# SHARWIN PATIL

### Co-op/Internship Availability: June - December 2023

@ patil.sha@northeastern.edu

**J** +1 (925) 389-8466

Sharwin24

in SharwinPatil

sharwinpatil.info

## **EDUCATION**

# Northeastern University | Candidate for Bachelor of Science in Computer Engineering & Computer Science, Minor in Robotics

Expected Graduation: 05/2024

Boston, MA

- GPA: 3.6, Dean's List (all semesters)
- Relevant Courses: Object-Oriented Design, Algorithms and Data, Robotics Sensing & Navigation, Robotic Science & Systems, Computer Systems, Embedded Design: Enabling Robotics, Circuits and Signals: Biomedical Applications, Robot Dynamics and Control.
- Fundamental Courses: Software Engineering, Computer Science (II), Electronics, Digital Design and Computer Organization, Networks, Cornerstone of Engineering, Calculus (III), Differential Equations & Linear Algebra, Probability and Statistics.
- Activities: NURobotics Club Project Lead and former Lead Intro Course Instructor, Club Water Polo Vice President, First-year Engineering Tutor.

### **EXPERIENCE**

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

**1** 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 improving factory 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# to be inserted into various Doble proprietary software products built with the .NET framework.
- Designed and deployed an installation wizard using Windows Presentation Foundation (WPF) for updating firmware on Doble instruments.
- Maintained software products in an Agile project management environment.

#### Northeastern University | Robotic Arm Educational Kit Research

**1** 05/2022 - present

Boston, MA

- Designed and constructed a 3-link planar robotic manipulator as an educational tool for students to utilize for learning the kinematics and dynamics of robotic manipulators.
- Developed custom libraries in C++ for students with little coding experience to program movements, perform trajectory planning, and compute kinematics.
- Collaborated with professor Rifat Sipahi to introduce the kit to the course ME3460: Robotic Dynamics and Control.
- Applied and obtained grant money from the PEAK Experience Award committee.

#### Northeastern University | First-Year Engineering Tutor

iii 01/2021 - present

Boston, MA

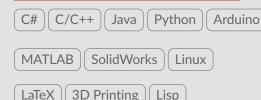
- Tutor first-year students in SolidWorks, C++, AutoCAD, MATLAB, and Arduino.
- Assist students with projects utilizing workshop machines (Bandsaw, Laser Cutter, 3D Printers).
- Member of the FYELIC Advisory team, which guides and aids prospective FYELIC tutors.

## **AWARDS**

BSA Eagle Scout VRC CA State Champion 2018 & 2019 VRC Awards (17x)

Varsity Water Polo MVP 2018 & 2019 PEAK Experience Summit Award 2023

## **SKILLS**



### **PROJECTS**

## AGV Motion-Planning | 😱



**1** 09/2022 - 12/2022

**NURobotics Club: VEXU Team HSKY** 

- Implemented an algorithm (Odometry) to compute a mobile robot's absolute position and orientation (pose) for use in autonomous navigation.
- Developed C++ code to update the robot's pose from Odometry in realtime, enabling motion-profiling.
- Designed a motion-planning algorithm to generate robot trajectories from desired pose inputs to follow using Odometry and PID controllers.

### Chess Robot | 😱



**i** 03/2021 - 05/2022

#### **NURobotics Club Project**

- Constructed a X/Y Plotter with a modified manipulator to interact with custom chess pieces. Built with customdesigned, 3D printed parts using Solid-Works and Prusa 3D Printers.
- Implemented Arduino and Rasberry Pi components to control stepper motors, read the board state using computer vision, and display information to the

## Aquatic Swarm Robots | 📢



**=** 04/2022



#### RoboTech 2022 Hackathon Submission

• Created a graphical simulation in Python for a swarm of autonomous aquatic drones tasked with cleaning algal blooms within a body of water utilizing pathfinding algorithms such as A\* Search and

# Image Manipulator | 📢



**6** 06/2021

#### CS3500: Object-Oriented Design

- Developed a Java project to apply manipulations and enhancements to images and export them as various file types.
- Utilized the Model-View-Controller design pattern for improved extendibility and ease of modification.