WORK EXPERIENCE

Gentex Corporation **Zeeland, MI**
Research & Development Intern *6/2025 - 7/2025*

- Automated epoxy application with an ABB IRB-1100: modeled hardware in RobotStudio, built a custom end-effector, and validated dynamic + plotted paths to replace manual glass bonding.
- Authored a dimension-driven script that instantly turns user-entered glass sizes into robot tool-paths for the air-pump syringe dispenser, pressurizing a syringe to lay epoxy, streamlining setup for new prototype geometries.
- Programmed plotted-point motion code and outfitted the ABB IRB-1100 with an automatic pipette, delivering hundreds of micron-accurate epoxy micro-drops, achieving superior precision over the tuning-heavy air-pump method.
- Devised an image-analysis workflow to compute gap heights below 50 µm during electro-chromic fluid tests, overcoming the laser sensor's limit and enabling ultra-thin glass experimentation.

General Atomics Aeronautical Systems **Poway, CA**
Software Engineering Intern *6/2024 - 8/2024*

- Designed and built several features for a plane to ground station communication simulation tool.
- Leveraged Python's Tkinter library to build and integrate the new features into the GUI.
- Updated a Bash script to safeguard files in designated directories from deletion during the build process of a containerized codebase, improving efficiency.
- Improved functionality and reliability by debugging and refactoring legacy code, ensuring previously malfunctioning simulation features operated seamlessly.

RESEARCH EXPERIENCE

Laboratory for Progress, University of Michigan **Ann Arbor, MI**
Undergraduate Researcher *9/2025 – 12/2025*

- Built a ROS 2 ↔ RIX bridge that subscribes to topics in one middleware, converts messages, and republishes them in the other to enable cross-system communication.
- Implemented a JSON-configured translation framework with modular converters supporting both standard and geometry message types (26 total) created dynamically at runtime.
- Verified stable end-to-end RIX → ROS message delivery and enforced a single-threaded execution model to ensure deterministic, thread-safe operation.

HaptiX Lab, University of Michigan **Ann Arbor, MI**
Undergraduate Researcher *9/2023 – 5/2024*

- Executed detailed moment of inertia evaluations on drones using the bifilar pendulum method, gathering data to refine autonomous drone flight simulations.
- Improved experimental procedures for inertia measurements, enhancing data quality for UAV research.
- Conducted thrust testing for drone motors, initially attempting repair and recalibration of a specialized board through soldering techniques, then switched to a new thrust tester that required the use of Arduino code.

Seeman DNA Nanotechnology Lab, New York University **New York, NY**
Undergraduate Researcher *5/2023 – 7/2023*

- Designed DNA sequences using ChimeraX to act as a blueprint for DNA crystallization.
- Performed various lab experiments including gel electrophoresis and DNA purification.

PROJECT EXPERIENCE

Autonomous Robotic Vehicles (ARV) Project Team **Ann Arbor, MI**
Navigation Sub-team Programmer *9/2024 – 5/2025*

- Co-developed a weighted cost-function algorithm that for each path-planning cycle, processes current scanned frame of the track assigns cost by distance, obstacle clearance, and heading alignment to pick the safest, most efficient goal.
- Joint-engineered a ROS 2 Python node that, on every cycle, rebuilds an occupancy frame for the current scanned piece of the track, applies the cost function, and publishes the next goal so the robot advances seamlessly to the finish line.
- Collaborated on a waypoint-prioritization routine that checks each new frame for competition-defined waypoints and overrides the cost-based goal when one is present, ensuring the robot stops at all mandatory checkpoints.

SKILLS

Coding Languages: C++, Python, C, RAPID, Bash Script, R, Julia, Assembly (LEGv8 & LC2K)
Frameworks: ROS2, RIX
OS's: Linux, Microsoft, Unix
IDE's: VSCode, RobotStudio, Visual Studio, Rstudio
Librareis: Pybullet, Scipy, Sympy, Tkinter