TOYA TAKAHASHI

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EDUCATION

Massachusetts Institute of Technology (M.I.T.) *Expected in May 2026*
B.S. in Electrical Engineering and Computer Science — GPA: 5.0/5.0
Relevant Coursework: Robotics, Autonomous Navigation, Algorithms, Controls, Digital Systems, Electrical Circuits

EXPERIENCE

MIT Arcturus Robotics September 2022 - Present
Autonomy Software Team Co-Lead *Cambridge, MA*

- Leading a team of approximately 20 students to develop an Autonomous Surface Vehicle (ASV) autonomy stack in C++ and Python, utilizing Robot Operating System (ROS) 2 and MOOS-IvP middlewares.
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NVIDIA May 2024 - August 2024
Systems Software Engineering Intern *Santa Clara, CA*

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MIT EECS Department February 2024 - May 2024
Lab Assistant, "Computation Structures" *Cambridge, MA*

- Assisted MIT undergraduate students with lab assignments for an introductory computer architecture and operating systems course.

MIT Sea Grant College January 2023 - May 2024
Undergraduate Researcher *Cambridge, MA*

- Modeled an oyster farm simulation environment using the Gazebo and ArduPilot SITL (Software in the Loop) simulators to facilitate testing and validating an ASV autonomy stack.
- Wrote Unified Robot Description Format (URDF) and Simulation Description Format (SDF) files of ships, oyster baskets, and ocean waves to generate models with accurate dynamics, ensuring realistic interactions and controller feedback withing the simulation.
- Designed and implemented cross-hull electrical wiring for microcontrollers, stepper motors, and sensors.

MIT Media Lab: Signal Kinetics June 2023 - December 2023
Undergraduate Researcher *Cambridge, MA*

- Operated the UR5e robot arm to collect millimeter wave radar, OptiTrack motion capture, and camera data, contributing to the development of a robot capable of searching for and retrieving hidden items.
- Wrote C++ and Python scripts using data analysis packages such as NumPy and Matplotlib to construct a machine learning dataset of simulated and robot-collected radar images.

FIRST Robotics Competition September 2018 - May 2022
Team President *Anchorage, AK*

- Winner of the 2021 FIRST Tech Challenge Dean's List Award, awarded to 20 out of over 121,000 FIRST participants internationally for demonstrating leadership and achieving technical expertise in robotics.
- Developed path-planning algorithms for autonomous robots using dead reckoning, visual odometry, wheel encoders, PID controllers, pure pursuit controllers, and color segmentation using OpenCV.

TECHNICAL SKILLS

Computer Languages	Python, C/C++, CUDA, Java, MATLAB, SystemVerilog, RISC-V Assembly
Tools	Git, Docker, Linux, Robot Operating System (ROS), Computer-Aided Design (CAD), Simulink