

# SHARWIN PATIL

@ sharwin24@gmail.com

📞 925-389-8466

🔄 Sharwin24

🌐 SharwinPatil

🌐 sharwinpatil.info

## 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

## EXPERIENCE

---

### GreenSight | UAV Robotics Engineer Co-op

06/2023 - 12/2023

Boston, MA

- Developed RTOS firmware for communications between a swarm of nano-drones and GCS over LoRa
- Implemented a Hardware-Abstraction-Layer (HAL) in C for the ESP32 platform to interface with a custom LoRa chipset
- Wrote firmware for a micro-controller to manage a charging station for autonomous solar lawn-mowers

### Fulfil Solutions | Robotics Software Controls Co-op

07/2022 - 12/2022

Redwood City, CA

- Developed sequencing code in C# for high-level behavior planning and task assignment for heterogeneous robotic agents
- 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

## SKILLS

---

**Robotics:** ROS/ROS2, Nav2, MoveIt, RViz2, Gazebo, OpenCV

**Software:** Embedded C, C++, Python, C#, Java, Matlab, Linux, Git, Unity, SolidWorks (CSWA)

## PROJECTS

---

### Automated Poker Table

01/2023 - 04/2023

- Designed a sensor-driven automated shuffler and card dealer with high repeatability
- Developed firmware for I2C and Serial communications between STM32 microcontrollers and a Raspberry Pi
- Earned first place for Northeastern's ECE Capstone 2023

### AGV Motion-Planning

09/2022 - 12/2022

- Implemented Odometry from scratch in C++ with multithreading to asynchronously compute the robot's absolute pose
- Designed a trajectory generator using Hermite splines and Bezier curves

### Robot Arm Educational Kit

05/2022 - 05/2024

- Designed a 3-link planar robotic manipulator as an educational tool for students learning the kinematics and dynamics of manipulators
- Developed custom libraries in C++ for students with little coding experience to program movements and perform trajectory planning
- Collaborated with professor Rifat Sipahi to package the robot arm into a kit for students to assemble and program

### Chess Robot

03/2021 - 05/2022

- Designed a 3-axis gantry system in SolidWorks with an end-effector to grab custom chess pieces
- Devised a custom serial interface between a Raspberry Pi and Arduino devices using command messages to perform low-level tasks
- Implemented a computer vision model in OpenCV for identifying the game state and verified accuracy over several games

### 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