

# ANDY REN

## Software Engineer

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## EXPERIENCE

### Software Engineer - CoreOS

**Cruise**

- Device OS bring-up for the Origin, Cruise's next-generation autonomous vehicle with no steering wheel
- Custom Linux kernel development for autonomous vehicle systems

### Software Engineering Intern - CoreOS

**Cruise**

San Francisco, California

September 2022 – December 2022

- Developed proof-of-concept of an ethernet-based centralized kernel logging system for embedded Linux devices running on **Cruise**'s self-driving vehicles, primarily in C
- Upstreamed patch to **Linux** kernel: Allow live renaming when an interface is up - bd039b5

### 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

### Embedded Software Intern

**Nuvation Energy**

Waterloo, Canada

January 2021 – April 2021

- Drafted and implemented a prototype software model in C++ for migrating SPI flash memory data on boot after a firmware upgrade

### Software Engineering Intern

**VirtaMove**

Kanata, Canada

September 2019 – December 2019

- Built a robust internal test framework using **Python** and **Robot Framework**, which enabled rapid nightly release testing - reducing software verification time by 50%
- Redesigned migration agent key generation in C++ to save state, enabling uninterrupted host system communication with remote agents after a system reboot, enhancing product scalability

## PROJECTS

### BOOTLE

C++ BLE

March 2023

- Smart device prototype that incorporates everyday carry functionality into an easy-to-carry water bottle, built as central part of capstone design project

### RISC-V Processor

SystemVerilog Verilog

November 2021

- 5-stage pipelined, 32-bit processor built on the **RISC-V** instruction set architecture

### 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

## SUMMARY

- Professional experience in firmware and operating systems development for ARM-based embedded systems using **C**, **C++**, and **Python**
- Experience with open-source **Linux** kernel development
- Coursework in performance programming with **Rust**, FPGA/RTL programming in **Verilog**, **RISC-V** assembly, and machine learning

## SKILLS

### Languages

C C++ Verilog Python RISC-V  
Rust

### Tools, Frameworks, and Libraries

Linux Buildroot arm-gcc gdb Git  
Docker Vivado Robot Framework  
PyTorch

## AWARDS

-  **ECE Capstone Symposium Award**  
ECE Fourth Year Design Project (FYDP) award for designing a system to consolidate everyday carry functionality

## EDUCATION

### BASc., (Hons) Computer Engineering

**University of Waterloo**

September 2018 – June 2023

- Graduated with Distinction
- cGPA: 3.7/4.0
- Relevant Courses:
  - ECE 350 - Real-Time Operating Systems
  - ECE 327 - Digital Hardware Systems
  - ECE 320 - Computer Architecture
  - ECE 445 - Integrated Digital Electronics
  - ECE 451 - Compilers
  - ECE 459 - Programming for Performance
  - ECE 495 - Autonomous Vehicles