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INTRODUCTION

Robotics Engineer with a track record of delivering real-time autonomous and embedded systems for industry leaders including Rivian, Samsung, and Amazon Robotics. Expert in the full robotics stack — from deploying SLAM and reinforcement learning policies to designing high-frequency motor controllers and custom PCBs. Combining a deep research background from Northeastern and Tufts University.

SELECT 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 an 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.
- Building a manipulation controller using Inverse Kinematics (IK) to enable end-effector positioning for precise object grasping tasks.

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 controller and trapezoidal trajectory motion planner 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 & AI:** ROS2, 3D SLAM, GTSAM, Kalman Filters, Factor Graphs, PyTorch, RL, MuJoCo, Isaac Sim.
- **Embedded Systems:** C/C++, Python, RTOS, STM32, VHDL, Verilog, PID/Trapezoidal Control, Altium/KiCad, I2C, SPI, UART, CAN

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*

- Deep Learning, RL, Computer Vision, Feedback Control Systems, Legged Robotics, Autonomous Field Robotics

Tufts University **Medford, MA**

Bachelor of Science in Electrical and Computer Engineering *2019-2023*