

Cong Zhou

Zhiyuan College
Shanghai Jiao Tong University
800 Dongchuan Road
Minhang District
Shanghai 200240
P.R. China

+86 13122699848
cong258258@sjtu.edu.cn
cong258258
cv.cong258258.site

EDUCATION

SEP. 2019 – PRESENT

B.S. in Computer Science, Shanghai Jiao Tong University, Zhiyuan College

Member of ACM Class, which is an honor program for top talented students.

EXPERIENCE & TEACHING

JULY. 2021 – PRESENT

Advanced Computer Architecture Laboratory, Shanghai Jiao Tong University

Undergraduate Research Assistant at ACA lab, supervised by Prof. Li Jiang, Associate Professor in the Department of Computer Science & Engineering at Shanghai Jiao Tong University.

I've participated in research projects on **PIM (process-in-memory)**, building specific accelerators to optimize algorithms and data structures (point chasing in linked list, B+ tree, etc.) and optimizing certain memory-bound scenarios (memcpy/memset in cache, etc).

SEPT. 2020 – JAN. 2021

Teaching Assistant of CS152: C++ programming (B), TA team leader

JAN. 2021 – JUNE. 2021

Teaching Assistant of CS1951 & CS0501H: Data Structure, TA team leader of three classes

JUNE. 2021 – AUG. 2021

Teaching Assistant of CS1952 & CS1956: Principle and Practice of Computer Algorithms, TA team leader of two classes

SEP. 2021 – JAN. 2022

Teaching Assistant of CS1953: C++ programming (A), TA team leader

During my four-semester experience as the TA group leader, I prepared numerous course projects, including a pipelined RISC-V simulator implemented in C++, an AI battle field game based on Monte Carlo, a railway ticket management system consisting of file-based data structures and web frontend, and STLite which is a naïve implementation of C++ STL, as well as taught useful algorithms from Information Olympics in class.

SKILLS

- Languages: C++, JavaScript, Python, Java, LATEX
- Full stack on Web development, including Nginx, MySQL, Redis, Frp proxy, Flask, jQuery, etc.
- Cooperating & communicating
- Very familiar with Windows and Linux
- Use of **gem5**, a full system simulator for multiple archs

RESEARCH INTEREST

My research interest includes various areas in computer systems. To be specific, I'm passionate about computer architecture, especially heterogeneous ones like hardware accelerators, PIM architectures, EDA, etc. Other areas in computer systems like networking, graphics, operating systems are all new fields I would like to have a try on.

ACTIVITIES, PROJECTS & AWARDS

ACM Class Online Judge: TesutoHime

<https://github.com/ACMClassOJ/Open-TesutoHime> <https://acm.sjtu.edu.cn/OnlineJudge/>

I am the co-initiator and long-time maintainer of ACM Class Online Judge, a **distributed** system for automatic code submission and judging (C++, C++ header, git, Verilog or any language with SPJ provided). Our system can be separated into frontend & management, web service, judge service, data service, etc, all written in JS or Python from scratch. Our system is currently providing support for more than **10** programming classes in SJTU, handling over **14,000** judge requirements in less than two years and accommodating more than **1,000** users.

RISC-V CPU (Computer Architecture)

From software's perspective, I implemented a five-stage pipelined CPU simulator based on RISC-V instruction set (RV32I) with C++ featuring branch prediction; also from hardware and architecture's viewpoint, I designed my own CPU in **Verilog** also based on RISC-V, verified on FPGA.

Mx Compiler (Principles for Compiling)

I implemented a java-like high-level programming language compiler targeting at RISC-V. I constructed AST syntax tree, LLVM-like intermediate representation, and finally transformed high-level language into assembly.

Mininet Lab (Computer Networks)

Based on the Mininet networking experiment platform from Stanford, I implemented a diversity of network applications and hardware like proxy_server, Link & Network Layer Forwarding (Virtual Switch & Router), ARP, ICMP, and RIP protocols, and a part of SDN.

Scotty 3D (Computer Graphics)

Rasterize, Texture, Transform, Geometry processing/queries/acceleration, Raytracing, Animation, etc.

SJTU CTF Security Contest hosted by Oops, 2nd in junior group, Special Award in Web

Zhiyuan Honors Scholarship 2019, 2020, 2021

School-level Merit Scholarship - C 2020, 2021