

Andrew M. Williams

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SUMMARY

Computer Engineering graduate working full-time in aerospace R&D, developing embedded and open-architecture systems for the U.S. Space Force and Naval Air Systems Command (NAVAIR). Proficient in C++, TypeScript, MATLAB, and Linux, with strong expertise in hardware/software integration, thermal analysis, and avionics data systems. Skilled in prototype design, firmware development, and system validation under ITAR-restricted environments. Demonstrated ability to modernize legacy systems and optimize mission-critical hardware for space and defense applications. Passionate about space technology, embedded computing, and scalable engineering design.

EXPERIENCE

Beacon Industries, Newington, Connecticut

Embedded Systems Engineer

August 2025 - Present

- Develops and maintains Git-based avionics communication framework using C++ and RTI Connex DDS to emulate MIL-STD-1553 data transfer, incorporating AI-driven anomaly detection and priority ranking via TensorFlow, enabling intelligent filtering of normalized data frames and secure distribution of validated data streams to authorized third-party applications.
- Conducts integrated thermal-mechanical-radiation simulations in ANSYS and Geant4 to evaluate heater material performance in vacuum and orbital radiation environments, identifying design parameters that improved projected lifetime reliability across GEO, MEO, and LEO.
- Leads technical presentations to NAVAIR representatives, translating high-level proposals into actionable Phase I execution plans, progress reports, and detailed engineering slides.
- Authors Phase I and II technical reports and supporting documentation for SBIR contracts, synthesizing results into concise deliverables for U.S. Space Force and Navy stakeholders.

College Computing Services, Tallahassee, Florida

Service Technician

February 2021 – July 2025

- Developed and maintained a custom TypeScript application (ITEM App) to track over 5,000 devices, improving inventory reliability and scalability by integrating an SQLite database with a Sequelize ORM.
- Redesigned the application interface, increasing inventory efficiency by over 50% and enhancing usability for faculty and staff.
- Cloned and deployed SSD images to streamline software installation and improve system performance across engineering labs.
- Upgraded and maintained classroom hardware and AV systems, supporting a dependable computing environment for students and faculty.

EDUCATION

Florida State University, Tallahassee, FL

Bachelor of Science in Computer Engineering, May 2025

Relevant 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, MATLAB, C#, VHDL, Assembly

Tools & Platforms: Linux, RTI Connex DDS, ANSYS, Geant4, Git/GitHub, VSCode

Hardware & Design: PCB Design (KiCAD), OnShape, QMK Firmware, Embedded Systems, Unreal Engine 5 Simulation

Interests: Space Systems, Open-Source Hardware, Robotics, Mechanical Keyboards

PROJECTS

Open Architecture Data Transfer Solution for Naval Aviation Platforms (Beacon Industries)

August 2025 – December 2025

- Designed and implemented a data communication framework using RTI Connex DDS to emulate MIL-STD-1553 message transactions, enabling real-time message passing between simulated mission systems.
- Integrated AI-driven analytics using AnoMili and LSTM models in TensorFlow for anomaly detection and message prioritization, improving situational awareness and data integrity for open-architecture avionics.
- Planned and demonstrated secure RTI data distribution layer to validate authorized third-party data access, mitigating cybersecurity risks, laying the groundwork for Phase II prototype implementation.

Self-Regulating Heater for Satellite Thermal Control (Beacon Industries)

August 2025 – December 2025

- Performed coupled thermal-mechanical-radiation simulations using ANSYS and Geant4 to assess material behavior and structural stability under orbital conditions, identifying design parameters that improved projected lifespan and thermal uniformity across orbits.
- Developed analytical models for tunable thin-film heater materials with temperature setpoints between -5°C and 20°C, achieving > 30:1 resistance turndown ratio feasibility.
- Collaborated with engineers to optimize manufacturing and validation processes for scalable, space-qualified heater production.

AI Based Driving Simulator (Florida State University)

January 2025 – May 2025

- Developed a driving simulator in Unreal Engine 5 and C# featuring realistic steering-wheel haptics and integrated AI feedback systems (ChatGPT-3.5 Turbo, ElevenLabs) to coach drivers in real-time.
- Modeled the FAMU-FSU College of Engineering campus using CADMAPPER, Blender 4.4, and Google Maps for high-fidelity training environments, and packaged the simulator as a standalone executable for easy deployment.

3x3 Mechanical Macropad (Personal)

January 2025 – February 2025

- Designed and assembled a custom PCB in KiCAD featuring nine mechanical switches, diodes, and an Arduino Pro Micro for microcontroller integration.
- Developed and flashed custom QMK firmware in C, creating a personalized keymap and implementing macro functions for multi-layered input and workflow automation.
- Contributed to open-source QMK repository, enhancing firmware customization features and maintaining hardware compatibility.