ANDY REN

Software Engineer

@ andy@andyren.me | 1-415-605-3089 | andyren.me | linkedin.com/in/andy-ren | github.com/ren-andy

EXPERIENCE

Software Engineer
San Francisco, California
Cruise
July 2022 – Present

- Embedded Linux kernel development

Software Engineering Intern (EmOS)
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
- Designed a proprietary token generator for all network switches families at the manufacturing configuration stage

Embedded Software Intern
Waterloo, Canada
Nuvation Energy
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 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

RISC-V Processor
SystemVerilog | Verilog
November 2021

- 5-stage pipelined, 32-bit processor 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

SUMMARY

- Professional experience in firmware and operating systems development for **ARM**-based embedded systems using **C**, **C++**, and **Python**
- Experience in 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

EXTRACURRICULARS

Fitness Enthusiast
Avid weightlifter and distance runner

Musician
Piano and **Alto Saxophone** player

EDUCATION

BASc., (Hons) Computer Engineering
University of Waterloo
September 2018 – June 2023

- cGPA: 3.7/4.0 (82%)
- 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
  - ECE459 - Programming for Performance
  - ECE 495 - Autonomous Vehicles