

Brandon Hayame

brandonhayame@gmail.com | 510-682-0489 | www.linkedin.com/in/brandonhayame

EDUCATION

B.S. in Bioengineering, Bioelectronics Concentration
University of California, Santa Cruz

Santa Cruz, CA
Graduated June 2020

SKILLS

Hardware

Embedded MCU development:
–PSoC 5LP, Raspberry Pi, Arduino, PIC32
FPGA development:
–Artix-7
Circuit design and analysis
Active filter and amplifier design
Oscilloscopes, function generators, logic analyzers, DMMs
PCB layout, hand soldering, schematic capture

Software

C, C++, Python, Linux
MATLAB, Verilog, MIPS Assembly
Bluetooth Low Energy (BLE)
Serial communication protocols
–SPI, I2C, UART, USB
Eclipse, PSoC Creator, Vivado, Git
LaTeX, gnuplot

WORK EXPERIENCE

Hardware Engineer Intern

Santa Cruz Analytics

Santa Cruz, CA
March 2020 – Oct 2020

- Led hardware/software development within a team of 3 engineers to design and prototype a clinical wearable capable of logging bioimpedance, pulse and temperature and transmitting data via BLE to proprietary iPhone app
- Developed C++ library to interface AD5933 impedance analyzer system through I2C
- Drafted and updated hardware schematics and BOMs based on design changes
- Presented design updates weekly to both technical and non-technical audiences

PROJECTS

Smart White Cane

2020

- Collaborated within a team of 4 undergraduate students to develop, prototype, and document the design process of an electronic "white cane" for the visually impaired
- Handheld cane uses 3 ultrasonic sensors to sense proximity to obstacles and provide haptic feedback to the user in the form of vibration

Dual-channel Digital Oscilloscope

2019

- Programmed digital oscilloscope system on Unix-like OS with Raspberry Pi as central device and PSoC 5LP as peripheral
- PSoC samples signals through ADCs and performs USB transfers of sampled data to Raspi, which graphically displays waveforms
- Implemented vertical/horizontal controls, variable sampling rate up to 100 kHz and trigger functionality

3-Electrode ECG Monitor

2019

- Designed and built single-channel ECG monitor and amplifier circuit using Teensy LC and PteroDAQ for data acquisition
- Utilized Python digital bandpass filter script to eliminate DC drift and line noise from ECG signal
- Routed component layout, drafted hardware schematic and soldered parts onto PCB protoboard

Audio Preamplifier and Class-D Power Amplifier

2019

- Designed variable-gain, low-power audio amplifier with high-pass filter from quad op-amp IC
- Built 3 W Class-D power amplifier to drive 8-ohm loudspeaker, consisting of H-bridge and low-pass LC filter
- Characterized AC and DC current/voltage behavior of electret microphone and fit data to linear/saturated regression models

FPGA Arcade Game on Basys3 Artix-7

2018

- Created 'Slug Cross' arcade game on FPGA board, consisting of controllable 'slug' navigating around obstacles
- Developed VGA controller module in Verilog to generate 4-bit color graphics on 640x480 display
- Implemented finite state machine, counters, and various other logic components using Verilog