Colton Acosta

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EDUCATION

B.S.E, Electrical Engineering May 2023
Arizona State University, Tempe, AZ 4.00 GPA

TECHNICAL SKILLS

Hardware: Multimeters, Oscilloscopes, Electronic Loads, Verilog, Microcontrollers, FPGA, Soldering (SMD)
Software: C, C++, Python, Assembly, Linux, Git, Make, ARM, Visual Studio
Design/Modeling: LTspice, KiCAD, DipTrace, MATLAB/Simulink, Cadence, SolidWorks

EXPERIENCE

Undergraduate Research Assistant: Advanced CMOS January 2022–April 2023

- Assisted in the data collection of a 90nm CMOS process in adverse environments for use in satellite imaging systems
- Designed over ten PCBs for mounting test devices and interfacing with a semiconductor parameter analyser
- Constructed a CMOS measurement setup rated for cryogenic temperatures to emulate temperature conditions in space

Sun Devil Rocketry: President and Avionics Team Founder August 2021–May 2022

- Oversaw all activities of a technical student organization with three rocket propulsion teams, two amateur rocketry teams, a K-12 outreach program, and over 50 members
- Facilitated all project development by holding meetings and design reviews, writing budget proposals, organizing launch logistics, mentoring, and maintaining industry/university relations
- Founded a new avionics team to design the club's first flight computer and promote the development of electrical and software engineering skills among students interested in the aerospace industry

Pyramid Technologies, Inc, Mesa, AZ: Electrical Engineering Intern May 2021–August 2021

- Revised a switching power supply and serial opto-isolator PCB to be usable with multiple bill acceptors
- Qualified new optocouplers by measuring logic levels and slew rate for ambient temperatures ranging from 0 to 60°C
- Designed a new PCB to protect test fixture pins from overvoltage and overcurrent conditions using schottky diodes and a PTC resettable fuse
- Collected and analyzed phototransistor data on over 150 LEDs to find a viable bill validation LED that would work at scale production without firmware modifications
- Added serial indication LEDs, signal buffering, inrush current protection, and short circuit protection to a USB to MDB serial interface PCB

PROJECTS

Sun Devil Rocketry: Flight Computer January 2021–Present

- Developed a flight computer to log flight data and implement parachute recovery in amateur and high power rockets
- Equipped the computer with an ARM Cortex-M4 microcontroller, a barometric pressure sensor, external flash, and a USB interface
- Created three PCB layouts to separately optimize for cost, size, and test by using different design rules (DRC)
- Tested the recovery software using a vacuum chamber to simulate the pressure loss that occurs during ascent

Sun Devil Rocketry: Liquid Rocket Engine Controller August 2019–May 2023

- Architected an avionics system which successfully supported ASU's first static hotfire attempt of a liquid rocket engine
- Designed and built an engine controller for to manage engine hardware and communicate with the ground station
- Designed the PCB using an ARM Cortex-M7 microcontroller, a switching power supply, external flash, an SD card, ignition terminals, sensor peripherals, a USB interface, and an RS485 command and control interface

Sun Devil Rocketry: Valve Controller Spring 2022

- Designed, built, and tested a controller to actuate rocket engine valves using an ARM Cortex-M7 microcontroller, solid state relays, a pulse interface, and motor sensors.
- Calibrated valve shaft initial positions using an optoelectronic photogate sensor with customized form factor