Yiyu Liu

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Education

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

B.Eng. in Computer Science. Student in **ACM Honor class**, 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 - Jun. 2024

UG researcher, advised by Prof. Quan CHEN. Topics: cloud computing, memory efficiency on serverless.

Paul G. Allen School of Computer Science & Engineering, UW Jul. 2024 - Present

UG researcher, advised by Prof. Baris Kasikci. Topics: cloud computing.

Teaching Experience

Programming Aug. 2022 - Jan. 2023

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 - Jun. 2024

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

Work: Write the development documentation for the whole project; add new features; fix bugs; (Feb 2023 - Present) operate and maintain the online judge service (∼369K submissions since 2020).

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. For the user space, "init" is the first user process and can spawn into multiple processes with UNIX syscalls.

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.

An 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.