# Zhengyao Lin

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## Education

**Carnegie Mellon University**                                          Pittsburgh, PA, USA
*Ph.D. in Computer Science*                                          August 2022 - Present
Advisor: Bryan Parno

**University of Illinois at Urbana-Champaign**                      Champaign, IL, USA
*B.S. in Mathematics and Computer Science (Highest Distinction)*     August 2018 - May 2022
GPA: 3.98 / 4.00

## Publications

*Towards Practical, End-to-End Formally Verified X.509 Certificate Validators with Verdict.*
**Zhengyao Lin**, Michael McLoughlin, Pratap Singh, Rory Brennan-Jones, Paul Hitchcox, Joshua
Gancher, Bryan Parno. **USENIX Security** Symposium 2025.

*Vest: Verified, Secure, High-Performance Parsing and Serialization for Rust.*
Yi Cai, Pratap Singh, **Zhengyao Lin**, Jay Bosamiya, Joshua Gancher, Milijana Surbatovich, Bryan
Parno. **USENIX Security** Symposium 2025.

*Cazamariposas: Automated Instability Debugging in SMT-based Program Verification.*
Yi Zhou, Amar Shah, **Zhengyao Lin**, Marijn Heule, Bryan Parno. International Conference on
Automated Deduction (**CADE**) 2025.

*FlowCert: Translation Validation for Asynchronous Dataflow via Dynamic Fractional Permissions.*
**Zhengyao Lin**, Joshua Gancher, Bryan Parno. Proceedings of the ACM on Programming Languages
(**OOPSLA**) 2024.

*Generating Proof Certificates for a Language-Agnostic Deductive Program Verifier.*
**Zhengyao Lin**, Xiaohong Chen, Minh-Thai Trinh, John Wang, Grigore Roşu. Proceedings of the
ACM on Programming Languages (**OOPSLA**) 2023.

*Synthesizing Axiomatizations using Logic Learning.*
Paul Krogmeier*, **Zhengyao Lin***, Adithya Murali*, P. Madhusudan. Proceedings of the ACM on
Programming Languages (**OOPSLA**) 2022.

*Towards a Trustworthy Semantics-Based Language Framework via Proof Generation.*
Xiaohong Chen, **Zhengyao Lin**, Minh-Thai Trinh, Grigore Roşu. International Conference on
Computer-Aided Verification (**CAV**) 2021.

*Language-Parametric Compiler Validation with Application to LLVM.*
Theodoros Kasampalis, Daejun Park, **Zhengyao Lin**, Vikram Adve, Grigore Roşu. ACM
International Conference on Architectural Support for Programming Languages and Operating
Systems (**ASPLOS**) 2021.

## Research Experience

**Carnegie Mellon University**, *Research Assistant*                      August 2022 - Present
Formal verification for CGRA architectures and web security, advised by Prof. Bryan Parno.

**Amazon Web Services**, *Applied Scientist Intern*                      May 2025 - August 2025
Coverage-guided automated test generation for Cedar policies.

**Intel Labs**, *Research Intern*                                    June 2023 - August 2023
Verification for a lowering pass in a fully homomorphic encryption (FHE) compiler.

**Formal Systems Lab at UIUC**, *Research Assistant*          August 2020 - August 2022
Proof generation for the $\mathbb{K}$ framework, advised by Dr. Xiaohong Chen and Prof. Grigore Roşu.

**University of Illinois**, *Research Assistant*                     June 2021 - August 2022
Lemma and axiom synthesis for first-order logic with least fixpoints and modal logics, advised by
Prof. Madhusudan Parthasarathy.

**LLVM Group at UIUC**, *Research Assistant*                 January 2020 - August 2021
Language-parametric translation validation for LLVM, advised by Prof. Vikram Adve.

**Illinois Geometry Lab at UIUC**, *Research Assistant*      August 2020 - December 2020
Visualizing Büchi-automatic fractals and working on a decision procedure for an extension of
Presburger arithmetic, advised by Prof. Philipp Hieronymi.

## Teaching Experience

- TA for 15-330 Introduction to Computer Security (CMU)                        Fall 2024
- TA for CS 426 Compiler Construction (UIUC)                                   Fall 2021
- TA for CS 473 Algorithms (UIUC)                                            Spring 2020
- TA for CS 241 System Programming (UIUC)                    Spring 2019 - Spring 2020

## Service and Professional Experience

- **USENIX Security 2025**, Artifact Evaluation Committee
- **CAV 2021**, Student Volunteer
- **Runtime Verification**, Software Engineer Intern                          Summer 2021
- **Facebook**, Software Engineer Intern                                      Summer 2020
- **Cloudflare**, Software Engineer Intern                                    Summer 2019

## Awards

- UIUC Bronze Tablet Award (top 3% in the graduating class)                     May 2022
- CRA Outstanding Undergraduate Researcher Award, Honorable Mention        January 2022
- UIUC Most Outstanding Major Award in Mathematics and Computer Science   February 2020
- UIUC Dean's List                                                           2018 - 2021