Zoe Paraskevopoulou

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Research Statement

I am a researcher and educator specializing in formal verification, interactive theorem proving, and verified compilers. I build practical tools, grounded in foundational theory, that ensure end-to-end correctness of complex software systems. My recent work explores AI-assisted proof mechanization: leveraging LLMs to dramatically accelerate the development of machine-checked proofs for verified software.

Work Experience

Assistant Professor September 2024 - present
School of Electrical and Computer Engineering, National Technical University of Athens *Athens, Greece*
- Teaching: Introduction to Programming, Programming Languages, Advanced Programming Languages

Research Engineer August 2022 - June 2025
Ethereum Foundation *Athens, Greece (remote)*
- Building verification tools for programs that run on the Ethereum blockchain.

Postdoctoral Researcher October 2020 - December 2022
Khoury College of Computer Sciences, Northeastern University *Boston, USA*
- *Computing Innovation Fellow 2020* (acceptance rate 11%)
- Research: Designing a substructural type system for Wasm, Mentor: Professor Amal Ahmed

PhD Intern June 2019 - August 2019
Facebook *Seattle, USA*
- Topic: Extracting Certified Elliptic Curve Arithmetic from Coq to Rust, Team: Libra

Research Internship June 2018 - August 2018
Microsoft Research *Redmond, USA*
- Topic: *Layered DSLs for Verified Cryptography*, Team: RiSE

Research Internship June 2017 - August 2017
Microsoft Research *Redmond, USA*
- Topic: *Optimizing an Interpreter by Selective Native Compilation*, Team: RiSE

Research Internship March 2015 - August 2015
Max Planck Institute of Software Systems *Saarbrücken, Germany*
- Topic: *Self-Adjusting Computation for CostIt*, Adviser: Deepak Garg

Research Internship April 2014 - September 2014
INRIA Paris-Rocquencourt *Paris, France*
- Topic: *QuickChick: A Coq Framework for Verified Property Based Testing*, Adviser: Cătălin Hriţcu

Education

Princeton University USA
PhD in Computer Science *2015-2020*
- Thesis: Verified Optimizations for Functional Languages, Adviser: Andrew W. Appel

École Normale Supérieure Paris-Saclay France
Master's Degree in Computer Science (Master Parisien de Recherche en Informatique) *2014-2015*
- *Summa Cum Laude*
- Specialization: Logics and Semantics of Programs
- Thesis: *Self-Adjusting Computation for CostIt*, Adviser: Deepak Garg.

National Technical University of Athens Greece
Combined BS/MS in Electrical and Computer Engineering *2008-2014*
- Specializations: Computer Software, Computer Systems, Mathematics, Computer Networks
- Thesis: *A Coq Framework For Verified Property Based Testing*, Adviser: Cătălin Hriţcu

Selected Publications

`hevm`, a Fast Symbolic Execution Framework for EVM Bytecode CAV 2024
Dxo, Mate Soos, Zoe Paraskevopoulou, Martin Lundfall and Mikael Brockman.

RichWasm: Bringing Safe, Fine-Grained, Shared-Memory Interoperability Down to WebAssembly. PLDI 2024
Michael Fitzgibbons, Zoe Paraskevopoulou, Noble Mushtak, Michelle Thalakottur, Jose Sulaiman Manzur, and Amal Ahmed.

Computing Correctly with Inductive Relations. PLDI 2022
Zoe Paraskevopoulou, Aaron Eline, and Leonidas Lampropoulos.

Compiling with Continuations, Correctly. OOPSLA 2021
Zoe Paraskevopoulou and Anvay Grover.

Compositional Optimizations for Certioq. ICFP 2021
Zoe Paraskevopoulou, John M. Li, and Andrew Appel.

Closure Conversion is Safe for Space. ICFP 2019
Zoe Paraskevopoulou and Andrew Appel.

Generating Good Generators for Inductive Relations. POPL 2018
Leonidas Lampropoulos, Zoe Paraskevopoulou, and Benjamin Pierce.

A Type Theory for Incremental Computational Complexity with Control Flow Changes. ICFP 2016
Ezgi Çiçek, Zoe Paraskevopoulou, and Deepak Garg.

Scholarships and Awards

Computing Innovation Fellow 2020
2-year postdoctoral fellowship from Computing Research Association (acceptance rate 11%).

Siebel Scholars Fellow 2019
Distinction based on academic merit, distinguished research, and outstanding leadership.

Stanley J. Seeger Hellenic Studies Prize 2015
Scholarship for distinguished academic performance for my first year of study at Princeton University.

INRIA-MPRI Scholarship 2015
INRIA 1-year scholarship to attend the MPRI master's program.

Thomaidio Award 2014
Award for ranking first among the students of my class at the Electrical and Computer Engineering School of NTUA during the academic year 2012-2013.

KARY Award 2014
Award from the National Technical University of Athens for excellent academic performance during the academic year 2012-2013.

Academic Service

Co-chair, RocqShop 2026 **Program Committee**, PLDI 2026
Program Committee, PLDI 2023
Program Committee, Types 2022
Workshops Co-chair, ICFP 2022
Program Committee, PEPM 2022
Program Committee, CPP 2022
Workshops Co-chair, ICFP 2021
Program Committee, PriSC 2021
Program Committee, TFP 2020
Program Committee, ML 2019
External Review Committee, ICFP 2019
Program Committee, TyDe 2018
Program Committee, OCaml 2017
Artifact Evaluation Committee, POPL 2017