

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

Design/Modeling: Altium, LTspice, KiCAD, MATLAB/Simulink, Cadence, NX, SolidWorks

EXPERIENCE

SpaceX: Hardware Development Engineer, Starship Electronics October 2023–Present

- Responsible Engineer for a gyroscope that provides inputs to bending compensation algorithms on Starship Booster
- Responsible Engineer for an engineering camera used to stream video of key events in flight to inform design
- Conducted environmental testing including thermal cycling, vibration, shock, leak, humidity, and radiation
- Developed and released PCBs and avionics designs using Altium for schematic capture and layout
- Reduced cost per vehicle stack by more than 150k by developing new technologies for rocket usage such as MEMs gyroscopes, video encoder ASICs, and cutting edge image sensors
- Doubled camera yield by root causing production test failures such as boot failures, loss of streams, and corrupted video packets
- Wrote Python scripts to scrub vehicle data from company databases and analyze hardware performance

Raytheon Missiles and Defense: Software Engineer July 2023–October 2023

- 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 user interface 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

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
- Wrote Python scripts to calculate external component design values from input specifications and datasheet guidelines
- Designed a revised bill acceptor software development board by adding an electronic fuse to alleviate faulty supply/loading conditions and provide power supply fault indication

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-M7 microcontroller, a pressure sensor, external flash, and USB
- Wrote hardware drivers in C to abstract low level control of hardware UART, I2C, SPI, and GPIO interfacing
- Wrote a data-logger application to collect flight data, and successfully recovered flight data from several launches
- 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