ANDY REN

Software Engineer

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EXPERIENCE

Software Engineer - CoreOS
San Francisco, California
Cruise
July 2023 – Present

- 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
San Francisco, California
Cruise
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
Santa Clara, California
Arista Networks
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
Waterloo, Canada
Nuvation Energy
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
Kanata, Canada
VirtaMove
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