

Honglin Cao

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EDUCATION

UNIVERSITY OF WATERLOO
BACHELOR OF COMPUTER SCIENCE
Expected Graduation: Sep 2025
Waterloo, ON, Canada
President's Scholarship of Distinction
Cumulative Average: 93+%

LINKS

Github:// **V2arK**
LinkedIn:// **Honglin Cao**

COURSEWORK

UNDERGRADUATE

Data Structures and Data Management
Algorithms
Object-Oriented Programming
Operating Systems
Distributed Systems
Computer Networks
Computer Graphics
Audio Processing
Artificial Intelligence
Neural Networks
Application Development (Full Stack)

SKILLS

LANGUAGES

Proficient:

C++ • C • Python • Java • C#
SQL • Bash • Groovy • HTML • CSS
Racket • R • \LaTeX

Familiar:

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

Arch Linux • Fedora • Ubuntu
Windows • macOS

EXPERIENCE

CENTML | PLATFORM SOFTWARE ENGINEERING INTERN

Sep – Nov 2024 | Toronto, ON

- Led the development of the local platform, enhancing the setup with tools like **Fluent Bit**, **LocalStack**, **CloudWatch**, and **Minikube**.
- Resolved critical issues related to billing, monitoring, and database mocking to ensure identical API interactions and deployment processes mirroring the production environment.

HUAWEI | DISTRIBUTED DATABASE ENGINEERING INTERN

Sep – Dec, Jan – Apr 2023, Jan – Sep 2022 | Markham, ON

- Designed **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; **troubleshoot** 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 | Programmer

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

PET HEALTH MONITOR | PYTHON

Jan 2024 | Researcher, Programmer

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

WATDFS | C++ BACKEND

Dec 2022 | Project Manager, Programmer

- Developed a **Distributed File System** for **UNIX**-based OS using **libfuse**.
- Implemented a generic **RPC** protocol for client-server remote communication.
- Supported creating, opening, reading, writing, and closing files on remote machines.

BAIER'S TO-DO LIST | KOTLIN FULL STACK

Dec 2022 | Project Manager, Programmer

- Built front-end using **JavaFX** with **MVVM** design pattern.
- Developed back-end using **Spring Framework** with **CockroachDB**.
- Conducted testing with **JUnit** and **Postman**.