

# SHARWIN PATIL

Co-op/Internship Availability: July – December 2023

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Boston, MA

Sharwin24

SharwinPatil

## 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

07/2022 – 12/2022

Redwood City, CA

- Developed sequencing code in C# for high-level control of various robotic systems.
- Task assignment for heterogeneous robotic agents.
- Optimized AGV planning and curated heuristics for improving factory performance.
- Enabled 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

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.

Northeastern University | First-Year Engineering Tutor

01/2021 – 05/2022

Boston, MA

- Tutored first-year students in SolidWorks, C++, AutoCAD, MATLAB, and Arduino.
- Assisted students with projects utilizing workshop machines (Bandsaw, Laser Cutter, 3D Printers).
- Member of 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

## SKILLS

C#

C/C++

Java

Python

Arduino

MATLAB

SolidWorks

Linux

LaTeX

3D Printing

Lisp

## PROJECTS

AGV Motion-Planning |

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 real-time, 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 |

03/2021 – 05/2022

NURobotics Club Project

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

Aquatic Swarm Robots |

04/2022

Atlanta, GA

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 path-finding algorithms such as A\* Search and RRT.

Image Manipulator |

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 extensibility and ease of modification.