

WORK EXPERIENCE

Robotics Engineer**Medra** | June 2024 – present

- Owned end-to-end delivery of customer projects, from concept and prototyping to development and field deployment
- Programmed and tested robotic behaviors to automate lab workflows, including task optimization, error handling, and motion planning for careful handling
- Collaborated with partner scientists to translate scientific goals into reliable robotic behaviors and validate in live lab environments
- Designed and shipped product updates informed by field learnings and customer feedback

Graduate Researcher, Mechanical and AI Lab**Carnegie Mellon University** | Aug. 2022 - June 2024

- Researched learning-based approaches for robotic manipulation of soft materials (e.g. clay sculpting)
- Conducted office hours and graded assignments for C++ programming course (24-780)

Robotics Engineer, Intern**Medra** | May – Aug. 2023

- Implemented a Transformer-based OCR model for reading a cell counter display, detecting instrument state and capturing data for cell culture workflows
- Programmed and integrated syringe pumps, expanding on-deck liquid handling from micropipettes to volumes up to 50mL, a 150x increase

Mechanical Design Engineer, Intern**Neuralink**

Jan. - June 2022:

- Designed and tested a wafer processing fixture that improved solvent flow and efficiency during chemical baths, megasonic cleaning, and vapor drying
- Continued work on the neural implant imaging station, updating the design and having several components machined and anodized before installing a second unit on a new production line

May - Aug. 2021:

- Developed a neural implant imaging station that combined custom hardware and image-processing software to automate four previously manual quality-control steps
- Designed parts for machining and injection molding and drafted technical drawings using GD&T

EDUCATION

Master of Science in Mechanical Engineering**Carnegie Mellon University** | 2022 - 2024**Emphasis:** Robotics & Control Systems**Achievements:** BRIDGE Fellowship (full tuition & stipend, 2022 – 2024); Co-author, SculptBot: Pre-Trained Models for 3D Deformable Object Manipulation, IEEE ICRA 2024**Bachelor of Science in Mechanical Engineering****Rensselaer Polytechnic Institute** | 2018 - 2022**Achievements:** Obtained a provisional patent from USPTO

PROJECTS

Path Planning and Control for Autonomous Vehicles

Oct. – Dec. 2023

- Developed LQR and PID controllers for lateral and longitudinal control of a simulated autonomous vehicle
- Implemented real-time A* search for obstacle avoidance
- Applied an Extended Kalman Filter for SLAM
- Designed an adaptive controller (MRAC) for a simulated quadrotor drone, capable of maintaining stable flight despite loss of thrust in one rotor

Learning Human-Like Tonal Inflections for Expressive Robotics

Oct. - Dec. 2022

- Classified audio signals recorded from a humanoid robot mouth into four tones using a custom CNN
- Converted time signals to Mel-frequency cepstral coefficients for data augmentation and feature extraction

Gastrostomy Skin Level Device (Provisional Patent)

Sep. - Dec. 2021

- Designed and prototyped a medical device for patients requiring enteral feeding, emphasizing reliability, comfort, and cost-effectiveness

SKILLS

Design: Solidworks, NX, GD&T, tolerance stack-up, material selection, DFM/DFA, PDM systems**Robotics:** Python, C++, OpenCV, depth cameras, optical sensors, motion planning, kinematics**Prototyping & Fabrication:** 3D printing, laser cutting, fixture building, motors, actuators, manual machining, injection molding, vacuum forming**Machine Learning:** PyTorch, classification, model training, feature extraction, data augmentation, fine-tuning