# Yihan Zhu

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## EDUCATION

**Shanghai Jiao Tong University** — Shanghai, China
*B.Eng. in Computer Science and Technology, Expected June 2028* — Sep 2024 – Present

- Member of the ACM Honors Class, Zhiyuan College.
  *An elite, research-oriented CS program for the top 5% of students.*
- Selected coursework: Principle and Practice of Computer Algorithms (4.3/4.3), Large Language Model (4.3/4.3), Machine Learning (4.0/4.3), Optimization (4.0/4.3).

## RESEARCH EXPERIENCE

**Agentic Compiler for High-Performance GPU Kernels** — May 2026 – Present
*Undergraduate Research Assistant*, EPCC Lab — Advisor: Prof. Jingwen Leng — Shanghai, China

- Built an agentic compiler that enables LLM agents to synthesize and optimize GPU kernels through a constrained set of structured and verifiable compiler transformations.
- Designed a Tile Graph IR and transformation verifier for recording, validating, and replaying optimization trajectories; implemented code generation for CUDA, Triton, TileLang, and CuTe DSL.
- Designed and implemented an Intra-kernel Tracing framework to capture the execution of GPU kernels and provide feedback to LLM agents for further optimization all by myself.
- Currently evaluating the compiler on GEMM, sparse attention, MoE, and mixed-precision workloads across NVIDIA Ampere, Hopper, and Blackwell GPUs.

## SELECTED PROJECTS

**RISC-V CPU** | Verilog — Nov 2025 – Feb 2026
github.com/JaneZ-2006/RISC-V-CPU

- A toy CPU written in Verilog.
- Implemented Tomasulo's algorithm with support for the RISC-V I and M extensions.

**RCompiler** | C++ — Jul 2025 – Jun 2026
github.com/JaneZ-2006/RCompiler

- A compiler for Rx* (a Rust-like educational language), written in approximately 30k lines of C++.
- Implemented a handwritten parser, Mem2Reg, inlining, SCCP, ADCE, local CSE, and linear-scan register allocation.

**DHT** | Go — Jun 2025 – Jul 2025
github.com/JaneZ-2006/PPCA-DHT

- Two distinct distributed hash table protocols are implemented in this project: Chord and Kademlia.
- Both protocols aim to provide efficient, scalable, and fault-tolerant systems for storing and retrieving (key, value) pairs across a distributed network of nodes.

## HONORS AND AWARDS

**Zhiyuan Honors Scholarship**, Shanghai Jiao Tong University — 2024, 2025
**Provincial First Prize**, Chinese National High School Mathematics Competition — 2022

## SKILLS

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|---|---|
| **Programming** | C++, Python, Go |
| **Tools** | PyTorch, CUDA, TileLang |
| **Systems** | Linux, Git, LLVM |
| **Languages** | Chinese (native); English (fluent) |

## TEACHING EXPERIENCE

**Shanghai Jiao Tong University** — Sep 2025 – Jan 2026
*Teaching Assistant*, Great Ideas in Computer Science — Shanghai, China

- Held office hours and designed a Turing-machine simulator assignment to support students in understanding computability and debugging course projects.