Eleftherios IOANNIDIS

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SOFTWARE ENGINEERING

Skills:	Formal Verification, Compilers, Cryptography, Programming Languages, Writing, Teaching.
Languages:	Scala, Rust, Haskell, C/C++, Python, Coq, OCaml, Go, Java, Javascript.
Software:	Linux, Docker, AWS, Dafny, Z3, SQL, Git, LLVM.

INDUSTRY EXPERIENCE

May '22 - Aug '22 — Research Scientist Intern at AMAZON, Automated Reasoning Group, Arlington, VA
Designed and prototyped a type system and type inference for the Cedar Authorization language.

Mar '19 - Sep '20 — Investment Engineer at BRIDGEWATER Associates, Westport, CT
Developed trading algorithms, risk-controls, designed and implemented domain-specific programming languages for financial data science embedded in Scala. Taught Scala to > 100 traders and engineers.

May '16 - Oct '17 — Software Architect at UNIFYID, San Francisco, CA
Designed and implemented the microservice back-end for implicit authentication. Implemented end-to-end encryption and scalable real-time machine-learning services. Acquired by PROVE in 2021.

Sep '15 - May '16 — Security Engineer at APPLE, *FairPlay group*, Cupertino, CA
Static Analysis, Security, LLVM compiler, cryptography (NDA).

PUBLICATIONS

Apr 2024 — Cedar: A New Language for Expressive, Fast, Safe, and Analyzable Authorization, with John Kastner, Aaron Eline, Joseph W. Cutler, Shaobo He, Emina Torlak, Anwar Mamat, Darin McAdams, Matt McCutchen, Andrew Wells, MIchael Hicks, Neha Rungta, Kyle Headley, Kesha Hietala, Craig Disselkoen.
SPLASH 2024, Pasadena, CA.

Dec 2023 — Reef: Fast Succinct Non-Interactive Zero-Knowledge Regex Proofs, with Sebastian Angel, Elizabeth Margolin, Srinath Setty and Jess Woods.
USENIX Security 2024, Philadelphia, PA.

Oct 2021 — Efficient Representation of Numerical Optimization Problems for SNARKs, with Sebastian Angel, Andrew J. Blumberg and Jess Woods.
USENIX Security 2022, Boston, MA.

Apr 2019 — MCQC: Extracting and optimizing formally verified code,
NASA Formal Methods Symposium (NFM 2019), Houston, TX.

EDUCATION

CURRENT — PHD IN COMPUTER SCIENCE, *University of Pennsylvania*, Philadelphia, PA
Research: *Correct compilers for zero-knowledge proofs, formal verification of distributed systems.*
Fourth-year PhD student advised by Sebastian ANGEL & Steve ZDANCEWIC.
Research on verified compilers for zkSNARKS and verification of liveness and safety properties of distributed systems. Graduation expected in 2025.
Teaching: DeepSpec REU student mentor, Compilers, Software foundations.

Jan 2019 — MASTER'S IN ENGINEERING, *MIT CSAIL*, Cambridge, MA
Research: *Extracting and optimizing low-level bytecode from high-level verified Coq.*
Advised by Frans KAASHOEK & Nickolai ZELDOVICH, built a compiler from Coq to C++.
Teaching: Computer Security, Operating Systems.

Jun 2015 — BACHELOR'S IN COMPUTER SCIENCE, *MIT CSAIL*, Cambridge, MA
Thesis: *Parallel optimizations for the Halide DSL language*, advised by Saman AMARASINGHE.