Honglin Cao

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Education

University of Waterloo, Bachelor of Computer Science — Sep 2020 – Aug 2025

- Faculty Cumulative Average: **93%** / GPA: **4.0**
- President's Scholarship of Distinction

Experience

Platform Software Engineer | CentML - Toronto, ON — Sep 2024 – Aug 2025

- Led the development of a local development environment mirroring the actual server setup implemented with **Pulumi**, **Kubernetes**, **Docker**, **Knative**, and **AWS**. Utilized tools such as **LocalStack** and **Minikube** to resolve critical issues related to billing, monitoring, deployment, and database mocking, ensuring identical API interactions and deployment processes with the production environment.
- Designed and implemented new **APIs** integrated with container deployment, billing, and user storage on **GCloud** and **AWS**, adhering to modern safety standards to protect against malicious users.
- Automated key processes, including releasing **API Clients** and **Container Images** for user deployment and control plane services upon platform releases, designed and built **integration tests** utilizing **pytest**, **jwt**, **WorkOS**, ensuring operations without intervention and providing up-to-date user experiences.
- Worked on projects from other venders like **llama-stack**, **huggingface_hub** and **huggingface.js** to promote our platform and provide alternative ways to interact with our serverless endpoints.

Distributed Database Engineer | Huawei - Markham, ON — Jan 2022 – Jan 2024

- Designed an **RPC** protocol over **TCP** and **RDMA** in **C** to eliminate size limits, enabling **crash recovery** messages on multi-node **GaussDB** configurations.
- Quantified database performance with **perf**, **gstack**, **vmstat/iostat**, **CPU Flame Graphs**, and **jTPCC**. Automated the process as a program with GUI using **Bash**, **Python**, and **HTML/CSS/PHP**.
- **Standardized** automated **TPC-C** benchmark on single-node, physical and logical multi-node **GaussDB** configurations with templates in **Groovy**, **Bash**, **Python**, **Java**, **GitLab CI**, and **Jenkins** across **ARM** and **x86** environments, maintained and adapted them to suit rapid development goals.
- **Managed** servers to suit developers' needs; **troubleshot** issues ranging from faulty link negotiation settings to low performance caused by unoptimized **sysctl** settings, **allocated** and **set up** working environments for developers, and **negotiated** with headquarters for resources needed across the teams.

Projects

Fluid Simulation | C++, OpenGL — Apr 2024

- Implemented basic **Rasterization** with **OpenGL shaders** on GPU.
- Developed a **Weakly Compressible Smooth Particle Hydrodynamics** simulation on CPU.

Pet Health Monitor | Python — Jan 2024

- Trained **YOLO-v8** on personal datasets, achieving **98%** accuracy on validation.
- Achieved detection of pet status within **200 ms** on low-power **IoT** devices.

Skills

Languages: C++, C, Python, Go, Java, C#, SQL, Bash, Groovy, HTML, CSS, R, LaTeX, JavaScript, PHP, Kotlin ...

Tools: Docker, Kubernetes, Jenkins, GitLab, VS Code, Postman, PostgreSQL, Unity 3D, Unreal Engine 4, CMake, GDB, vim, Valgrind, OpenGL, CUDA, ROCm

Platforms: Arduino, Raspberry Pi, Flipper Zero

Operating Systems: Linux (Arch Linux, Fedora, Ubuntu), Windows, macOS