Brandon Todd

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EDUCATION

Embry Riddle Aeronautical University, Prescott, AZ
Bachelors of Science Degree – Software Engineering, 2023
Magna Cum Laude Honors

EXPERIENCE

Garmin, Chandler, AZ - Software Engineer 1
2023 - Present
- Work on our aviation system's Primary Flight Display (PFD) real time safety critical software for horizontal indicators and vertical speed tape components.
- Implement code changes through the evaluation of requirements of the system working off of multiple branches associated with different customers. Create configurable options for each customer.
- Provide bug fixes for existing production line branches as well as new development, notably achieving a 70% reduction in runtime for a specific issue.
- Create automated tests for both run logic background files as well as presenter code (front end producing visual output) as well as updated existing automated tests for full decision coverage (roughly 30-40 total).
- Wrote over 1500 requirements for my assigned components according to Federal Aviation Administration's (FAA) DO-178B guidelines.
- Perform build cop responsibilities of checking build and error logs as well as communicating any issues to the developer who pushed them using Git and Jenkins.
- Wrote parsing scripts to evaluate requirements yet to be tested as well as outdated requirements in automated tests, streamlining the testing process.
- Discussed design decisions with management to create a better and more responsive system
- Refactor various run logic files.
- Found potential vulnerabilities and security risks in our software and helped fix them.
- Debugged customer issues using pcap packet files run on hardware.
- Made memory optimizations by fixing structure padding and alignment

Textron Aviation (Cessna and Beechcraft), Wichita, KS - IT Developer Intern PLM Department
2022
- Reduced technical debt by porting a web application that assisted in business processes from old AIX server to run on newer Linux server.
- Configured web application to automatically build and deploy upon git push using Azure DevOps with Continuous Integration and Continuous Deployment Principles.
- Presented summer project to business leaders.

Canyon AeroConnect, Prescott, AZ - Software Engineer Intern
2021
- Worked in embedded systems engineering on their power supply chip which had an ARM M0+ processor.
- Wrote code to use I2C, ADC, DAC, LED peripherals on an NXP ARM processor in C.
- Wrote bootloader and field loader application in C using I2C communication to field load new images and select the most recent image to boot into.
- Wrote a wear leveling algorithm to reduce the amount of writes to flash memory.
- Performed bench testing on hardware daily.
- Worked in a lab to determine issues with new chipset in a multi-disciplinary team.
- Debugged firmware using JTag and Analog Discovery for waveform captures.

PROJECTS

Senior CapStone – Autonomous Navigation System with Sandia National Laboratories – Software Engineering Technical Lead

2022-2023

- Created design documents such as PDR (Preliminary Design Review) and CDR (Critical Design Review), gathered and wrote requirements, estimated time to completion in a multi-disciplinary team that included electrical engineers.
- Developed and demonstrated Global Navigation Satellite Systems (GPS) denied navigation solutions in Turtlebot 4 drone by retrieving and parsing Lidar as well as odometer data, performing Kalman filtering upon the data to reduce error, then passing that data through a UDP socket connection to a user computer to plot the Turtlebot 4 surroundings.
- Created a script to spawn concurrently running child processes that read, parsed, and stored relevant data, as well as created plans for wear leveling data written onto permanent hardware storage.
- Worked with TurtleBot 4 unit drones equipped with LiDar, RGB camera, and Raspberry Pi 4 using a ROS2 (Robotic operating system).
- Performed product analysis to choose which hardware equipment to use in the final design of the system.

SKILLS

- Proficient in C, C++, Python, Javascript, HTML, ARM architecture, realtime safety-critical systems, git, webscraping
- Some experience in Ada, Matlab, SQL, ROS2, Perl, Django, Azure DevOps, Apache, Java, Solidworks, Unreal Engine