

# Colton Acosta

404.430.1346 • cacost12@asu.edu • US Citizen • coltonacosta.com • linkedin.com/in/colton-acosta/

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

## EXPERIENCE

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**Raytheon Missiles and Defense: Software Engineer I** July 2023–Present

- Implemented new features for a .NET based WebUI used for automating software (SIL), computer (CIL), and hardware (HIL) in the loop missile tests using C# and Javascript
- Wrote a C# method to automatically locate library dll files to eliminate the need for manually setting the path
- Added a new page to the WebUI for monitoring background test status by querying the API using HTTP requests
- Added Javascript keyboard event listeners to results pages to implement quit and save keyboard shortcuts

**Garmin Aviation: Embedded Software Engineering Intern** May 2022–August 2022

- Developed certification software for a new Vulkan graphics driver to be used in safety-critical avionics systems
- Wrote unit tests with randomized test vectors in C to test the GPU driver source code with maximal coverage
- Debugged compiler errors of ARM and Windows builds using Visual Studio and MSBuild XML schemas
- Resolved runtime errors caused by randomized test vectors by analyzing the source code functions and manually setting up data structures, pointers, arrays, and buffers

**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

## 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
- Wrote APIs in C for low level control of external hardware using UART, I2C, SPI, and GPIO
- Implemented the recovery software using a state machine architecture to transition between programming, idle, in-flight, and post-flight states
- Implemented apogee detection, main parachute altitude detection, and landing detection algorithms using a FIFO buffer, Z-transforms, and tuned thresholds

**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
- Programmed a Python interface for real-time visualization of engine state and sensor measurements
- Wrote sequencing code in C to open/close engine valves in a timed order to automate a static hotfire test
- Wrote an interrupt driven command processor to communicate with the remote ground station over ethernet