Eleftherios Ioannidis

Address: 748 S Randolph St, Philadelphia, PA
Contact: eleftheri@seas.upenn.edu, +1 (267) 968-3532

Education

Current PhD in Computer Science, *University of Pennsylvania*, Philadelphia, PA
Research: *Research in formal verification of distributed systems.*
Fourth-year PhD, building compilers for zkSNARKs and using the Coq proof-assistant to build an embedded logic for distributed systems. Graduation in 2025.
Mentorship: DeepSpec REU mentor, Software foundations (CIS500) TA
Advisors: Sebastian Angel, Steve Zdancewic

Jan '19 Master's in Engineering, *MIT CSAIL*, Cambridge, MA
Thesis: *Extracting and optimizing low-level bytecode from high-level verified Coq.*
Mentorship: Computer Security (6.858) TA, Operating System (6.828) TA
Advisor: Frans Kaashoek, Nickolai Zeldovich, Adam Chlipala

Jun '15 Bachelor's in Computer Science, *MIT CSAIL*, Cambridge, MA
Thesis: *Parallel optimizations for the Halide DSL language.*
Advisor: Saman Amarasinghe

Research

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

Aug 2022 Type System and Inference for the Cedar authorization language
Automated Reasoning Group (ARG), Amazon.
Summer 2022, Alrington, VA

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

Mar 2020 Scala eDSLs for domain-specific business logic,
Northeast Scala Symposium (NEScala 2020), Brooklyn, NY (online).

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

Work Experience

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 about 100 new engineers.

May '16 - Oct '17 Software Architect at UnifyID, San Francisco, CA
Designed and implemented the back-end for implicit authentication, including end-to-end encryption load-balancing, analytics, redundancy and distributed machine-learning microservices.

Sep '15 - May '16 Security Engineer at Apple, *FairPlay group*, Cupertino, CA
Application Security, LLVM Compiler extensions for cryptography, reverse engineering mitigation.

Software Engineering

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