Yiyu Liu

✉ liu_yiyu@sjtu.edu.cn · � LauYeeYu · % https://lau.yeeyu.org/

Education

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

Student in **ACM Honor class**, GPA: **3.93**/4.3. Rank: **5**/33. *B.Eng. in Computer Science*

Selected courses: Computer Architecture: 99/100, Operating System: 100/100, Comprehensive Design for Computer System: 100/100, Computer Networks: 98/100.

Publication

FaaSMem: Improving Memory Efficiency of Serverless Computing with Memory Pool Architecture (ASPLOS'24)

Authors: Chuhao Xu, **Yiyu Liu**, Zijun Li, Quan Chen, Han Zhao, Deze Zeng, Qian Peng, Xueqi Wu, Haifeng Zhao, Senbo Fu, Minyi Guo.

Research Experience

Research interests: cloud computing, systems for machine learning, and hardware/software co-design.

Emerging Parallel Computing Center, SJTU, Shanghai, China Sep. 2023 – Jun. 2024

Undergraduate researcher, advised by **Prof. Quan Chen**. *Topic: cloud computing*

- (ASPLOS'24) Explored the memory footprint under serverless condition and proposed a new mechanism tailored for serverless containers to improve memory efficiency. The system yields up to 71.0% reductions in local memory usage and a maximum $2.2\times$ more deployment density.
    - **Role in the project:** designed the strategy to effectively and efficiently offload pages together with Chuhao; conducted experiments; wrote the paper with Chuhao.

Paul G. Allen School of Computer Science & Engineering, UW, WA, USA Jan. 2024 – Present

Undergraduate researcher, advised by **Prof. Barış Kaşikçi**. *Topics: cloud computing and systems for ML*

- Built a disaggregated system to improve resource utilization while keeping the durability guarantee of persistent memory. A few key challenges were fixed in this project to improve the performance. This system outperforms NFS by up to $85\times$ on read-heavy workloads.
    - **Role in the project:** investigated the end-to-end procedure; made quite a few changes to the original system design; conducted experiments; wrote the paper with other authors.
- Optimized the performance of Retrieval-Augmented Generation from a system perspective. *In submission.*
    - **Role in the project:** introduced a couple of improvements from the original project design; conducted core experiments; solved performance issue; wrote the paper with other authors.

Teaching Experience

Programming	Aug. 2022 – Jan. 2023
Data Structure	Feb. 2023 – Jun. 2023
Principle and Practice of Computer Algorithms (project-based course)	Jun. 2023 – Jul. 2023
Compiler Design and Implementation (project-based course)	Aug. 2023 – Jan. 2024
Operating System	Feb. 2024 – Jun. 2024

Roll: teaching assistant. Work includes giving lectures, writing guidebooks or guiding documents, creating exam questions, etc.

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

Selected Project

ACM Class Online Judgement System (ACMClassOJ/TesutoHime)   Sep. 2022 – Jun. 2024

Website: `https://acm.sjtu.edu.cn/OnlineJudge`
Work: Wrote the development documentation for the whole project; added new features; fixed bugs; (Feb. 2023 – Jun. 2024) operated and maintained the online judge service ($\sim$369K submissions since 2020).

A RISCV-32I CPU (LauYeeYu/RV32I-CPU, $\sim$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, $\sim$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, $\sim$6.2K lines of Kotlin code)

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

Skills

Programming languages: C, C++, Python, Go, Java, Kotlin, Verilog and Bash.
Markup languages: HTML, Markdown and LaTeX.

Languages

English: fluent.
Chinese mandarin: native.
Shanghainese: native.