Ryan McWilliams

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***Security Clearance*:** Secret, active through December 2025.

Education

Auburn University – Auburn, Alabama
Master of Science in Mechanical Engineering, December 2021

Auburn University – Auburn, Alabama
Bachelor of Aerospace Engineering, May 2018, Computer Science Minor

Skills

- Object-Oriented & Procedural Programming: C, C++, Python, Java, MATLAB, ROS Framework
- Embedded engineering: Interrupt handling, bitwise operations, and breadboard prototyping.
- Inertial & Magnetic Navigation, State Estimation & Control, Sensor Fusion, and Orbital Mechanics
- Cameo Systems Modeler • AltaView 1553 Bus Analyzer • NASTRAN/PATRAN • LaTeX • VSCode

Experience

- Georgia Tech Research Institute, Electronic Systems Engineer January 2022 – July 2025
  - Participated in the design and development of prototype systems based on modular open standards approach (MOSA) technologies.
  - Project lead of a team in a time-bound & budget-constrained project to implement, integrate, verify, and document custom system designs meeting unique customer requirements.
  - Coordinated with team members & communicated with customers to derive functional definitions from high-level system requirements.
  - Implemented the AltaAPI in a C-based application for a Windows environment to control a MIL-STD-1553 device for testing purposes. Extended an existing Python script to retrieve & display MIL-STD-1553 data in a user-accessible format.
  - Supported the revision and enhancement of the Hardware Open Systems Technologies (HOST) standards framework including the ongoing development of Small Form Factor technologies.
  - Completed professional training courses for UAF Systems Modeling & RF EW Concepts.
  - Primary representative of organization and sponsor interests at recurring industry events including technical working sessions and business development opportunities.
  - Provided regular guidance and detailed documentation to Department of Defense sponsors.
- GPS & Vehicle Dynamics Laboratory, Grad Research Assistant January 2019 – December 2021
  - Master's Thesis: Designed a particle filter to estimate vehicle location based on magnetic map-matching of measured data under the advisory of Dr. David Bevly.
  - Presented on the particle-based magnetic localization technique at ION GNSS+ 2021.
  - Collected and analyzed experimental data outputs of magnetometers, GNSS, INS, and radar sensors mounted on a ground vehicle.
  - Performed noise analysis of IMU systems to investigate sources of error growth and estimate error dynamics over simulated 6-DoF aerial trajectories.
  - Developed a pedestrian navigation platform to collect barometric, magnetic, and global positional data for novel research.
  - Modified sensor drivers to improve data interpretation quality and software reliability.

Relevant Coursework

- Real-Time & Embedded Systems Project January 2020 – May 2020
  - Developed and implemented algorithms in C for microcontroller hardware using function queue scheduling and interrupts to sample photodiodes and display the incrementing sum of simulated shapes.
- Software Modeling Project, Requirements Engineer January 2018 – May 2018
  - Worked in a six-man team to analyze, design, model, and implement functional software representing a rudimentary budgeting application using the Java programming language.
  - Constructed & presented UML state models, interaction models, and class models to represent the application. Coordinated with team members to implement & test these models in code.