SHARWIN PATIL

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EDUCATION

Northwestern University | Master of Science in Robotics

Expected Graduation: 12/2025 *Chicago, IL*

Northeastern University | B.S. in Computer Engineering & Computer Science, Minor in Robotics

Graduated: 05/2024 *Boston, MA*

SKILLS

Robotics: ROS/ROS2, Nav2, MoveIt, RViz2, Gazebo, OpenCV, Robot Kinematics, Dynamics, & Manipulation, Kalman Filtering
Software: Embedded C, C++, Python, C#, .NET, Java, Matlab, Linux, Git, Unity, Docker, SolidWorks (CSWA)
Machine Learning: Computer Vision, PyTorch, CNNs, Reinforcement Learning (DQN, PPO), Mujoco

EXPERIENCE

Locus Robotics | Planning & Controls Intern

06/2025 – Present *Remote*

- Reduced mobile robots' downtime by optimizing charging behavior and battery management when routing robots
- Optimized robot navigation when interacting with charging stations, pickup/drop-off locations, and other robots

GreenSight | UAV Robotics Engineer Co–op

06/2023 – 12/2023 *Boston, MA*

- Developed RTOS firmware for communications between a swarm of drones and GCS over LoRa for collecting real-time weather data
- Implemented a Hardware-Abstraction-Layer (HAL) in C for the ESP32 platform to interface with a custom LoRa chipset
- Created a custom SPI driver for the ESP32 to connect to peripherals for the drone's data collection

Fulfil Solutions | Robotics Software Controls Co–op

07/2022 – 12/2022 *Redwood City, CA*

- Developed planning code in C# for high-level behavior and task assignment for up to 50 robots in a warehouse automation setting
- Composed data fetching functions to bridge C# sequencing code to MongoDB
- Optimized AGV planning and curated heuristics for maintaining the factory's health while improving performance
- Deployed factory-wide alerts and notifications for operators to react with relevant safety measures

Doble Engineering | Software Engineering Co–op

07/2021 – 12/2021 *Marlborough, MA*

- Developed an external data persistence mechanism in C# running on the .NET framework for various Doble software products
- Designed and deployed a firmware installation wizard using Windows Presentation Foundation (WPF) for Doble instruments

PROJECTS

Open Sourced ROS2 Delta Robot

01/2025 – 03/2025

- Designed and fabricated a 3-DOF delta robot using 3D printed parts and Dynamixel motors
- Derived Jacobian for planning and executing both position and velocity trajectories
- Authored a configurable ROS 2 package to interface with any delta robot and provide motion planning and sensor telemetry

Toasting Bread with Franka Robot Arm

11/2024 – 12/2024

- Implemented a ROS2 package to interface with the MoveIt API for sending motion requests to the Franka robot arm
- Utilized an Intel Realsense camera to identify april tag markers for the robot to interact with the scene
- Collaborated within a group of students to sequence the camera and robot with the scene elements to autonomously toast bread

KUKA Mobile Manipulator Pick and Place Simulation

11/2024 – 12/2024

- Implemented a task-space feed-forward controller for the KUKA YouBot in Python for pick and place tasks
- Derived Jacobian for omni-directional mobile base and robotic arm to generate velocity trajectories for robot arm and the mobile base

Kalman Filter for 6-Wheel Mars Rover

08/2025 – Present

- Derived and implemented an Extended Kalman filter in C++ for state estimation, fusing data from an IMU, wheel encoders, and a LiDaR
- Simulated the rover's motion system in Python using NumPy and Matplotlib to tune process and measurement noise covariances
- Architected a ROS2 Package to interface with sensors and handle real-time data processing