LIU YiYu

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Education

Shanghai Jiao Tong University (SJTU), Shanghai, China 2021 - 2025 (Expected)

B.Eng. in Computer Science
Student in **ACM class** (`https://acm.sjtu.edu.cn`)
GPA: **3.95**/4.3. Rank: **4**/33.
Selected courses: Computer Architecture: 99/100, Operating System: 100/100, Comprehensive Design for Computer System: 100/100, Great Ideas in Computer Science: 95/100.

Research Experience

Research interests: cloud computing and operating system.

Emerging Parallel Computing Center, SJTU Sep. 2023 - Present

Undergraduate Researcher, advised by Prof. Quan CHEN.
Research topics: cloud computing, and memory efficiency on serverless.

Teaching Experience

Programming Aug. 2022 - Jan. 2023

Roll: leading teaching assistant for Class B[1]. Teacher: Prof. HuiYu WENG.

Data Structure Feb. 2023 - Jun. 2023
Principle and Practice of Computer Algorithms (practice course) Jun. 2023 - Jul. 2023
Compiler Design and Implementation (practice course) Aug. 2023 - Jan. 2024
Operating System Feb. 2024 - Jun. 2024

Roll: teaching assistant.

Publication

FaaSMem: Improving Memory Efficiency of Serverless Computing with Memory Pool Architecture (ASPLOS24)

Authors: Chuhao Xu, **Yiyu Liu**, Zijun Li, Quan Chen, Han Zhao, Deze Zeng, Qian Peng, Xueqi Wu, Haifeng Zhao, Senbo Fu, Minyi Guo.
We explored the memory footprint under serverless condition and proposed a new mechanism tailored for serverless containers to improve memory efficiency.

Project Experience

ACM Class Online Judgement System (ACMClassOJ/TesutoHime) Sep. 2022 - Present

Website: `https://acm.sjtu.edu.cn/OnlineJudge`

- Write the development documentation for the whole project;
- Add new features;
- Fix bugs;
- (Feb 2023 - Present) Operate and maintain the online judge service (widely used by students in SJTU, ∼369K submissions since 2020).

[1] Class B is designed for students without programming experience.

A RISCV-32I CPU (LauYeeYu/RV32I-CPU, ∼3.5K lines of Verilog code)

Adopts the speculative execution based on the Tomasulo algorithm with branch predictor, ICache, and DCache. Passed all simulation tests and FPGA tests.

A RISCV Kernel (LauYeeYu/toy-riscv-kernel, ∼3.0K lines of C code and 244 lines of asm)

A RISCV kernel that supports kernel-user space seperation and scheduling tasks. It can starts from machine mode and switch to supervisor mode after some necessary initialization. Then it will start init as the first process and handle traps (exceptions and interrupts). Runs well on qemu.

A Compiler for a C-like Language (LauYeeYu/Mx-Compiler, ∼6.2K lines of Kotlin code)

A compiler for a C-like language, Mx* on RISCV-32I.

A Implementation of the Google File System[1] (in progress) (LauYeeYu/GFS-Go, ∼4.0K lines of Go code)

Implements the Google File System in golang.

Honors and Awards

Longfor Scholarship, top 1% Dec. 2023
2021 Zhiyuan Honors Scholarship, top 2% Dec. 2021
2022 Zhiyuan Honors Scholarship, top 2% Dec. 2022
2023 Zhiyuan Honors Scholarship, top 2% Dec. 2023

References

[1] Sanjay Ghemawat, Howard Gobioff, and Shun-Tak Leung. The google file system. In *Proceedings of the nineteenth ACM symposium on Operating systems principles*, pages 29–43, 2003.