

INTRODUCTION

Robotics Engineer focused on autonomy, perception, and learning-based robotics systems, with a track record of owning and delivering real-time embedded software and control systems deployed on real-world hardware.

PROJECTS

Multi-Agent Robotics Autonomy System (Simulation & Sim-to-Real) – Northeastern University Oct 2025 – Present

- Leading the design of a MuJoCo-based robot simulation stack to evaluate learning-based control policies, surface sim-to-real failure modes (localization drift, contact dynamics), and validate deployment on physical robots.
- Building a simulation environment and autonomy stack for Stretch 2 (with ROS2), implementing LiDAR-based SLAM, AMCL localization and autonomous docking with recovery behaviors; collaborating with RL researchers on policy integration (targeting IROS).

Servo Motor Feedback Controller (Project Link) 2024

- End-to-end development of a real-time embedded motor control system, converting feedback DC motors into precision servos.
- Implemented high-frequency PID control and trapezoidal trajectory planning in C on STM32, designing custom PCB hardware (H-bridge, UART/I2C) and validating closed-loop behavior under sensor noise, load variation, and fault conditions.
- Delivered a drop-in control module enabling rapid experimentation and integration eliminating months of duplicated development effort.

TECHNICAL SKILLS

- **Autonomy & Robotics:** ROS2, 2D/3D SLAM, GTSAM, Kalman Filters, Factor Graphs, Path Planning, Navigation.
- **AI & Simulation:** PyTorch, Reinforcement Learning (RL), MuJoCo, NVIDIA Isaac Sim, Digital Twins.
- **Embedded Systems:** C/C++, Python, RTOS (REX, FreeRTOS), STM32, ESP32, FPGA (VHDL/Verilog), PID, Trapezoidal Control.
- **Hardware & Protocols:** PCB Design (Altium/KiCad), I2C, SPI, UART, CAN, Motor Drivers, SMD Soldering.

WORK EXPERIENCE

Rivian (via RV-Tech) Palo Alto, CA

Embedded Software Engineer (Intern) June 2025 - August 2025

- Architected an automated diagnostics and fault-detection system for the embedded and telemetry stack, integrating CI/CD and automated release validation to streamline post-failure analysis.
- Developed a scalable root-cause analysis and replay framework correlating multi-modal sensor streams with embedded logs, reducing validation cycles from days to minutes while providing a foundation for Hardware-in-the-Loop (HIL) testing.
- Accelerated system adoption by presenting architecture to leadership and orchestrating a seamless transition to partner teams.

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.
- Designed a low-latency Voice Activation Detection algorithm using FFT and integrated it into the REX RTOS.
- Optimized the 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

- Built a digital-twin of an Amazon warehouse station in Isaac-Sim, simulating autonomous robots with accurate physics and photorealism.
- Integrated a VR human-in-the-loop interface using C and Python, enabling associates to remotely practice complex machinery interactions.
- Eliminated physical collision risks and training facility overhead by transitioning operator onboarding to a simulation-based workflow.

Tufts University Medford, MA

Research Engineer - Full-time December 2023 - May 2024

- Integrated LiDAR into research platforms, and developed STM32 firmware for real-time sensor interfacing, and mentored students.
- Research Engineer - Part Time 2021 - December 2023

- Built a fully automated sensor fabrication device for Tufts NanoLab, enabling on-demand production of high-quality tension sensors.
- Implemented stepper-motor controller with electromechanical components and real-time PID controller in embedded C.
- Accelerated prototyping cycles from weeks to hours and ensured reproducible sensor characteristics critical for research.
- **Publication (2024):** Automated Fabrication of Smart Strain Sensing Threads (Publication Link) (Media Link)

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

Tufts University Medford, MA

Bachelor of Science in Electrical and Computer Engineering 2019-2023