Jierui (Jerry) Zhang

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EDUCATION

University of Pennsylvania, School of Engineering and Applied Science, Philadelphia, PA *Sept 2020 – May 2022*

- Master of Science in Engineering (Robotics)
- Cumulative GPA: 3.67/4.0
  Courses taken:
  Introduction to Robotics; Control System Design; Linear Systems; Computer Vision; Machine Perception; Learning in Robotics

New York University, Tandon Engineering School, New York, NY *Sept 2016 – May 2020*

- Bachelor of Science in Computer Science, minor in Mathematics
- Cumulative GPA: 3.92/4.0
- Honors & Awards: Summa Cum Laude *May 2020*
- HackNYU：3rd prize *Feb 2019*

RESEARCH & PROJECTS

Data Association in Semantic SLAM with ORB-SLAM2, Upenn *Apr 2022*

- Participated in building the pipeline for producing a semantic point cloud map with ORB-SLAM2 based on KITTI dataset.
- Applied YOLOv5 and SIFT feature extractions for matching landmarks and bounding boxes in stereo images.

Video Face Swapping, Upenn *Dec 2021*

- Led a team of four to build the pipeline for swapping the faces in two videos.
- Applied landmark detection, triangulation, color blending, and optical flow to make the face-swapped videos appear realistic and natural.

GTSRB Traffic Sign Recognition, Upenn *Apr 2021*

- Built and tested various CNN architectures using PyTorch to classify traffic sign images from the GTSRB dataset. Achieved a test accuracy of 95%.
- Performed PCA on the dataset for visualization and better understanding of the underlying informative structures in the traffic sign images.

Robot Arm Project, Upenn *Nov 2020*

- Co-designed a strategy for a 5 DoF robot arm to perform the task of grabbing static and dynamic cubic objects from a turntable and platforms and stack these cubes onto each other. Applied forward and inverse kinematics and inverse velocity kinematics in the design.
- Programmed the robot arm in Python and tested it in Gazebo simulation.

Soft Robotics Exoskeleton Project, NYU Tandon**,** *Undergraduate Researcher* *Sept 2019 – May 2020*

- Co-designed a lower-body exoskeleton actuated by pneumatic artificial muscles that powers the user's legs to help the user move forward.
- Designed a system that measures accelerations at the exoskeleton's joints and controls the air flow through pneumatic artificial muscles based on the measurements; implemented the system with rotary encoders and solenoid valves.
- Developed the system in C.

Soft Robotics Gripper Project, NYU Tandon**,** *Undergraduate Researcher* *Sept 2018 – Sept 2019*

- Built a pneumatically actuated three-finger gripper using silicone rubber gel to fetch objects of certain shapes.
- Tested different materials: silicone rubber gel, gecko materials, shape-memory alloy.
- Co-designed the gripper mold and the robot arm structure and 3D printed both items.
- Studied and applied H-bridge motor driver circuit, stepper motor and microstepping, and DC motor.
- Programmed in C to support moving the gripper.

Embedded System Project: Robot Car Relay, NYU Tandon**,** *Team Leader* *Nov 2019 – Dec 2019*

- Enabled P2P communication between two cars using HC05 Bluetooth.
- Programmed in Arduino to autonomously navigate a robot car toward the next car based on the received Bluetooth signal strength and ultrasonic feedback; attached an IMU sensor to track the car's orientation.
- Applied event-driven programming to handle different kinds of input signals.
- Led a team of ten members by assigning tasks, organizing discussions, and executing a project plan.

SKILLS

Programming: Python, C++, C;
Others: Arduino, MATLAB