Ziyi Xu

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Education

Shanghai Jiao Tong University Shanghai, China

Bachelor of Computer Science *Sept. 2022 - Present*

- Member of ACM Honors Class, which is an elite CS program for top 5% talented students
- **GPA** (Core): 4.013/4.3, Ranking: 2/30
- Selected core courses:
  - Linear Algebra: 99/100
  - Mathematical Analysis II: 100/100
  - Principle and Practice of Computer Algorithms: 100/100
  - Compiler Design and Implementation: 99/100
  - Computer Architecture: 99/100
  - Operating System: 100/100
  - Program Verification: 99/100

Experience

Shanghai Jiao Tong University Shanghai, China

Undergraduate Researcher, advised by Prof. Quan Chen *Sept. 2022 - June. 2026(expected)*

Projects

Tidal: Fast ML-model cold start in serverless (in-progress)

Corporating wth Weihao Cui, still in progress, plan to be submitted in OSDI 25

A transparent framework which can accelerate the cold start of Serverless Machine Learning functions.

- Implemented in cuda and python, with pytorch as backend.
- Transparent to user, no need to modify the original code too much.
- Support trace-based auto optimization, like pipeline loading, GPU prefetching, initialization skipping, tensor sharing, etc.

Compiler for Mx* Language

SJTU ACM Class Compiler Design and Implementation 2023 Assignment (CS2966 Course Project)

A compiler from Mx* language (which is a C++ & Java like language) to RV32I Assembly.

- Implemented in C++, using anlr4 as front-end, LLVM IR as intermediate representation.
- Featuring many aggressive scalar optimizations (e.g. SCCP, ADCE, GCM/GVN etc.), loop optimizations, function inlining, mem2reg, SSA-based register allocation, etc.
- Rank 1st in both compiling speed and generated code quality.

RV32IM User-mode Simulator

A Simulator for Online Judge of ACM Class Compiler Design and Implementation

An implementation of RV32IM simulator.

- Implemented in C++, with high performance and robustness.
- Support cache simulation, branch prediction, instruction count, etc.
- Provide easy built-in debugging tools and nice front-end error prompts for students.

RV64gc Microkernel

SJTU ACM Class Operating System 2023 Assignment (CS Course Project)

An implementation of RV64gc microkernel in Rust.

- Implemented in Rust
- Support mini shell, various user libraries, and unix-like system calls
- Provide an opaque design of IPC, crucial for a microkernel

Honors & Awards

Scholarship

- 2022, 2023 Zhiyuan Honorary Scholarship (**Top 2%** in SJTU)
- 2023 Academic Excellence Scholarship (Second Prize)

Teaching Experience

Computer Programming
Teaching Assistant of Prof. Huiyu Weng — *Sept. 2023 - Jan. 2024*

Data Structure
Teaching Assistant of Prof. Alei Liang — *Jun. 2024 - Jul. 2024*

Programming Practice
Teaching Assistant of Prof. Yong Yu — *Jun. 2024 - Jul. 2024*

Optimization Methods
Teaching Assistant of Prof. Kuan Yang and Bo Jiang — *Sept. 2024 - Jan. 2025*

Technical Skills

Programming Languages: Proficient in C/C++, cuda, Python, Go, Rust, and Verilog.
Tools: Git, CMake, Docker, Makefile, xmake, Coq, LaTeX, Markdown.
Languages: Mandarin (native), English (fluent).