

WORK EXPERIENCE

Rivian (via RV-Tech)

Palo Alto, CA

Embedded Software Engineer (Intern)

June 2025 - August 2025

- Pioneered an automated diagnostics system for embedded vehicle software, analyzing sensor data and system logs to detect regressions during CI and release testing. Eliminating manual triage and accelerated release validation.
- Deployed a root-cause analysis pipeline on AWS with LLM integration to correlate sensor recordings with connectivity logs.
- Integrated Databricks to centralize diagnostic telemetry and automate reporting across embedded programs and HIL systems.

Samsung Research America - Think Tank Team

Mountain View, CA

Embedded Systems Engineer

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 (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 training facility by transitioning operator onboarding to simulation 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

December 2023 - May 2024

- Integrated LiDAR into research platforms, developed STM32 firmware for real-time sensor interfacing, and mentored 2 students.

Research Engineer

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 development of a MuJoCo-based simulation for evaluating RL control policies on high-DOF mobile manipulators, surface sim-to-real failure modes (localization drift, contact dynamics) on physical robots. Targeting publication at IROS.
- Designed an autonomy stack for Stretch 2 (with ROS2), implementing LiDAR-based SLAM (with AMCL), and autonomous docking.
- Implemented Jacobian-based inverse kinematics for high-DOF manipulation, enabling precise end-effector control for grasping tasks.

GTSAM with LM optimization and Loop Closure on trajectory Dataset ([Project Link](#))

- Implemented 2D and 3D pose-graph SLAM in Python using GTSAM, applying Levenberg–Marquardt optimization to correct odometry drift and loop-closure constraints on benchmark datasets.

Precision Servo Control System with Force Feedback ([Project Link](#))

- Developed an end-to-end real-time embedded system that converts DC motors into precision servos via closed-loop control.
- Implemented a 1kHz PID controller with < 50μs latency and trapezoidal trajectory motion generator in C on STM32.
- Integrated current sensing for torque feedback; implemented high-frequency filtering and cyclic buffering to enable impedance control.
- Designed and fabricated a PCB featuring an H-bridge and UART/I2C; validated performance under sensor noise and fault conditions.
- Designed drop-in motor controller enabling rapid integration into robotic systems, eliminating months of development effort.

TECHNICAL SKILLS

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

EDUCATION

Northeastern University

Boston, MA

Master of Science in Robotics

2024 - May 2026

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

Tufts University

Medford, MA

Bachelor of Science in Electrical and Computer Engineering

2019-2023