

ANDY REN

Computer Engineering at University of Waterloo

@ andy.ren@uwaterloo.ca

1-519-404-5869

andyren.me

linkedin.com/in/andy-ren

github.com/ren-andy

EXPERIENCE

Software Engineering Intern

Cruise

- Working on the Embedded Linux team

San Francisco, California

September 2022 – Present

Firmware Subteam Co-Lead

Waterloop

- 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

Waterloo, Canada

January 2022 – Present

Diagnostics/Platform Engineering Intern

Arista Networks

- 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

Santa Clara, California

January 2022 – April 2022

Embedded Software Intern

Nuvation Energy

- 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

Waterloo, Canada

January 2021 – April 2021

Software Developer

VirtaMove

- 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

Kanata, Canada

September 2019 – December 2019

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