# Honglin Cao

Toronto, ON  h45cao@uwaterloo.ca  647-939-8018  v2ark.com  linkedin.com/in/v2ark  github.com/V2arK

## 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 – Apr 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, ensuring seamless operations without manual intervention and providing up-to-date user experiences.

**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, Racket, R, LaTeX, JavaScript, PHP, Kotlin . . .

**Tools:** Docker, Kubernetes, Jenkins, GitLab, VS Code, Postman, GaussDB, CockroachDB, PostgreSQL, Fusion 360, Microsoft Access, Unity 3D, Unreal Engine 4, GNU Octave, MobaXterm, IntelliJ IDEA

**Platforms:** Arduino, Raspberry Pi, Flipper Zero

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