Tianhao (Andy) Qin

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EDUCATION

University of Michigan, College of Engineering Ann Arbor, MI
Master of Science in Robotics, ***Cumulative GPA: 3.97*** Aug 2023 – May 2025 (Expected)
- Relevant Coursework: Self-driving Cars, Deep Learning for Robot Perception

New York University, Tandon School of Engineering Brooklyn, NY
Bachelor of Science in Mechanical Engineering, ***Cumulative GPA: 3.89*** Sep 2019 – May 2023
- Minor: Computer Science, Robotics
- Relevant Coursework: Robotic Manipulation and Locomotion, Robot Motion and Planning, Robot Vision

ACADEMIC PROJECTS

3D-SLIP Model Based Monopedal Control Feb 2024 – May 2024
- Optimized trajectory of a Raibert Hopper through model predictive control (MPC) to minimize exerted torque during liftoff.
- Simulated dynamics of 3D spring-loaded inverted pendulum in MATLAB.

Monocular 3D Object Detection with Auxiliary Learning Oct 2023 – Dec 2023
- Extended MonoCon method to localize 3D bounding boxes of cars with 2D supervision signals as auxiliary parameters.
- Trained and evaluated model on a Google Cloud virtual machine and surpassed preset average precision (AP) benchmark.

Autonomous Differential Drive Robot for Warehousing Tasks Nov 2023 – Dec 2023
- Developed MBot that supported pick-and-place warehouse tasks as an RTR motion model with PID controller.
- Implemented a particle filter based SLAM, A* algorithm for path planning, and frontier based exploration method.

Robot Arm Control for Block Detection and Manipulation Sept 2023 – Oct 2023
- Implemented Inverse Kinematics and Resolved Rate Control to smoothly manipulate a 5-DOF ReactorX 200 Robot Arm.
- Integrated with block/color detection from an RGB-D camera to grasp and stack blocks of different sizes.

WORK EXPERIENCE

New York University, Computer Science and Engineering Department Brooklyn, NY
Course Assistant | CS 1114 Introduction to Programming and Problem Solving Jan 2022 – May 2023
- Graded Python assignments with comments and held office hours for 10 hours weekly.
- Taught 3-hour lab sections on Python and reviewed professor's lecture materials every Friday.

New York University, Future Labs Brooklyn, NY
Product Engineer Internship | "Trashy Wheels" Sept 2021 – Jan 2022
- Produced skateboarding wheels with biodegradable polyurethanes and researched optimal plastic combinations.
- Designed 3D wheel injection molds with SOLIWORKS and simulated mold fabrication through CAM in Fusion 360.
- Manufactured molds from polyethylene plastic blocks through CNC machine and awarded NYU Prototyping Fund.

New York University, AI4CE Lab Brooklyn, NY
Research Assistant | Undergraduate Summer Research Program May 2021 – Aug 2021
- Designed a decentralized soft particle robot platform and published an abstract during the 2021 NYU UGSRP Showcase.
- Calibrated pose estimation and SLAM algorithm for a Unitree A1 robot dog to project water pipeline in construction site.

LEADERSHIP

NYU Robotic Design Team, Vertically Integrated Projects Brooklyn, NY
Team Lead | NASA Robotic Mining Competition: Lunabotics Sept 2019 – May 2023
- Led a team of 50 to construct a rover that aimed to excavate and deposit icy regolith below surface on the Moon.
- Implemented Agile project management according to NASA's systems engineering standards throughout project life cycle.
- Developed ConOp, System Requirements, and Verification Plans following the "V" model of systems engineering.

SKILLS & INTERESTS

- Python, Java, C++
- MATLAB, Simulink, PID
- SOLIDWORKS, ANSYS, OnShape
- ROS2, Gazebo, PyBullet
- Manipulation, CV, Planning
- LaTeX, Git, Linux
- Numpy, Pandas, Tensorflow, Pytorch
- Machine Learning, NLP
- Data Analysis, Data Visualization