

## Education

### Massachusetts Institute of Technology

Cambridge, MA

BS in Computer Science and Electrical Engineering

May 2022 | GPA: 4.7

Candidate for Masters of Engineering: Concentration in Artificial Intelligence

Projected May 2023

**Relevant Coursework:** Software Studio, Software Construction, Data Structures and Algorithms, Machine Learning, Computer Vision, Robotics: Science and Systems, Decision Making and Autonomy, Underactuated Robotics, Robotic Manipulation, Feedback Controls

## Technical Skills

**Languages and Tools:** Python, Java, C++, Swift, Objective-C, HTML/CSS/JS, Vue, Git, Xcode, Linux

**Libraries/Frameworks:** ROS, Drake, OpenCV, TensorFlow, PyTorch, SciPy, Jupyter

## Experience

### MIT CSAIL - Improbable AI

Cambridge, MA

Undergraduate Researcher

Feb 2021 - Present

- Collaborating on demonstration learning framework for object manipulation using descriptor fields to solve an optimization problem.
- Reproducing experiments for demonstration learning with a focus on researching approaches to improve performance of framework in scenes with occlusion and partial observability to still generalize well to unseen objects.
- Created and integrated PointNet++ model for point cloud segmentation using DGL and PyTorch into skill sampler pipeline to compare the performance of the predicted contact poses generated with feature layers to the existing model without it.

### Apple - Reminders App

Cupertino, CA

Software Engineer Intern

Jun 2021 - Aug 2021

- Took ownership of an experimental feature for the Reminders app starting with the creation of user stories and a technical proposal.
- Implemented the entire pipeline of the feature including storage of new data models using Core Data, transfer of data over XPC, and also designed and built a prototype UI using a VIPER architecture. Wrote production level code and merged with main branch.
- Presented feature to the design team to brainstorm a mockup UI, the technical architecture proposal to engineers, and the finished product deliverable to higher executives and marketing to demonstrate purpose and usage of the feature.

### MIT Driverless

Cambridge, MA

Planning Subteam Member

Sep 2020 - Sep 2021

- Designed and implemented novel algorithms in C++ for real-time path planning and obstacle avoidance of high speed autonomous racing in Indy Autonomous and RoboRace competition. Also made visualization tools for planning using Matplotlib and RViz.
- Improved the representation of trajectories by researching and comparing splines to better model human driving. Built spline generation toolbox using Euler spline and Spiro splines for paths given selected waypoints and interpolation step size.

### Northrop Grumman Mission Systems

San Diego, CA

Software Development Intern

Jun 2020 - Aug 2020

- Worked on a tactical data link simulator to improve user experience and added additional functionality for internal usage.
- Added TCP/IP support to backend for more robust data transfer and built full stack of import/export tool for file transferring.

### MIT Media Lab

Cambridge, MA

Undergraduate Researcher

Feb 2019 - Jan 2020

- Collaborated on FlowIO, a development platform for pneumatics and soft actuator application by enabling remote control of peripheral by building an iOS mobile app to connect over BLE and transmit data to control individual valves and pumps.

## Projects

### MIT Underactuated Robotics

- Designed and solved an MPC trajectory optimization problem for optimal state and trajectory of a racecar completing a lap around a circular track. Formulated problem constraints such as vehicle dynamics and the cost function to minimize distance from centerline ,

### MIT Advanced in Computer Vision

- Evaluated the performance of an appearance-based gaze estimation model iCatcher on infant development videos by adding feature extraction into the dataloader generation pipeline and inputs into the model in TensorFlow.

### MIT Robotics: Science and Systems

- Implemented algorithms for sensing with LiDAR and camera using homography and color segmentation, implemented PD controller, approximated real time pose with particle filter localization, and planned trajectories for RC car to autonomously navigate environment.