

ANDY REN

Computer Engineering at University of Waterloo

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EXPERIENCE

Software Engineering Intern

Cruise

📍 San Francisco, California

📅 September 2022 – Present

- Working on the Embedded Linux team

Firmware Subteam Co-Lead

Waterloop

📍 Waterloo, Canada

📅 January 2022 – Present

- Developed a state machine driver in **C** for an **STM32F04**-series microcontroller to control the hyperloop pod indicator lights, based on CAN state messaging from various pod subsystems

Diagnostics/Platform Engineering Intern

Arista Networks

📍 Santa Clara, California

📅 January 2022 – April 2022

- Ported hardware configuration tests for a family of network switches to be more modular in **Python**, improving test extensibility
- Designed a proprietary token generator for all network switches families at the manufacturing configuration stage

Embedded Software Intern

Nuvation Energy

📍 Waterloo, Canada

📅 January 2021 – April 2021

- Developed firmware in **C/C++** and hardware-in-the-loop system tests in **Python** for the Nuvation **Battery Management System**
- Drafted and implemented a prototype software model for migrating SPI flash memory data after a firmware upgrade

Software Developer

VirtaMove

📍 Kanata, Canada

📅 September 2019 – December 2019

- Built a robust internal test framework using **Python** and **Robot Framework**, which executed release-critical tests nightly, reducing software verification time by 50%
- Redesigned migration agent key generation in **C++**, enabling host system communication with remote agents after a system restart, enhancing product scalability

PROJECTS

RISC-V CPU

SystemVerilog Verilog

📅 November 2021

- 5-stage pipelined, 32-bit CPU built on the **RISC-V** ISA

ARM RTX Kernel

C GDB Arm Cortex M3

📅 August 2021

- Real-time operating system kernel for an **NXP LPC1768** microcontroller with dynamic memory allocation, console I/O and real-time task scheduling

home-monitor

C C++ Raspberry Pi 3B+

📅 July 2020

- Multi-threaded home monitor embedded system capable of detecting intruders, sensing temperature and humidity, and playing music

SUMMARY

- Professional experience in software/firmware development and testing with **ARM Cortex M**-based embedded systems using **C**, **C++**, **Python**
- Practical experience with **Unix** and RTOS programming, FPGA and RTL programming in **Verilog**, and **RISC-V** assembly

SKILLS

Languages

C C++ Verilog Python RISC-V

Tools, Frameworks, and Libraries

POSIX FreeRTOS arm-gcc GDB
Git Docker Vivado Robot Framework

EXTRACURRICULARS

⚙️ **Engineering Student Councillor**
Advocate for engineering students

💓 **Fitness Enthusiast**
Avid weightlifter and distance runner

🎵 **Lifelong Musician**
Played **Piano**, and **Alto Saxophone** for over a decade

EDUCATION

BASc, Computer Engineering

University of Waterloo

📅 September 2018- May 2023 (Expected)

- cGPA: 3.3/4.0 (81%)
- Relevant Courses:
 - ECE 250 - Algorithms and Data Structures
 - ECE 224 - Embedded Microprocessor Systems
 - ECE 252 - Systems Programming and Concurrency
 - ECE 350 - Real-Time Operating Systems
 - ECE 327 - Digital Hardware Systems
 - ECE 320 - Computer Architecture
 - ECE 445 - Integrated Digital Electronics