Liam Jennings

jenningsliamd@gmail.com ldjennings Liam Jennings jenningsliamd.me

OBJECTIVE

Software and robotics engineer with embedded firmware, hardware validation, and real-time controls experience. Proficient in C/C++, Python, and Linux, with hands-on debugging using oscilloscopes and SWD debuggers. Seeking to apply my embedded systems background to challenging electromechanical problems.

EDUCATION

Bachelors in Computer Science, Worcester Polytechnic Institute (WPI) August 2021 - May 2025

with Minor in Chinese Studies, GPA: 3.93/4.0

Masters In Robotics Engineering, WPI August 2024 - Dec 2026

GPA: 3.75 / 4.0

SKILLS

Languages: C, C++, Python, Rust, Java, Typescript, MATLAB, Mandarin Chinese (Intermediate)

Software & Technologies: Linux, Git, CI/CD, Docker, RTOS, MQTT, TCP/IP, SolidWorks CAD (CSWA)

Lab Equipment: Oscilloscopes, SWD Debuggers, Embedded Data Acquisition

EXPERIENCE

Hardware Test Engineering Co-op, Symbotic, Boston MA July - December 2025

- Owned end-to-end execution of hardware validation tests for embedded and electromechanical subsystems — developing procedures, running tests, and documenting failure criteria and results to support team-level V&V efforts.
- Redesigned a HIL traction motor test fixture with closed-loop PID control and MQTT-over-Ethernet communication to support reliable multi-month accelerated life testing.
- Built automated Python tools for log parsing and time-series visualization using InfluxDB; maintained tooling under Git with unit tests and CI/CD pipelines.
- Diagnosed hardware faults and characterized subsystem behavior using oscilloscopes and embedded instrumentation.

Backend Computer Security Software Intern, STR, Boston, MA May - August 2022

PROJECTS AND ACTIVITIES

WPI Formula Electric 2025 Electronics & Software Team August 2024 - May 2025

- Designed, brought up, and validated STM32-based mixed-signal PCBs for real-time sensor acquisition and control; implemented and debugged CAN, UART, SPI, and I2C communication across multiple embedded modules.
- Implemented a Bluetooth-based communication system for live telemetry and driver-ground communication.
- Performed SWD debugging and signal-level testing on custom boards, verifying hardware against design requirements using oscilloscope and embedded instrumentation.

Racecar Telemetry Dashboard, WPI January - July 2024

- Designed and built a real-time telemetry system using C++, Linux, Raspberry Pi, and CAN bus.
- Implemented time-series logging and live visualization for debugging and performance analysis of vehicle subsystems.

Sliding Mode Controller for Simulated UAV Interception, WPI October - December 2023

- Derived and implemented sliding mode control laws for quadrotor altitude, roll, pitch, and yaw in MATLAB; designed a state machine managing tracking, capture, stabilization, and return-to-base phases.
- Built a predictive trajectory estimator using numerical differentiation to anticipate target UAV state, enabling proactive intercept guidance rather than reactive position tracking.

Robot Arm Design and Fabrication, WPI October - December 2023

- Designed, fabricated, and tested a 3-DOF planar robot arm — from kinematic design and dynamics analysis through 3D printing, motor integration, and machined payload assembly.
- Implemented forward/inverse kinematics (Product of Exponentials), quintic trajectory generation, and torque analysis via Recursive Newton-Euler in MATLAB.