Kyle Wang

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EDUCATION

Northwestern University   **Evanston, IL**
M.S in Robotics   *Sept 2023 - Dec 2024*

Case Western Reserve University   **Cleveland, OH**
B.S.E in Electrical Engineering, Concentration in Robotics   *Sept 2020 - May 2023*

SKILLS

Robotics: ROS/ROS2, SLAM, Robot Kinematics, MoveIt, Path Planning, Feedback/Control Systems, AprilTags, RVIZ, Simulation, Gazebo, CoppeliaSim, Mechatronics, Embedded Systems, Microcontrollers, Quadcopters
Machine Learning: PyTorch, Computer Vision, OpenCV, Reinforcement Learning, Supervised Learning
Programming: C++, Python, C, Git, Linux, Ubuntu, Bash, Unit Testing, CMake, AWS, MATLAB, Django, Java

EMPLOYMENT

Cleanr - Innovation Engineer   **Mar - Aug 2023**
- Developed a data logger system and website using NI DAQmx and GWeb to allow real-time and historical data access
- Prototyped an RFID-based tracker using an Arduino and RC522 RFID Sensor for disposable washing machine pods

Viscofan Collagen USA - Electrical Engineer Intern   **May - Aug 2021, Jun - Aug 2022**
- Created a new Programmable Logic Controller and Display system for monitoring and controlling multiple assembly line machines using the DirectLogic 205 PLC and C-more EA9 HMI
- Designed a Dual-Tank HCl control system using a Siemens CPU 1214C PLC and a TP700 Comfort HMI

CWRUBOTIX Robotics Team, Combat Team Co-Lead   **Aug 2021 - May 2023**
- Designed a chassis, weapon, and electronics system for a 3 pound combat robot with a full-body spinner type weapon
- Programmed an algorithm in C to convert a 2-axis control system into instructions for a 3-axis triangular drivetrain

PROJECTS

Autonomous Drone Swarm for Light Painting   **Jan - Mar 2024**
- Designed a Python pipeline for using OpenCV Canny Edge Detection and a Nearest Neighbors Algorithm to generate a series of waypoints for drones to navigate through
- Developed multiple ROS2 Python packages and nodes for controlling a DSLR Camera, wrapping the Crazyswarm2 API, flying multiple Crazyflie 2.0 drones, and toggling each drone's onboard status LED

Simultaneous Localization and Mapping (SLAM) From Scratch   **Jan - Mar 2024**
- Implemented an Extended Kalman Filter (EKF) SLAM algorithm from scratch in C++
- Developed a C++ Library for robot control, differential-drive robot kinematics, and odometry
- Deployed algorithm on a custom simulation environment and on the Turtlebot3

Robot Arm that Makes Coffee   **Nov - Dec 2023**
- Worked with a team of 5 to program a 7 DoF Franka Emika Panda robot arm to brew pour-over coffee in Python
- Utilized ROS2, OpenCV, AprilTags, and various features of MoveIt including path constraints and inverse kinematics
- Acted as the Reliability Engineer by isolating and testing various subsystem functionalities such as calibrating and refining the pouring algorithm in an RVIZ environment and on the actual robot

Mobile Manipulation Simulation with CoppeliaSim   **Nov - Dec 2023**
- Simulated a mobile robot with mecanum wheels and a 5 DoF robotic arm in CoppeliaSim
- Generated a trajectory to manipulate a block, using feed-forward control and a PI controller in Python

Eagle Scout, Boy Scouts of America   **Oct 2019**