens, March 2008.
- **Finding Data Races in C programs using Static Analysis.** Dean's Lecture Seminar, Department of Computer Science, University of Maryland, College Park, September 2007.
- **Context-sensitive Correlation Analysis for Detecting Races.** SoftLab Programming Languages Seminar, National Technical University of Athens, Greece, December 2006.
- **Locksmith: Finding Data Races in C programs using Static Analysis.** Maryland Software Day, University of Maryland, College Park, November 2006.

SOFTWARE

- **SCOOP** (2013)
<http://www.ics.forth.gr/carv/downloads.html>
A static analysis and rewriting compiler that adds parallel tasks to C programs.
- **Locksmith** (2006)
<http://www.cs.umd.edu/projects/PL/locksmith/>
A static analysis tool for finding races in C programs.
- **ProxyC** (2004)
<http://www.cs.umd.edu/~polyvios/proxyc/>
A compiler that supports Java with asynchronous method calls and transparent futures.
- **Librarian II** (2001)
Available from <http://www.lib.ece.ntua.gr>
A library management program used in the Department Library in the National Technical University of Athens.

SERVICE

External Reviewer

OOPSLA 2007, ECOOP 2008, ISMM 2008, CCS 2008, POPL 2009, VMCAI 2009, ESOP 2009, TASE 2009, CAV 2009, TLDI 2009, FM 2009, TACAS 2009, VMCAI 2010, IPDPS 2010, POPL 2010, TOPLAS 2010, TOSEM 2011, CF 2011, ESOP 2011, POPL 2011, VMCAI 2011, EUROPAR 2011, EUROPAR 2012, RAID 2012, ICPP 2012, CCS 2012, JPDC 2012, ECOOP 2013, ICALP 2013, PODC 2013, EUROPAR 2013, TACO 2013, ISMM 2014, TOSEM 2016, DISC 2016, TACO 2016, MULTIPROG 2016.

Committee Member

ISMM 2014, MULTIPROG 2016, EUROPAR 2017.

Incoming student mentor

University of Maryland, 2004, 2007.

Co-organizer

Thematic Session on Parallel and Concurrent Programming Models, HiPEAC Computing Systems Week, Ghent, Belgium, 2012.

Task Force on Education, HiPEAC 2011 Cluster Meetings, Chamonix, France, 2011.

Student Committee Member

Ioannis Sfakianakis, PhD, currently.

Vaggelis Vasilakis, MSc, 2015.

Yannis Apostolidis, MSc, 2015.

Eleftherios Kosmas, PhD, 2015.

Dimitrios Poullos, MSc, 2015.

Antonios Papadogiannakis, PhD, 2014.

Iasonas Polakis, PhD, 2014.

AWARDS, DISTINCTIONS, GRANTS

Coordinator of “ASAP” project proposal, awarded EU Funding in 2013.

Coauthor of “GreenVM” project proposal, awarded Greek National Funding in 2012.

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

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

TEACHING EXPERIENCE

Instructor, University of Crete

CS-100: Introduction to Computer Science (357 students)	Fall 2016
CS-100: Introduction to Computer Science (356 students)	Fall 2015
CS-100: Introduction to Computer Science (377 students)	Fall 2014
CS-490.40: Type Systems and Static Analysis (6 students)	Fall 2014
CS-590.29: Multicore Processor Programming (9 students)	Spring 2014
CS-100: Introduction to Computer Science (369 students)	Fall 2013
CS-490.40: Type Systems and Static Analysis (6 students)	Fall 2013
CS-529: Multicore Processor Programming (10 students)	Spring 2013
CS-100: Introduction to Computer Science (339 students)	Fall 2012
CS-490.40: Type Systems and Static Analysis (5 students)	Fall 2012
CS-100: Introduction to Computer Science (256 students)	Fall 2011
CS-490.40: Type Systems and Static Analysis (10 students)	Fall 2011
CS-490.40: Type Systems and Static Analysis (9 students)	Fall 2010

Course Development

CS-490.40: Type Systems and Static Analysis. Course designed from scratch for University of Crete undergraduate programme.

CS-100: Introduction to Computer Science. Redesigned course for first semester based on previous version

for second semester, for University of Crete undergraduate programme.

CS-529: Programming Parallel Architectures. Adapted previous version of course material, for University of Crete graduate programme.

CS-590.29: Programming Parallel Architectures. Half-credit course adapted for managed and functional languages for University of Crete graduate programme.

Guest Lecturer

CS-590.29: Multicore Processor Programming, University of Crete	Spring 2011
CS-529: Multicore Processor Programming, University of Crete	Spring 2010
CS-556: Distributed Systems, University of Crete	Spring 2010
Logic and Automata Theory, Laboratoire Verimag	Spring 2009
CMSC631: Program Analysis and Understanding, University of Maryland	Spring 2007
CMSC631: Program Analysis and Understanding, University of Maryland	Fall 2006

Graduate Teaching Assistant

CMSC424: Database Design, University of Maryland	Spring 2003
CMSC424: Database Design, University of Maryland	Fall 2002

STUDENT CO-SUPERVISION

- Pavlos Katsogridakis: Diploma thesis 2014¹, M.Sc. 2014–present¹.
- Rafail Troulakis: Diploma thesis 2014-2015.
- Foivos S. Zakkak: M.Sc. 2010–2012^{2,3}, Ph.D. 2012–2016³.
- Irimi Stavrakantonaki: Diploma thesis 2013-2014³, M.Sc. 2014–2016³.
- Nikos Papakonstantinou: Diploma thesis 2012-2013³, M.Sc. 2013–2016³.
- Apostolos Glenis: M.Sc. 2013–2015¹.
- Ioannis Manousakis: M.Sc. 2013–2015².
- Georgios Chinis: M.Sc. 2012-2013⁴.
- Evangelos Kafentarakis: M.Sc. 2012–2013².
- Christi Symeonidou: Diploma thesis 2010-2011^{2,3}, M.Sc. 2011–2013^{2,3}.
- Alexandros Labrineas: Diploma thesis 2011², M.Sc. 2011–2013^{2,3}.
- Dimitrios Chasapis: Diploma thesis 2010-2011², M.Sc. 2011-2012^{2,3}.
- Dimitrios Skarlatos: Intern, Summer 2012.

¹: Co-advised with Manolis Katevenis.

²: Co-advised with Dimitrios Nikolopoulos.

³: Co-advised with Angelos Bilas.

⁴: Co-advised with Sotiris Ioannidis.

REFERENCES

Available upon request