

YOUWEI ZHONG

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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

OOPSLA 2024

- The Second Place Winner in the Student Research Competition
- This paper 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

- This paper is an extension work based on my OOPSLA 2024 SRC paper with the same name.

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 a paper accepted by OOPSLA 2024 SRC.

ACADEMIC ACTIVITIES

OOPSLA/SPLASH 2024

October 2024

Student Volunteer

Pasadena, California, United States

- Served as a Student Volunteer.
- Attended the Programming Languages Mentoring Workshop (PLMW).
- Participated in the Student Research Competition and got the 2nd place in undergraduate category.

WORK EXPERIENCE

Riema Labs

Security R&D

July 2024 - October 2024

Remote

- Worked with Yanju Chen
- Worked in developing bug finders for zero-knowledge virtual machines.
- Developed an analyzer for circom, a domain specific language for zero-knowledge circuits.

Minghong Investment

Quantitative Developer

January 2024 - February 2024

Shanghai, China

- Worked in developing a high frequency trading system.

TEACHING EXPERIENCE

Program Design and Data Structure - Part III, Shanghai Jiao Tong University

Teaching assistant

June 2023 – July 2023

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.

HONORS AND AWARDS

The 2nd Place Winner in OOPSLA 2024 SRC

October 2024

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

MISCELLANEOUS

John Class Online

Maintainer

December 2021 – Present

- 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.

Zhiyuan College Debate Team

Captain

July 2021 – July 2022

Shanghai, China

- Organized the recruitment of the debate team. Produced recruiting WeChat pushes.
- Lead the preparation for Freshman Cup and Union Cup. Organized team building activities.

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