

Education

Carnegie Mellon University

Ph.D. in Computer Science

Advisor: Bryan Parno

Pittsburgh, PA, USA

Aug. 2022 - Present

University of Illinois at Urbana-Champaign

B.S. in Mathematics and Computer Science with Highest Distinction

GPA: 3.98/4.0

Champaign, IL, USA

Aug. 2018 - May. 2022

Publications

- [1] **Zhengyao Lin**, Xiaohong Chen, Minh-Thai Trinh, John Wang, and Grigore Roşu. Generating Proof Certificates for a Language-Agnostic Deductive Program Verifier. *Proceedings of the ACM on Programming Languages (OOPSLA 2023)*, October, 2023. <https://doi.org/10.1145/3586029>
- [2] Paul Krogmeier*, **Zhengyao Lin***, Adithya Murali*, and P. Madhusudan. Synthesizing Axiomatizations using Logic Learning. *Proceedings of the ACM on Programming Languages (OOPSLA 2022)*, December 2022. <https://doi.org/10.1145/3563348>
- [3] Xiaohong Chen, **Zhengyao Lin**, Minh-Thai Trinh, and Grigore Roşu. Towards a Trustworthy Semantics-Based Language Framework via Proof Generation. *Proceedings of the 33rd International Conference on Computer-Aided Verification (CAV 2021)*, July 2021. https://doi.org/10.1007/978-3-030-81688-9_23
- [4] Theodoros Kasampalis, Daejun Park, **Zhengyao Lin**, Vikram Adve, and Grigore Roşu. Language-Parametric Compiler Validation with Application to LLVM. *Proceedings of the 26th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS 2021)*, April 2021. <https://doi.org/10.1145/3445814.3446751>

Research Experience

Carnegie Mellon University, Research Assistant

Advised by Prof. Bryan Parno.

Topic: Building software and hardware verification tools for RipTide, a CGRA architecture.

Nov. 2022 - Present

Intel Labs, Research Intern

Advised by Zhenkun Yang, Jeremy Casas, Jin Yang

Topic: Compiler verification for a fully homomorphic encryption accelerator.

Jun. 2023 - Aug. 2023

University of Illinois, Research Assistant

Advised by Prof. Madhusudan Parthasarathy.

Topic: Lemma and axiom synthesis for first-order logic with least fixpoints and modal logics.

Jun. 2021 - Aug. 2022

Formal Systems Lab at UIUC, Research Assistant

Advised by Xiaohong Chen and Prof. Grigore Roşu.

Topic: Proof object generation for the \mathbb{K} framework in matching logic.

Aug. 2020 - Aug. 2022

LLVM Group at UIUC, Research Assistant

Advised by Prof. Vikram Adve.

Topic: Translation validation of LLVM backend passes using the \mathbb{K} framework.

Jan. 2020 - Aug. 2021

Illinois Geometry Lab at UIUC, Research Assistant

Aug. 2020 - Dec. 2020

Advised by Prof. Philipp Hieronymi.

Topic: Exploring Büchi-automatic fractals and implementing a known decision procedure for Presburger arithmetic with quadratic irrational coefficients.

Teaching Experience

- CS 426 Compiler Construction**, Course Assistant at UIUC Aug. 2021 - Dec. 2021
Maintained programming assignments and answered students' questions on an online forum.
- CS 473 Algorithms**, Course Assistant at UIUC Jan. 2020 - May. 2020
Graded assignments and answered students' questions on an online forum.
- CS 241 System Programming**, Course Assistant at UIUC Jan. 2019 - May. 2020
Led the infrastructure team and maintained a distributed auto-grader.

Professional and Volunteering Experience

- CAV 2021**, Student Volunteer Jul. 2021
At the 33rd International Conference on Computer-Aided Verification.
- Runtime Verification**, Software Engineering Intern Jun. 2021 - Aug. 2021
Worked on matching logic proof objects for deductive program verification in \mathbb{K} .
- Facebook**, Software Engineering Intern, Reliability Team May. 2020 - Aug. 2020
Developed templating tools for an error monitoring system.
- Runtime Verification**, Software Engineering Intern Nov. 2019 - Dec. 2019
Prototyped an interface for verification of ERC20 contracts using the \mathbb{K} framework.
- Cloudflare**, Software Engineering Intern May. 2019 - Aug. 2019
Developed and shipped a customer-facing origin server monitoring product.

Awards

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