

ZEBANG HE

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EDUCATION

ShanghaiTech University 2023 - Present
Undergraduate | *Computer Science* Shanghai, China

Shanghai Jiao Tong University - IPADS Lab 2025
Research Assistant | *MLSys @ Zhichao Hua* Shanghai, China

Research Interests: I am currently focusing on *computer architecture*, *high performance* and *intelligent storage*, with a particular focus on optimizing heterogeneous computing and parallel computing, as well as high-concurrency and distributed file system.

INTERNSHIPS

SiFlow/Scitix (UbiQuant) | SYSTEM DEV **C++, Python, k8s**
AI Infra - Distributed storage / cache system. Connects to LMCache. *Sep 2025 - Nov 2025*

- I was responsible for developing the dynamic scaling and failover features for distributed storage, and I implemented a task queue based on a sliding window to avoid performance spikes.
- I also wrote correctness tests and a large number of unit tests for the project to ensure that the functions worked properly.

SKILLS

Expertise: HPC | Architecture | OS | Compiler | Full-stack Developing | Product Design

Languages: Python | C/C++ | Javascript/Typescript | Rust | OCaml | C# | Golang | LaTeX/Typst

COMPETITIONS

RED Hackathon | SOFTWARE FIRST PRIZE **ComfyUI, k8s, Python**
Hacker Maration by Red Note *2026. Apr.*

- We've developed a TikTok-like hair style APP in **48-hours** named **ChicChic**, and won the first prize with many investments.
- I developed ComfyUI workflow to implement facial transition and video generation. I also developed a load-balance router with many optimizations on parallelism on ComfyUI, supporting inference with many cards simultaneously.

NSCSCC 2025 (Loongson Cup) | SPECIAL PRIZE (RANK 1ST) **Verilog, Vivado, C, ASM**
National Student Computer System Capability Challenge *2025 Jun.*

- We are designing a **high-performance** chip supporting the **LoongArch** instruction set on the FPGA of the Artix-7 kit. And **we've defeated Tsinghua University and Fudan University, ranked 1st!**
- We have run the **Linux system** on this chip and ported specific programs, performing targeted **profiling** and **optimization** for the performance of those specific programs.

- We have optimized **HPL** and **HPCG** with special tuning based on the CPU and GPU architectures we use, allowing them to achieve more than 90% of the theoretical results!
- We've transferred **AlphaFold3** from GPU to CPU, and we've done some optimizations.

PROJECTS

JPO - An Order-Based Market Data feed | JUMP TRADING SCHOOL PROJECT

C++

An efficient implementation of orderbook.

Oct 2025

- I implemented an efficient orderbook with high efficiency. Profiled between different hash implementation, high performance data structure and algorithms.
- Supports Augmented BST Tree to trace history, uses Flat Hashmap, and optimized in instruction-level with Intel VTune to be cache friendlier.

GCC-Fortran with Multi-Versioning Support | OSPP PERSONAL PROJECT C, C++, Fortran

Function Multi-Versioning `target_clones` support for GFortran compiler.

Jun 2025 - July 2025

- I implemented the correct registration and parsing of ATTRIBUTE in the frontend, implemented the attribute handling function, and modified the IFUNC function generation mechanism.

TrackMaker-rs | PERSONAL

Rust

Audio-based Ethernet Implementation, support ICMP/TCP/UDP/DNS

Feb 2024 - Jun 2025

- I implemented a ethernet interface based on acoustic link (by AUX wire or by sound). Using WLAN-like protocol to support multiple access.
- Based on physical layer, I implemented other internet layers, including TCP/UDP/ICMP/DNS and other protocols.

PintOS | PERSONAL

C, x86 Assembly

An operating system for the 80x86 architecture.

Mar 2024 - Jun 2024

- I implemented the advanced scheduling, system call, user/kernel mode, virtual memory and file system of the operating system.
- PintOS contains basic shell and filesystem, and is able to run programs in user mode.

OATC Language Compiler | PERSONAL

OCaml, LLVM, X86lite

A simple language compiler for the OATC language.

Aug 2024 - Jan 2025

- I implemented an X86lite instruction set simulator and assembler. And the OATC language interpreter using OCaml.
- I've also developed the compiler from OATC to LLVMlite IR, and final to X86lite platform.

ROLES

GeekPie Association, GeekPie HPC Team | PRESIDENT

*I'm the **president of GeekPie Association**, a comprehensive technology-based science and innovation society. I'm also the **team leader of the GeekPie HPC team**, participated in ASC/SCC/ISC.*