HARRISON CHEN

hchen.robotics@gmail.com +1(734)968-5295 New York, NY chen-harrison chen-harrison

Robotics software engineer with experience in developing and integrating navigation, mapping, and perception algorithms into mobile robotics systems. Proficient in programming with C++ and Python, as well as robotics-specific libraries such as ROS and Eigen. I am a self-driven learner who enjoys tackling complex challenges, especially in a collaborative manner. My goal is to leverage my skills and knowledge to build technologies that make a positive impact.

EXPERIENCE

PDW, New Rochelle, NY — Mar 2022 – Present
Autonomy Engineer

- Augmented quadcopter's autonomous navigation stack with trajectory generation capable of obstacle avoidance and breadth-first search for safe start and goal positions, increasing safety and reliability while flying
- Modularized navigation pipeline to accommodate multiple flight modes with unique implementations, improving code abstraction and ease of adding future algorithms
- Integrated multi-sensor OctoMap and Voxblox 3D mapping algorithms into mapping ROS package, allowing drone to map 3D occupancy by combining input from forward- and downward-facing RealSense cameras
- Evaluated stereo depth DNNs on Arducam sensors in search of learning-based vision alternatives using Nvidia TAO Toolkit and MATLAB Deep Learning Toolbox for model modification and tuning

Jugaad Labs, Philadelphia, PA — Mar 2021 – Mar 2022
Robotics Engineer

- Contributed to development of automotive situational awareness system for semi-trucks, using Python and ROS to identify and monitor nearby vehicles using center point-based object detection and Kalman filter tracking
- Built application with Nvidia Isaac SDK to perform object detection on camera feeds in Isaac Sim warehouse environment, serving as a theoretical sensing foundation for autonomous logistics

FANUC America, Rochester Hills, MI — Jun 2020 – Aug 2020
Applied Product Development Intern

- Strengthened functionality for ArcTool recovery mechanism using proprietary programming language Karel, enabling welding robots to recalibrate in any reachable end effector pose

Robotic Systems Laboratory Course (ROB 550), Ann Arbor, MI — Jan 2020 – May 2020
Student / Team Member

- Implemented a simulated SLAM robot in C++ with 2D occupancy grid mapping, odometry motion model, beam measurement model, Monte Carlo localization, and A* path planning
- Collaborated with teammates on the development of an inverted pendulum robot using C and RCL, including PID control for balancing, manual steering via joystick, and autonomous movement along series of waypoints

EDUCATION

University of Michigan, Ann Arbor, MI — Dec 2020
Master of Science in Robotics

- **GPA: 3.96/4.00**
- Relevant coursework: Mobile Robotics, Deep Learning for Computer Vision, Robot Modeling and Control

Northwestern University, Evanston, IL — June 2019
Bachelor of Science in Mechanical Engineering

- **GPA: 3.80/4.00**
- Relevant coursework: Advanced Mechatronics, Feedback Systems
- Activities: Education Chair @ Refresh Dance Crew, Social Chair @ Chinese Students Association, Tau Beta Pi

SKILLS & INTERESTS

Programming: C++, Python, MATLAB, Bash, Git
Robotics: ROS, Eigen, OpenCV, PCL, PyTorch, 3D geometry, kinematics, Bayesian statistics, sensor calibration
Interests: soccer, running, dance, cooking, environmental conservation