Matthew Champagne

@ champagne7103@gmail.com | GitHub | New York

Education

Stony Brook University — Stony Brook, NY
B.E Computer Engineering; — *Aug 2019 – May 2023*

Stony Brook University — Stony Brook, NY
M.S Computer Engineering; — *Aug 2023 – May 2025*

Work Experience

Orbit International Corporation — Hauppauge, NY, USA
Junior Embedded Systems Design Engineer — *May 2023 – Current*

- Lead the software development effort for multiple projects including new and legacy products.
- Setup, documented, and maintained a self-hosted GitLab server for Orbit Instrument's Engineering department.
- Helped migrate our sister company from SVN to Gitlab.

Orbit International Corporation — Hauppauge, NY, USA
Embedded Systems Design Engineer Intern — *Jan 2023 – May 2023*

- Constructed a trackball demo unit to test the feasibility of using an optical sensor for our trackball products.
- Learned how to use Orbit's product lifecycle software, schematic software, and product release process.

Work Projects

Rockwell Collins Simulated Control Display Unit (SCDU) and Supporting Software (C++ and Rust)

- The SCDU is a smart display capable of displaying graphics, text, and reporting back user input using a custom protocol over UDP.
- To make the SCDU, drivers were written to control backlighting, scan for key presses, and perform end-user firmware upgrades via the serial port using Ymodem.
- To support the customer and production, a cross platform desktop application was written to light balance the keypad, perform firmware upgrades, and sanitize the unit over USB.

BAE Systems Upgraded Radio Control Unit (uRCU) Software Upgrade (C On AVR)

- The uRCU is a smart display unit that is responsible for communicating with BAE's transponder and providing feedback to the helicopter pilot.
- This program was under DO-178C rules therefore I was given requirements that I had to implement, test, trace, and document.
- The existing codebase lacked source control, so I wrote a Python script to gather all old versions and import them into a Git repository.

BAE Systems Slim Data Entry Device (DED) (Rust on STM32)

- The Slim DED is a VT100 terminal emulator that recieves characters / ANSI escape codes over the serial port and renders the data onto the grid.
- Additionally, the unit had to support end-user firmware upgrades, touch screen input, and contrast adjustment.
- Wrote the main application, bootloader, and cross platform desktop testing application.

OIL VICTORY Bus Prototype (C++ on Linux)

- The OIL Prototype unit was a touch screen device that used GPS data from the VICTORY Bus to determine the current location on an open source mapping application.
- Wrote a reusable and modular VICTORY Bus Library.
- Wrote a Systemd service that monitored the network for VICTORY Bus packets to send them over to the open source map application.

Skills

Programming: C, C++, Java, Python, Verilog, SystemVerilog, VHDL, SystemC, Rust, Latex

Technologies: Linux, GitLab, STM32, CMake, AVR, GCC, Networking