

# Zening Hao

University of Waterloo, 4B Honours Computer Science, Digital Hardware Specialization

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Available for 4-Month Work Term – Fall 2024

## Summary of Qualifications

- Experience in embedded software programming, system-level cryptography, and computer networking research
- Fast and active learner, proven strong problem-solving and critical thinking skill
- Proficient languages with working experience: C; C++; Python
- Environments: Linux (including Shell scripting), Windows; Tools: Git, SVN, Jenkins, Jira

## Work History

### Firmware Developer Co-op

May 2024 – Present

ON Semiconductor, Corp (Onsemi)

Waterloo, ON

- Developed secure **embedded software in C** for wireless/DSP devices with a focus on **hardware security**.
- Conducted **Bluetooth stress testing** for upcoming product release, ensuring robust performance.

### Systems Software Development Student

Sep – Dec 2023

Blackberry, Ltd.

Mississauga, ON

- Developed a **Python test framework** for **QNX's system-level cryptography** library on **Linux**, supporting safety certification application process. Included ECC and SHA256 algorithm tests.
- Improved test coverage with code generation. Integrated framework into test ware compilation using **Makefile**.
- Implemented **runtime fault injection** for error detection using statistical methods, ensuring its accuracy and reliability.

### Software/Firmware Engineering Co-op

Jan – Apr 2023

Microchip Technology, Inc.

Ottawa, ON

- Performed **C++ low-level programming**, improved a **chip flashing dynamic-linked library**.
- Integrated data transfer for multiple chip boards, added support via intermediate device, developed its **device driver**.
- Addressed **external customer requests** to resolve DLL bugs and improve chip communication speed with **I2C**.

### Software/Firmware Engineering Co-op

May – Aug 2022

Microchip Technology, Inc.

Ottawa, ON

- Worked on **device-level Python and TCL validation tool** for Azurite-series chip boards.
- Collaborated with firmware and validation teams to customize features for streamlined testing process.
- Integrated Python **equipment library** and designed new data processing methods to enhance measurement accuracy for devices like oscilloscopes and function generators.

### Technical Intern

Jul – Dec 2021

Synopsys, Inc.

Shanghai, China

- Developed **Python validation tool** for regression tests of Proteus solutions, adopted by multiple QA project groups.
- Created **code coverage analysis** method and designed lexers & parsers for code analysis in **Python and TCL** under **Linux** environment. Detected uncovered branches and syntax errors. Opened 4 Jira tickets to address issues.

## Research

### Research Assistant at University of Waterloo

Mar 2024 – Present

- Conducted **network performance analysis** with simulations to test **Linux traffic control scheduler fairness**.
- Explored Linux Qdisc scheduler traits and designed customized traffic flow generation algorithms using **Python**.
- Tested Qdisc settings' impact on **traffic shaping and throughput**, aiming to disrupt a scheduler fairness scheme.

## Education

### University of Waterloo – Waterloo, Ontario

Sep 2020 – Apr 2025 (Expected)

- Bachelor of Computer Science, Honours, Co-operative Program, Digital Hardware Specialization
- Term Honours: Term Distinction for Winter 2021, Winter 2022, Winter 2023, Spring 2023, Fall 2023
- Awards: University of Waterloo President's Scholarship of Distinction (2021)
- Coursework: Digital Forensics, Operating Systems, Computer Networks, Software & Systems Security

## Additional Information

**Coursera Courses:** Machine Learning (Octave, 2021), Data Analysis with Python (Python & MySQL, 2021)