

# Andrew M. Williams

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## SUMMARY

Embedded software engineer working in aerospace R&D on open-architecture systems for the U.S. Space Force and Naval Air Systems Command (NAVAIR). Experienced in C++, Python, Linux, and real-time data systems, with a strong focus on hardware/software integration, simulation, and legacy avionics data buses. Proven ability to modernize mission-critical systems, validate prototypes in ITAR-restricted environments, and deliver government-funded R&D projects from concept through final report. Passionate about embedded computing, space systems, and scalable engineering design.

## EXPERIENCE

### Beacon Industries, Newington, Connecticut

#### Embedded Software Engineer

**August 2025 - Present**

- Led development of a C++ and Python-based avionics data exposure and simulation framework under a NAVAIR Phase I SBIR contract, enabling access to and analysis of legacy aircraft bus data.
- Implemented MIL-STD-1553 and ARINC-429 protocol decoding, abstraction, and data routing, supporting system validation, test automation, and downstream analytics.
- Designed a modular, hardware-agnostic simulation architecture capable of emulating avionics bus traffic and operational scenarios, enabling repeatable validation under representative timing and data-rate constraints without reliance on physical bus hardware.
- Developed a machine learning-based analysis pipeline using a custom autoencoder trained offline, deploying static model artifacts into a real-time data stream for bounded, deterministic validation of avionics bus behavior.
- Authored the system architecture, implementation, and results for the final Phase I report submitted to NAVAIR, delivering a complete end-to-end R&D solution from concept through government review.

### College Computing Services, Tallahassee, Florida

#### Service Technician

**February 2021 – July 2025**

- Developed and maintained a custom TypeScript-based asset management application, tracking 5,000+ devices and improving inventory reliability and scalability through an SQLite database with Sequelize ORM.
- Redesigned and optimized the application's user interface and workflows, increasing inventory processing efficiency by over 50% and improving usability for faculty and staff.
- Automated and deployed standardized SSD images to streamline software provisioning and ensure consistent system performance across engineering laboratories.
- Supported operational reliability of engineering lab systems through proactive hardware upgrades, imaging, and configuration management.

## EDUCATION

### Florida State University, Tallahassee, FL

**Bachelor of Science in Computer Engineering, May 2025**

- **Coursework:** Computer Architecture, Data Structures, Advanced Microprocessors, Embedded Systems, Digital Logic Design, VHDL, Digital Communication Systems, Artificial Intelligence, Computer Networks, Cybersecurity

## TECHNICAL SKILLS

**Languages:** C++, Python, TypeScript

**Systems & Platforms:** Linux, Git, Embedded Systems, RTOS Concepts, ITAR-Restricted Development

**Avionics & Data Systems:** MIL-STD-1553, ARINC-429, Avionics Data Simulation, HIL, RTI Connext DDS

**Tools & Frameworks:** VS Code, SQLite, Sequelize ORM, Geant4, ANSYS

**Hardware & Design:** PCB Design (KiCAD), QMK Firmware

## PROJECTS

### Open-Architecture Data Simulation & Analysis Framework

**August 2025 – January 2026**

- Architected a modular C++/Python system for real-time data ingestion, translation, and dissemination, enabling secure, non-intrusive exposure of legacy system data to downstream analytics and applications.
- Implemented a hardware-independent simulation pipeline enabling deterministic testing, repeatable scenarios, and validation without reliance on physical avionics hardware.
- Designed an offline-to-online machine learning workflow, deploying pre-trained model artifacts into a real-time stream for bounded, deterministic analysis under embedded system constraints.