

WORK EXPERIENCE**Rivian (via RV-Tech)****Palo Alto, CA***Embedded Software Engineer (Intern)**June 2025 - August 2025*

- Built and integrated Rivian's first automated diagnostics system for embedded vehicle software, analyzing recorded sensor data and system logs to detect failures and regressions during CI and release testing; Hosted the system on AWS servers, integrated Databricks.
- Developed an automated root-cause analysis pipeline that correlated sensor recordings with embedded and connectivity logs, accelerating release validation and eliminating manual triage.
- Designed a scalable cloud architecture that supports parallel analysis across embedded programs and can expand to HIL systems.

Samsung Research America - Think Tank Team**Mountain View, CA***Embedded Systems Engineer - Full Time**August 2023 - December 2023*

- Prototyped an AI assistant earbud by designing a PCB around a Qualcomm processor and integrating Qualcomm REX RTOS.
- Built a low-latency Voice Activation Detection algorithm using FFT; integrated into the REX RTOS to reduce the latency.
- Designed a bidirectional voice pipeline under strict latency constraints to enable real-time conversational interaction.

Amazon Robotics**North Reading, MA***Robotics Software Engineer (Simulation team) - (Intern)**May 2022 - August 2022*

- Developed a digital-twin of an Amazon warehouse station in Isaac Sim, simulating robots with rigid-body-dynamics and photorealism.
- Eliminated 100% of collision risks and operational costs of dedicated training facility by transitioning operator onboarding to simulation-based workflows.
- Extended Isaac Sim's source code by implementing VR integration, including custom 3D transformation functions and input interfaces.
- Engineered high-fidelity robot trajectory generation using trapezoidal velocity profiles and S-curves with jerk limits.

Tufts University**Medford, MA***Research Engineer - Full-time**December 2023 - May 2024**Research Engineer - Part Time**2021 - December 2023*

- Built and deployed an automated sensor fabrication device for Tufts NanoLab, enabling on-demand production of quality tension sensors.
- Accelerated prototyping cycles from weeks to hours and ensured reproducible sensor characteristics critical for research.
- Designed an interrupt-based stepper motor controller and a real-time PID controller to regulate sensor tension in embedded C.
- Presented the project at [MRS-Boston \(Tufts News\)](#); published it as first author at MDPI ([Publication Link](#))

SELECT PROJECTS**RL Robotics Autonomy System (Simulation & Sim-to-Real) – Northeastern University****Oct 2025 – Present**

- Leading the design of a MuJoCo-based multi-robot simulation stack to evaluate custom reinforcement learning control policies, surface sim-to-real failure modes (localization drift, contact dynamics) on physical robots. Targeting publication at IROS.
- Designing an autonomy stack for Stretch 2 (with ROS2), implementing LiDAR-based SLAM (with AMCL), and autonomous docking.
- Building a manipulation controller using Jacobian-based IK to enable precise end-effector positioning for object grasping tasks.

Servo Motor Feedback Controller ([Project Link](#))**2024**

- Developed an end-to-end real-time embedded system that converts DC motors into precision servos via closed-loop control.
- Programmed a high frequency PID controller and trapezoidal trajectory motion generator in C on STM32.
- Designed and fabricated a PCB featuring an H-bridge and UART/I2C; validated performance under sensor noise and fault conditions.
- Engineered the system as a modular drop-in controller, enabling rapid integration and eliminating months of duplicated development effort.

Real-Time Procedural Environment Engine | C++, OpenGL, GLSL ([Project Link](#))**2022**

- Architected a procedural spherical terrain engine in C++/OpenGL; Implemented a multi-octave Simplex noise to generate Brownian Motion surfaces. Optimized spatial queries by building a hashmap-based indexing system, achieving O(1) complexity for mesh triangle lookups.

TECHNICAL SKILLS

- **AI and Robotics:** ROS2, PyTorch, RL, MuJoCo, Isaac Sim, 2D/3D SLAM, GTSAM, Kalman Filter, Factor Graphs
- **Software & Simulation:** C/C++, Python, JavaScript, MicroPython, Git/Gitlab, ROS2, RTOS, PID/impedance control, MuJoCo, NVIDIA Isaac Sim, Unreal Engine, Unity, PyTorch, SQL, OpenGL
- **Hardware & Embedded:** STM32, ESP32, Atmel, Xilinx FPGA, VHDL, SystemVerilog, PCB design (Altium, KiCad), Motor drivers (brushed/brushless), SMD soldering, Sensor integration, I2C, SPI, UART, CAN, Fusion360, Assembly

EDUCATION**Northeastern University****Boston, MA***Master of Science in Robotics**2024 - May 2026*

- Reinforcement Learning, Feedback Control Systems, Geometric Deep Learning, Legged Robotics, Autonomous Field Robotics (3D SLAM, Kalman Filters, Sensor Fusion, GTSAM, Factor Graphs)

Tufts University**Medford, MA***Bachelor of Science in Electrical and Computer Engineering**2019-2023*