

# DANIEL RUSH

## Senior Software Engineer

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📍 San Francisco, California

in daniel-rush95

🔗 theDrsh

## EXPERIENCE

### Senior Software/Firmware Engineer

#### Carbon, Inc.

📅 June 2017 - Ongoing

📍 Redwood City, California

- Built a motor controller from the ground up. Communicates and integrates with all of Carbon's 3D printers and other systems.
- Played an integral role as in building and maintaining the firmware and low level software of the core platform.
- Developed automation, code generation, hardware-in-the-loop tests, and tools for building and testing firmware and hardware.

### Associate Firmware Engineer

#### California Mechatronics Center

📅 November 2017 - May 2017

📍 Chico, California

- Developed firmware for an earthquake sensing system using MQTT and USB storage for data transmission and redundancy.
- Worked on Verilog HDL for FPGA based sensor system with mass parallel sampling and data transfer.
- Rewrote library for data serialization optimizing for speed to keep up with parallel sampling rate.

## PROJECTS

### Motor Controller

#### Carbon

- FOC Motor controller, cascaded control loop allows for torque, velocity, relative position, or absolute position control.
- USB Logging, UART API interface, SPI Controlled FET-Driver chip, I2C EEPROM hardware version control
- Hardware fault detection and safety states to prevent damage to mechanics and electronics.

### Oxygen Subsystem

#### Carbon

- Oxygen concentration and distribution system. Heart of CLIP printing process.
- I2C based system of solenoids and regulators.
- Developed abstraction layers to service multiple versions of hardware

### Open Source Firmware communications

#### uComs

- Ongoing project to make starting an embedded project's communication protocol easy and generated
- Integrates all the nitty gritty of communicating between a host and a device, providing a boilerplate for communications

## MY LIFE PHILOSOPHY

*"Build things, break things, fix things"*

## STRENGTHS

Hard-worker

Detail Oriented

Self-Starter

Dedicated Teammate

Communicator

## PROFICIENCIES

I2C

SPI

UART

USB

System Debugging

System Integration

Board Bring-up

Embedded Systems

Linux

Bazel

Cmake

Jenkins

PyQT

TKinter

Saleae Logic analyzer

## LANGUAGES

C++

Python

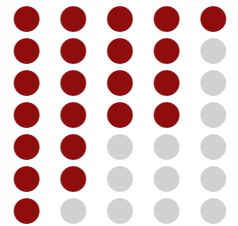
Mako

YAML

Verilog

Lua

Bash



## EDUCATION

### B.Sc. Mechatronics Engineering

#### CSU Chico

📅 Aug 2013 - May 2018

### B.Sc. Computer Engineering

#### CSU Chico

📅 Aug 2013 - May 2018

## MY IDEAL ROLE

