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, simulation 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 Connext DDS to emulate MIL-STD-1553 and ARINC-429 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 material performance in orbital environments, identifying design parameters that improve 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, Navy, and DoD 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*

- **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 Connext 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

NAVAIR Open Architecture Data Transfer Solution (Beacon Industries)   *August 2025 – December 2025*

- Designed and implemented a data communication framework using RTI Connext DDS to emulate MIL-STD-1553 and ARINC-429 message transactions, enabling real-time data streams between simulated avionics systems.
- Integrated AI-driven analytics with TensorFlow to create a custom machine-learning model 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 groundwork for Phase II prototype implementation.

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.