Daniel Luick
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EDUCATION

Ph.D. in Computer Science. Yale University | Expected 2026
Co-Advisors: Ruzica Piskac and Zhong Shao

B.S. in Computer Science, Math Minor *Magna cum laude*. University of Minnesota | 2021
Advisor: Gopalan Nadathur

RESEARCH PROJECTS

Zero Knowledge for Unsatisfiability of SMT Formulas: Spring 2023 - present
(Presented at USENIX Security 2024)

- Designed a Zero Knowledge protocol for verifying unsatisfiability of SMT formulas
- Developed a compiler to transform SMT proof outputs into a ZK-friendly form
- Presented research as an invited talk at Galois

Extensible Proof Systems: Fall 2022 - present

- Designed a system for a common, extensible proof format
- Explained results in a written technical report
- Compiled a literature review on proof format conversion and extensible proof checkers

Adelfa: Spring 2020 - Spring 2021
(Supported by REU and UROP awards)

- Demonstrated usage of a proof assistant for LF specifications using variables
- Discovered soundness and completeness bugs in the proof assistant

PROFESSIONAL EXPERIENCE

Dell EMC Intern Software Engineer (CloudIQ): Summer 2020

- Wrote Java microservices to connect a cloud monitoring backend to GUI plugins
- Navigated a large existing codebase during software design

Dell EMC Intern Testing Engineer (Isilon): Summer 2019

- Developed feature tests in Python for drives in a FreeBSD environment
- Utilized code reviews to ensure code quality

SKILLS AND OTHER EXPERIENCE

Languages: Coq, Dafny, OCaml, Python, C, C++, Rust, LLVM, Java
Tools: SMT Solvers, Lexer and Parser Generators, Git, GDB, Docker

RELEVANT COURSEWORK

Software Analysis and Verification: Spring 2022, Yale

- Worked with SAT and SMT solvers, program logics, and model checkers
- Constructed a SAT solver and verification condition generator

Introduction to Compilers: Spring 2021, University of Minnesota

- Implemented a compiler front end and back end
- Studied lexing and parsing for LR grammars

Cryptography and Computer Security: Spring 2022, Yale

- Learned fundamentals of cryptographic primitives
- Proved security of cryptographic protocols

Artificial Intelligence: Spring 2023, Yale

- Implemented a neural network with back propagation in Python
- Presented a recent conference paper on robotic vision