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

HUAWEI | Distributed Database Engineering Intern

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

- Quantified database performance regression 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**.
- Designed and implemented an **RPC** subprotocol over **TCP** and **RDMA** in **C**, allowing packages to be sent without size limits, enabling **crash recovery** messages on multi-node **GaussDB** configurations.
- **Standardized** automated tests for **TPC-C** benchmark on single-node, physical and logical multi-node **GaussDB** configurations with template scripts in **Groovy**, **Bash**, **Python**, **Java**, **GitLab CI**, and **Jenkins** across **ARM** and **x86** environments. Created setup and usage Wikis, maintained and adapted them to suit rapid development goals.
- Designed and implemented **unit tests** from scratch for **RPC** functionality.
- **Managed**, **fixed**, and **upgraded** 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, ensuring a fair workload on servers across teams.
- **Documented** findings from experiments into **reports** for developers to present; guided team members with well-written **Wiki pages** on various tasks.

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**.