

Colton Acosta

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EDUCATION

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

May 2023
4.00 GPA

TECHNICAL SKILLS

Software: C, C++, C#, Python, Assembly, Linux, Git, Make, ARM, Visual Studio

Hardware: Verilog, Microcontrollers, FPGA, Soldering (SMD), Multimeters, Oscilloscopes, Function Generators

Design/Modeling: LTspice, KiCAD, DipTrace, MATLAB/Simulink, Cadence, SolidWorks

EXPERIENCE

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

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, and IMU, external flash, and a USB interface
- Wrote APIs in C for low level control of external hardware using UART, I2C, SPI, and GPIO
- Wrote a data-logger application to collect flight data, and successfully recovered flight data from several launches
- Implemented 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
- Developed ignition and data-logging APIs in C to abstract low-level hardware control functionality
- Programmed a Python graphical 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