BRANDON ALBA

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Electrical engineering undergraduate with experience developing low-cost, mixed-signal embedded devices including circuit design, PCB layout, and firmware/software. Currently seeking positions anywhere in the embedded design toolchain, where I can help develop reliable embedded solutions as quickly and cost-effectively as possible.

EXPERIENCE

Embedded System Engineer, Ravata Solutions   **Feb 2020 - Present**

- Reduced product cost by roughly 50% by optimizing hardware selection for impedance sensing circuit, as well as eliminating several expensive components by implementing digital signal processing of input and output sinusoids
- Improved device prototype turnover and performance by switching to 4-layer circuit boards for critical modules and otherwise optimizing the PCB design toolchain
- Designed PCBs and wrote embedded firmware in C for real-time simultaneous ADC data processing, a stepper motor driver, and libraries for a variety of hardware peripherals
- Improved versatility and cost-effectiveness of system by designing host software for embedded medical device in Python, with full functionality including filesystem management and data transfer demonstrated on common PCs as well as Raspberry Pi

Physics Tutor, UC Davis AATC   **Feb 2020 – Present**

- Peer tutor for students taking lower division physics courses at UC Davis
- Topics range from classical mechanics to special relativity and quantum physics, and includes electromagnetics

PROJECTS

CubeSat Electrical Bus   **Jan 2019-Present**

- Leading the electrical team in the design of UC Davis's first undergraduate Cubesat mission
- Presented "Environmental and Performance Testing of Hard Disk Drives as Low-Cost Cubesat Reaction Wheels" at the UC Davis Undergraduate Research Conference in 2020
- Obtained amateur radio Technician license for validating AMSAT satellite transceiver
- Designed low-cost flight computer PCB based on Raspberry Pi Compute Module 3, featuring real-time-clock, hardware watchdog, and GPS.

EDUCATION

University of California, Davis, B.S. Electrical Engineering   **2018 – 2022**

- 3.5 GPA
- Lead of satellite club electrical team
- Courses: EEC 180 (Digital Design in Verilog), EEC 170 (Comp. Architecture)

SKILLS

- **Analog circuit design/verification**: Amplifiers, filters, circuit simulation in LTSpice or OrCAD Capture CIS
- **Embedded firmware**: UART, SPI, I2C, DMA, ADCs. Packet encoding/ring buffers for high speed, reliable data transmission
- **Microcontroller toolchains**: STM32 (STM32Cube ecosystem), MSP432 (Code Composer Studio), PlatformIO IDE (Arduino and STM32), "Bare metal" (makefile + ARM GCC toolchain)
- **PCB Design**: Autodesk EAGLE, KiCAD, Altium Designer; impedance matching, 4-layer boards
- **Programming languages**: Python, MATLAB/Octave, embedded C/C++, bash
- **Digital logic design**: Verilog in Quartus Prime/Altera Modelsim