Haowen **Yan**

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Biography

I am Haowen Yan, a third-year undergraduate student majoring in Computer Science and Technology at Sun Yat-sen University.

I have participated in projects including robotic arm teleoperation, ultra-fast model predictive controller (MPC), 5-stage pipelined CPU design, and RISC-V-based operating system development, gaining substantial experience in these areas.

My research interests include Embodied AI, Robotics, Reinforcement Learning, World Models, and Optimal Control.

Education

Sun Yat-Sen University *Guangdong, China*

Bachelor in Computer science *Sept 2023 – Now*

GPA: 4.3397/5.0

Course Grades

The average grade for core major courses is above 90, with some courses exceeding 95.

Mathematics Analysis II (98), Probability and Statistics (96), Machine Learning (98), Data Structures (98)

Projects

Teleoperation of a robotic arm *Python*

- Implemented teleoperation of an existing robotic arm using Meta Quest 3S.
- In many existing teleoperation systems, the robot motion is affected by the head-mounted display (HMD): even when the controller remains stationary, movement of the HMD alone can cause unintended robot motion.
- By introducing the initial pose of the HMD as a reference frame, this work eliminates the influence of HMD motion, thereby improving system stability and control accuracy.

Ultra-Fast Model Predictive Controller (MPC) *C/C++, Python*

- Deployed a hardware-software co-accelerated MPC on a UAV and tested its performance.
- Modeled UAV dynamics and verified state-space equations via MATLAB simulations.
- Programmed the MPC on an FPGA and controlled UAV flight through ROS + Gazebo simulation.

A single-cycle CPU and a 5-stage pipelined CPU based on the MIPS instruction set. *Verilog, Python*

- Designed a single-cycle CPU and a 5-stage pipelined CPU, with all hazards (data, structural, and control) resolved in hardware.
- Implemented both CPUs in Verilog, simulated and debugged them, and deployed on an FPGA development board.

https://github.com/whY-note/PipelineCPU

Operating System Based on the RISC-V Instruction Set

- Developed an OS on RISC-V, supporting ~90 system calls; participated in the Operating System Design Competition.
- Designed and implemented an RISC-V-based operating system with nearly 90 system calls, competing in the OS Design Competition.

Honours and Awards

2024 **National Scholarship**,
2025 **National Scholarship**,
Aug 2025 **Third Prize, Kernel Implementation Track, National College Student Operating System Design Competition (China)**, Implemented an operating system on the RISC-V instruction set, supporting nearly 90 system calls.
Nov 2024 **First Prize, Guangdong Division, National College Student Mathematics Competition (China)**,
Dec 2024 **Second Prize, Guangdong Division, "Shenzhen Cup" Mathematical Modeling Competition (China)**,
Oct 2024 **Third Prize, Guangdong Division, National College Student Mathematical Modeling Competition (China)**,
May 2025 **H Award, Mathematical Contest in Modeling (MCM), USA**,
Apr 2024 **Second Prize, South China Division, MathorCup Mathematical Modeling Competition (China)**,

Skills

English: CET-4(621), CET-6(556)
Programming: Python, C/C++, Matlab, Rust, Verilog
Softwares: Linux, Mujoco, ROS, Git
Trait:

- **Innovative:** Designed a 5-stage pipelined CPU with all data, structural, and control hazards handled entirely by hardware.
- **Diligent and Detail-Oriented:** Explored the underlying logic of concepts while studying Mathematical Analysis and Linear Algebra, delving into each detail.
- **Self-Learner:** Independently studied Reinforcement Learning, Optimal Control, Introduction to Robotics, and other advanced topics.
- **Persistent and Hardworking:** Committed to completing every task thoroughly, willing to endure challenges and take on less glamorous work.

Contact Me

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