HARRISON CHEN

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Robotics software engineer with experience in developing and integrating navigation, perception, and mapping algorithms for 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 – Jan 2025
Autonomy Engineer

- Augmented quadcopter's autonomy stack with trajectory generation capable of obstacle avoidance and breadth-first search for safe start and goal positions, increasing safety and reliability while flying
- Utilized runtime polymorphism to modularize navigation pipeline, improving code abstraction and allowing for multiple flight modes with unique implementations
- Evaluated stereo depth DNNs on Nvidia Jetson; calibrated Arducam sensors for disparity to depth conversion, wrote nodes to run TensorRT and ONNX models, and explored quantization options using MATLAB and Nvidia TAO
- Integrated multi-sensor OctoMap and Voxblox 3D mapping algorithms into a C++ ROS package, enabling quadcopter to map occupancy by combining input from forward- and downward-facing RealSense cameras

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

- Developed an automotive situational awareness system for semi-trucks in Python and ROS, using center point-based object detection and Kalman filter tracking to identify and monitor nearby vehicles
- Built application with Nvidia Isaac SDK to perform object detection 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: Intro to Mechatronics, Machine Dynamics, Advanced Solid Modeling
- 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

*No work authorization required