Zening Hao

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

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Available for 4-Month Work Term – Fall 2024

Skills

- **Languages**: C, C++, Python, Bash, Makefile, HTML, CSS, JavaScript, Racket, R
- **Technical**: Linux, Windows, Docker, VirtualBox, Git, SVN, Jenkins, Jira
- **Certificate:** Machine Learning (Octave, 2021), Data Analysis with Python (Python & MySQL, 2021)

Work History

Firmware Developer Co-op
May 2024 – Present

ON Semiconductor, Corp. (Onsemi) — *Waterloo, ON*

- Contributed to SDK release process for an Arm-based Bluetooth Low Energy wireless MCU with **4** verification tests.
- Scanned SDK code to identify and fix **10+** non-volatile global flags, preventing compiler issues across **all** systems.
- Migrated handler code and tested changes on **7** BLE applications, including FOTA and RTOS.

Undergraduate Research Assistant
Mar – May 2024

University of Waterloo — *Waterloo, ON*

- Simulated network traffic to test the fairness scheme of Linux traffic control schedulers (QDisc).
- Designed and implemented a multi-threaded QDisc experiment with flow generation and measurement.
- Detected exception flow behaviour under specific configurations via analysis of traffic shaping results.

Systems Software Development Student
Sep – Dec 2023

Blackberry, Ltd. (QNX) — *Mississauga, ON*

- Developed a test framework for Certicom's cryptography APIs, integral to applying a **safety certification**.
- Improved branch coverage via compile-time code generation, proven **0 false-negative** test cases using a runtime fault-injection feature. Included tests for **all 7** ECC variants and SHA256 algorithms.

Software/Firmware Engineering Co-op
Jan – Apr 2023

Microchip Technology, Inc. — *Ottawa, ON*

- Resolved **1 critical** bug for **external customer**. Enhanced I2C chip communication speed for a prototype platform.
- Added a C++ device driver to a chip-flashing DLL to integrate Universal Controller (UC) as an intermediate device between PC and chip platforms. Supported **all** Azurite series chip platforms and the prototype platform.

Software/Firmware Engineering Co-op
May – Aug 2022

Microchip Technology, Inc. — *Ottawa, ON*

- Upgraded a device-level Python and TCL validation tool to integrate a switch box for testing across **2** chip platforms.
- Enhanced accuracy of measurement methods for oscilloscope and **3** function generators in the equipment library.

Technical Intern
Jul – Dec 2021

Synopsys, Inc. — *Shanghai, China*

- Developed a Python code coverage analysis tool for TCL code, generating HTML reports akin to LCOV for GCC.
- Used the tool to identify **4** code coverage gaps and syntax errors, leading to its adoption by **2+** QA groups.

Projects

Operating Systems: Implemented multiple kernel concepts in C in Linux environment inside **Docker** container.

Digital Forensics: Explored file system & memory forensics. Performed network analysis with **Wireshark** in Kali Linux.

Website Scraper: Built a Python website scraper for job postings on a campus job board, utilizing **GPT API** calls to generate customized summaries and prioritize job preferences.

Personal Website: Created a professional web portfolio in HTML, CSS, and JavaScript, highlighting technical skills.

Education

University of Waterloo – Waterloo, Ontario
Sep 2020 – Apr 2025 (Expected)

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