

# Zhengyao Lin

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## University of Illinois at Urbana-Champaign

Aug. 2018 - Present

Bachelor of Science in Mathematics and Computer Science

GPA 3.99/4.00

- Expected graduation: May 2022

## Publications

- Xiaohong Chen, **Zhengyao Lin**, 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](https://doi.org/10.1007/978-3-030-81688-9_23)
- 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>
- Reed Oei, Dun Ma, **Zhengyao Lin**, Yikai Teng, and Pavle Vuksanovic. Pecan: An Automated Theorem Prover. *MAA Student Poster Session, Joint Mathematics Meetings (JMM 2021)*, Jan 2021.

## Preprints

- **Zhengyao Lin**, Xiaohong Chen, Thai Trinh, John Wang, and Grigore Roşu. Trustworthy Program Verification via Proof Generation. <http://hdl.handle.net/2142/110344>
- **Zhengyao Lin**, Theodoros Kasampalis, and Vikram Adve. An Automated Translation Validation Algorithm for Production Register Allocators.
- **Zhengyao Lin**, Xiaohong Chen, and Grigore Roşu. An Interactive Theorem Prover for Matching Logic with Proof Object Generation. <http://hdl.handle.net/2142/111650>

## Research Experience

- **Undergraduate Researcher**, UIUC Jun. 2021 - Present  
With Adithya Murali, Paul Krogmeier, and Prof. Madhusudan Parthasarathy.  
Synthesis for FO+LFP theories and automated axiomatization for modal logic.
- **Undergraduate Researcher**, Formal Systems Laboratory at UIUC Aug. 2020 - Present  
With Xiaohong Chen and Prof. Grigore Roşu.  
Proof object generation for the  $\mathbb{K}$  framework based on matching logic.
- **Undergraduate Researcher**, LLVM Group at UIUC Jan. 2020 - Aug. 2021  
With Theodoros Kasampalis, Daejun Park, and Prof. Vikram Adve.  
Translation validation of LLVM backend passes using the  $\mathbb{K}$  framework.
- **Undergraduate Researcher**, Illinois Geometry Lab at UIUC Aug. 2020 - Dec. 2020  
Advised by Christian Schulz, Mary-Angelica Tursi, and Prof. Philipp Hieronymi.  
Worked on an automated theorem prover Pecan based on Büchi Automata.  
Implemented plotting of automatic fractals  
Implemented a known decision procedure for Presburger arithmetic sentences with quadratic coefficients.

## Teaching Experience

- **Course Assistant**, Compiler Construction (CS 426) at UIUC Aug. 2021 - Dec. 2021  
Maintained programming assignments and answered questions from students.
- **Course Assistant**, Algorithms (CS 473) at UIUC Jan. 2020 - May. 2020  
Graded assignments and answered questions from students.
- **Course Assistant**, System Programming (CS 241) at UIUC Jan. 2019 - May. 2020  
Infrastructure lead. Maintained a distributed auto-grader.

## Professional and Volunteering Experience

- **Student Volunteer**, CAV 2021 Jul. 2021  
At the 33rd International Conference on Computer-Aided Verification.
- **Software Engineering Intern**, Facebook May. 2020 - Aug. 2020  
Developed templating tools for an error monitoring system.
- **Software Engineering Intern**, Runtime Verification Nov. 2019 - Dec. 2019  
Prototyped an interface for verification of ERC20 contracts, based on the  $\mathbb{K}$  framework.
- **Software Engineering Intern**, Cloudflare May. 2019 - Aug. 2019  
Developed and shipped a customer-facing origin monitoring product.

## Awards

- **CRA Outstanding Undergraduate Researcher Award Nominee** UIUC, 2021
- **Most Outstanding Major Award in Mathematics and Computer Science** UIUC, 2020
- **Dean's List** UIUC, 2018-2021