

# Colton Acosta

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## EDUCATION

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**B.S.E, Electrical Engineering**  
Arizona State University, Tempe, AZ

May 2023  
4.00 GPA

## TECHNICAL SKILLS

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**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

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### 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

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### 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