YOUWEI ZHONG

Shanghai Jiao Tong University ◇ Shanghai, China

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EDUCATION

Shanghai Jiao Tong University   *September 2021 – Present*
Undergraduate in Computer Science
Member of **John Hopcroft Class**, an elite CS program at Zhiyuan College, SJTU, for top 5% of students, with a focus on **Theoretical Computer Science**.

Core GPA: 3.91
TOEFL Score: 101

Shanghai High School   *September 2018 – June 2021*
Member of the Engineering Class, an elite class at SHS, one of the best high schools in China.

PUBLICATION

A Parameterized Framework for the Formal Verification of Zero-Knowledge Virtual Machines   2024
Youwei Zhong   *To appear at SPLASH/OOPSLA 2024 SRC*

· This long abstract introduces a parameterized framework for the formal verification of zkVMs in Coq. We prove the soundness and completeness of the constraint generation algorithm from machine instructions to semantics-level constraints. Existing works target specific zkVMs, and require repeated proof work in this phase, whereas our proofs are parameterized and can be reused in development and by all zkVMs. We also demonstrate the generality of our framework by instantiation on two examples: Cairo VM and a simplified zkEVM.

MANUSCRIPTS

A Parameterized Framework for the Formal Verification of Zero-Knowledge Virtual Machines   2024
Youwei Zhong, Zihan Xu, Yuncong Hu, Xiang Xie, Yu Yu, Qinxiang Cao   *In submission to IEEE S&P 2025*

· This paper is an extension work based on my long abstract with the same name, which is accepted by SPLASH 2024 SRC.

RESEARCH EXPERIENCE

John Hopcroft Center, Shanghai Jiao Tong University   April 2023 - Present
Research internship   *Shanghai, China*

· Tutored by Qinxiang Cao
· Worked in the formal verification of zero-knowledge virtual machines, using the Coq proof assistant, with an article in submission to IEEE S&P 2025.

TEACHING EXPERIENCE

Program Design and Data Structure - Part III, Shanghai Jiao Tong University   June 2023 – July 2023
Teaching assistant   *Shanghai, China*

· Prepared the code repository for the project of Ray Tracing in Rust. Wrote a detailed setup manual for the students.
· Designed the tasks of the project. Answered the questions of the students.

MISCELLANEOUS

John Class Online   December 2021 – Present
Maintainer

· Designed an internal class forum based on Discourse, a well-known open source discussion platform.
· Maintained the operation of the Aliyun server and the website.

HONORS AND AWARDS

Longfor Scholarship (10'000 yuan, 10 winners each year)	December 2022
Zhiyuan Honors Scholarship (5'000 yuan per year, Top 5%)	December 2023, 2022 and 2021
Three Good Student of Shanghai Jiao Tong University	October 2023 and 2022

TECHNICAL SKILLS

Research Interests	Formal Verification, Zero-Knowledge Proof
Computer Languages	Coq, C, C++, Python, Rust
Machine Learning library	Pytorch, Scikit-learn
Tools	Git, VSCode