Colton Acosta

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EDUCATION

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

TECHNICAL SKILLS

Software: 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: Software Engineer I Jul 2023–Present

- Hardware in the loop testing of missile systems in C++

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

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

- Evaluated bill validation errors of a bill acceptor's firmware using an in-circuit debugger and assembly source code
- 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
- Wrote Python scripts to calculate external component design values from input specifications and datasheet guidelines

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 flight stages
- 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
- Programmed a Python graphical interface for real-time visualization of engine state and sensor measurements
- Wrote sequencing code in C to open/close engine values 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