

# YOUWEI ZHONG

Shanghai Jiao Tong University ◇ Shanghai, China  
(+86) · 136 · 1176 · 4416 ◇ zhongyouwei@sjtu.edu.cn ◇ <https://ywzh.org/>

## EDUCATION

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### 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.

## MANUSCRIPTS

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### 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 introduces a parameterized framework for the formal verification of zkVMs, based on the Coq proof assistant. We prove the soundness and completeness of the transformation phase 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: a simplified zkEVM and a simplified Cairo VM.

## RESEARCH EXPERIENCE

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### 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

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### 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

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### 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

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**Longfor Scholarship (10'000 yuan, 10 winners each year)**  
**Zhiyuan Honors Scholarship (5'000 yuan per year, Top 5%)**  
**Three Good Student of Shanghai Jiao Tong University**

December 2022  
December 2023, 2022 and 2021  
October 2023 and 2022

## TECHNICAL SKILLS

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