

## HAOWEI (Howard) ZHU

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### EDUCATION

**Northeastern University**, San Jose, United States  
*Master of Science in Computer Science*

09/2024 – 05/2026

**Shenzhen University**, Shenzhen, China

*Bachelor of Engineering in Computer Science and Technology*

09/2020 – 07/2024

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### TECHNICAL SKILLS

- Languages: C, Python, Rust, C++, Shell Script, Awk, Go, JavaScript, HTML/CSS, SQL, C#, Lisp.
  - Frameworks: React, FastAPI, Gin, Vue.js, libbpf.
  - Tools: eBPF, Linux, Nginx, Git, GNU Make, CMake, Vim, Systemd, Elasticsearch, Redis, PostgreSQL, Spark.
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### PROJECT EXPERIENCE

**Google Summer of Code, Linux Kernel - Perf trace and BTF** [Link](#)

04/2024 – 09/2024

- Contributed over **1,000** lines of code patches that were merged into **Linux kernel** version 6.12 (**180,000 stars** on GitHub), used by **56 million** PCs and **96.4%** of the **top one million** web servers. [Link](#)
- Developed a collector for struct, buffer, enum, and string arguments in system calls using **eBPF** and **BTF**, enhancing **perf trace** functionality and collecting **130%** more pointer arguments. [Link](#) [Link](#)
- Enabled real-time analysis of CPU idle time for **perf record**, achieving **millisecond-level** granularity. [Link](#)
- Fixed various bugs in **perf**, enabling tracing for **11%** more system calls and adding **Clang** build support for over **38%** of Linux machines. Also participated in code reviews and testing. [Link](#) [Link](#) [Link](#)
- Created documentation for **multiple** new features and wrote development blog posts. [Link](#)

**eBPF-based Performance Analysis and Visualization Tool - Sberf** [Link](#)

09/2023 – 03/2024

- Enabled stack trace and CPU counter collection with **eBPF**, boosting speed by **37%** compared to **perf** while using only **1%** of the disk space required by **perf**.
- Implemented a built-in flame graph visualization feature, which is **178%** faster than **FlameGraph**.
- Leveraged **BPF CO-RE** to ensure portability across **45%** of all Linux machines worldwide.

**Terminal File Explorer - Transgender.rs** [Link](#)

02/2024 – 04/2024

- Implemented file exploration with **Vim-like** key bindings, file searching with **regular expressions**, and support for opening files with a preferred text editor, achieving a starting time **88 times** faster than **ranger**.
- Built the terminal UI entirely from scratch, reducing dependencies to only **libc** and **regex**. This resulted in a small executable, only **11%** of the size of **yazi**, and minimal memory usage, just **7%** of that used by **ranger**.

**ByteDance Youth Camp - Search Engine Project** [Link](#)

05/2022 – 08/2022

- Developed a search engine for the **Huawei Wukong** dataset, optimizing queries across **100 million** entries.
  - Built the back-end using **Go** and **Gin** framework, designed the front-end UI with **Vue.js**, and deployed the application on a **Linux** server using **Nginx**, improving query response time by **48%**.
  - Implemented efficient indexing using **LevelDB**, boosting search speed by **60%**, and achieved accurate query text segmentation with the **gojieba** library, enhancing search relevance by **35%**.
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### WORK EXPERIENCE

**Software Engineer Intern, Loozee Inc.**, Shenzhen, China

07/2023 - 09/2023

- Developed an AI dialogue chat assistant powered by the **ChatGLM2** large language model (LLM).
- Utilized the **fastllm** C++ acceleration library to increase model generation speed by over **50%**.
- Implemented an intuitive training framework with **LoRA** fine-tuning, with **80%** of users being non-technical.
- Created a user recommendation algorithm using **KeyBERT**, **Neo4j**, and **Elasticsearch**, improving performance by **15%**. Developed a sensitive word filtering system using **Redis**, handling **90%** of traffic.
- Achieved **multi-batch** LLM generation, resulting in up to a **3,000%** increase in generation speed.
- Integrated a retrieval-augmented generation system using **LangChain** and **Faiss**, boosting accuracy by **80%**.

**Software Engineer Intern, Mindray Medical International Ltd.**, Shenzhen, China

08/2022 - 09/2022

- Developed the CPQ (Configure, Price, Quote) system using the **SAP** system **Python API**.
  - Resolved a third-party fee bug, accelerating the audit process by **40%**.
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### PUBLICATION

- M. Saqib Nawaz, Shoaib Nawaz, Haowei Zhu, Unil Yun, **SPM4GAC: SPM based approach for genome analysis and classification of macromolecules**, International Journal of Biological Macromolecules. [Link](#)