
Ivan Eduardo Guerra

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Professional Experience

Northrop Grumman - Aeronautics Systems

September 2019 - Present

Principal Software Engineer (Active DoD Secret)

- Led a team of 3 in the development of a Cross Channel Data Link in a real-time Linux environment reducing the probability of unmanned air vehicle loss of control by over 10%.
- Accelerated the development of multiple vehicles by creating reusable Linux and Windows device drivers for a variety of sensors including inertial measurement units, air data computers, and motor controllers.
- Configured and benchmarked real-time Linux systems on both consumer and proprietary hardware solutions. Benchmark results drove the selection of safety critical vehicle components.
- Deployed and benchmarked autocoded Simulink flight models to various embedded ARM devices including NXP's iMX6 and Xilinx's Zynq UltraScale+ MPSoC.
- Successfully employed oscilloscopes, multimeters, and other hardware tools in an effort to verify and debug a safety critical circuit.
- Designed and implemented a vehicle hardware in the loop testbench reducing flight test risk and providing a means to regression test the system.
- Negotiated with suppliers on the software specifications for the next generation of flight control computers used in low cost UAV demonstrators. These UAV demonstrators would drive the capture of future contracts.

Raytheon - Space and Airborne Systems

June 2017 - September 2019

Software Engineer II

- Reduced the time needed to identify software defects during flight tests by implementing an air vehicle software instrumentation API in C++.
- Improved laser deconfliction system by implementing SAT location caching. The average time to detect an unwanted laser intersection with a satellite improved by an order of magnitude.
- Built a Jenkins CI pipeline to isolate faults and give developers early feedback on code changes.

Education

University of Oklahoma: Norman, OK

Fall 2013 - Spring 2017

- B.S.E. in Computer Science with minors in Mathematics and Spanish; Overall GPA: **3.95/4.00**

Languages and Technologies

- **Languages:** C/C++ (proficient), Python (proficient), Bash (proficient), Rust (competent)
- **Tools and Platforms:** Linux, Realtime Linux, Embedded ARM, FreeRTOS, Docker, GoogleTest, CMake, Git, Subversion, Atlassian Stack
- **Protocols and Standards:** UART, I2C, SPI, CAN, PWM, RS422/485, TCP/UDP, MIL-1553, ARINC 429, WOSA, STANAG 4586, UCI

Technical Projects

- **gsync** (2023). GPIO driven synchronization on a real-time Linux system. C/C++, Bash
- **steganography** (2023). An image based steganography command line tool. C++, Boost
- **cpplox** (2022). A C++ implementation of the Lox programming language. C++, Python
- **cosmo** (2022). Custom x86 operating system written from scratch. C/C++, x86 ASM, Bash