

# Eleftherios "Lef" IOANNIDIS

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## EDUCATION

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**CURRENT** PHD IN COMPUTER SCIENCE, *University of Pennsylvania*, Philadelphia, PA  
**Research:** *Research in formal security protocols and zero-knowledge proofs.*  
Second-year PhD, using the Coq proof-assistant for computer-assisted cryptography.  
Distributed systems language formalization and implementation. Graduation in 2025.  
**Advisors:** Sebastian ANGEL, Steve ZDANCEWIC

JAN '19 MASTER'S IN ENGINEERING, *MIT*, Cambridge, MA  
**Major:** COMPUTER SCIENCE.  
**Thesis:** *Extracting and optimizing low-level bytecode from high-level verified Coq.*  
**Advisor:** Frans KAASHOEK, Nikolai ZELDOVICH, Adam CHLIPALA, CSAIL

JUN '15 BACHELOR'S IN COMPUTER SCIENCE, *MIT*, Cambridge, MA  
**Major:** ELECTRICAL ENGINEERING AND COMPUTER SCIENCE  
**Thesis:** *Parallel optimizations for the Halide DSL language.*  
**Advisor:** Prof. Saman AMARASINGHE, CSAIL

## RESEARCH

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OCT 2021 Efficient Representation of Numerical Optimization Problems for SNARKs,  
with Sebastian Angel, Andrew J. Blumberg and Jess Woods.  
USENIX Security 2022 (under review).

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

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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.

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 protocols, load-balancing, analytics, as well as distributed machine-learning infrastructure.

SEP '15 - MAY '16 Security Engineer at APPLE, Cupertino, CA  
*FairPlay and DRM group*  
Application Security, worked with the LLVM Compiler in reverse engineering mitigation.

## SOFTWARE ENGINEERING

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**Skills:** Programming Languages, Formal Verification, Security, Operating Systems,  
Distributed Systems, Compilers, High Performance Engineering.

**Languages:** Haskell, Coq, OCaml, Scala, C/C++, Go, Javascript.

**Software:** Linux, Docker, Kubernetes, SQL, MongoDB, GIT, LLVM.