

Education

California Polytechnic State University, San Luis Obispo

(Junior) Expected Jun. 2022

BS Electrical Engineering - 3.95 Major GPA

San Luis Obispo, CA

- Dean's List; CP Hyperloop Control Systems design lead, CP SLO Breakers, Yu-Gi-Oh Club

Experience

Microsoft

Jun. 2020 - Sep. 2020

Software Engineering Intern - Surface Duo Firmware Engineering

(Remote) Sunnyvale, CA

- Brought-up, integrated, developed, & customized sensor device driver for commercialization on Qualcomm Snapdragon SoC sensors processor & applications processor HAL
 - Debugged hardware, registry loading, & system integration for successful driver initialization
 - Configured dual sensor instance & exposed sensors to Android framework in C & C++
 - Programmed hardware register configuration functionality from external sensor entities
- Developed Android app, Android framework, & native libraries for modem configuration

Apple

(9 Months) Jan. 2019 - Sep. 2019

Hardware Engineering Intern - Apple TV Hardware Engineering

Cupertino, CA

- Designed electrical, mechanical, & software system to characterize IR performance
 - Developed embedded abstraction layer on STM32 MCU for closed-loop motor control, LCD drives, sensor/peripheral control, & I2C & UART communication
 - Programmed Python application as flexible entry point into embedded systems over USB
- Architected, prototyped, & designed HDMI dev platform PCB. Design lead for DC-DC power, USB, & debug subsystems. Collaborated on high-speed digital (HDMI) & MCU subsystems
- Led validation, debug, & FA efforts: HDMI (CTS), PMU, SoC, UART, NAND, PCIe & PDM mic hardware subsystem, & multilayer PCB failure
 - Debugged SAR ADC current & voltage measurement tracking on PMU's multiphase buck
 - Conducted HDMI CTS testing across process corners. Debugged eye opening compliance & configured PHY output behavior. Explored high-speed digital PHY & board-level design
- Analyzed A-series SoC thermal & power performance across temperature & process corners
 - Wrote Python scripts for Serial data collection to measure long-term device performance
 - Explored internal CPU & GPU performance & thermal throttling mechanisms
- Analyzed test coverage on factory line to ensure correct placement, value, etc. for every component at each test station. Increased component test coverage by over 25%

Suild

Feb. 2018 - Jul. 2020

CEO

San Francisco, CA

- Shipped 1k+ units to 10+ countries on webstore with 30k+ annual sessions & \$15k+ revenue
- Managed entire product design lifecycle of multiple pcb-based electronics products from concept, architecture, prototype, design, coding, validation, assembly, manufacturing, testing, & shipping
- Designed & programmed embedded electronics products implementing AVR MCUs, USB, UART, DC-DC switching & linear converters, & PID controlled inductive loads
- Deployed frontend, backend, & system architecture e-commerce website with MERN stack
- Developed documentation hosting functionality & interactive web applications

Projects

Find more at suild.com & montychoy.com

Select-Fire Nerf Rapidstrike Kit - suild.com/shop/4

Jun. 2019 - Jul. 2020

- Designed & manufactured PCB-based product for select-fire control in modified Nerf blasters
- PCB implements programmed MCU, USB, UART, analog, high-speed digital, DC-DC power, closed-loop PID inductive drive, & debug hardware subsystems

RISC-V MCU

Apr. 2018 - Jun. 2020

- Designed MCU & microarchitecture to implement RISC-V ISA in SystemVerilog on FPGA
- Wrote test benches to validate hardware modules before & after system integration

LTspice Buck Converter

Aug. 2020 - Present

- LTspice simulation of ideal & non-ideal, single phase, open-loop, continuous mode buck converter with synchronous rectification

Suild.com - suild.com

Feb. 2018 - Jul. 202

- Webstore that receives 30k+ annual sessions & processes \$15k+ revenue
- Hosts interactive web applications, technical documentation, & e-commerce functionality
- Built with React, Node.js, Express, Mongo DB, Google Analytics, Paypal API

Flywheel Setup Picker - suild.com/tools/flywheel-setup-picker

Nov. 2019 - Jun. 2020

- “Reddit for Nerf blasters” - Interactive web application to submit, view, find, filter, sort, vote, & comment on modified Nerf blaster configuration that receives 5k+ annual sessions at Suild.com
- Built with React, Node.js, Express, Mongo DB, Material-UI, & SASS

TeleMentary Box - *First Place Google Cloud Platform, SLO Hacks 2020*

Feb. 2020

- Personal security locker to prevent package theft with live-streaming facial detection & gps
- Deployed React application & GCP firebase, facial detection, & machine learning cloud functions

Technical Skills

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- **Hobbies:** Breakdancing, Yu-Gi-Oh, wrestling, board games (Dominion, Grifters, Coup), cooking

Electrical Engineering:

- **Hardware Engineering:** MCUs, I2C, SPI, CAN, USB, UART, HDMI, PCB layout & design, test coverage & HW validation, computer architecture, RISC-V ISA, high-speed digital design
- **Power Electronics:** DC switching regulators, inductive drives, MOSFET drives, LiPo batteries
- **Software Engineering:** C, C++, Python, firmware, scripting, device drivers, HAL

IC Design

- **Analog Design:** DC switching regulators, high-speed PHYs, MOSFET, SAR ADC, PLL
- **Digital Design:** Computer architecture, RISC-V ISA, microarchitecture, RTL, SystemVerilog
- **Software Engineering:** C, C++, device drivers, HAL, RTOS, bus controllers, RISC-V

Software Engineering:

- **Software Engineering:** C++, C, firmware, RISC-V ISA & assembly, Python, Java, JavaScript
- **Web Development:** React, Node.js, MongoDB, JavaScript, Python, HTML, CSS, JSON, npm
- **Embedded Programming:** C, C++, device drivers, HAL, RTOS, bus controllers, RISC-V
- **Hardware Engineering:** MCUs, I2C, SPI, USB, UART, motor control, computer architecture

Embedded Systems Programming:

- **Embedded Programming:** C, C++, device drivers, HAL, RTOS, RISC-V ISA & assembly

- **Hardware Engineering:** MCUs, I2C, SPI, USB, UART, HDMI, PCIe, high-speed digital design, MOSFETs, OSI PHY layer design, test coverage & HW validation, computer architecture
- **Software Engineering:** Python, Javascript, HTML/CSS, Java, Git

Web Development:

- **Web Development:** React, Node.js, MongoDB, JavaScript, Python, Google Cloud Platform
- **Software Engineering:** C++, C, firmware, RISC-V ISA & assembly, Python, Java, Git