SHARWIN PATIL

Co-op/Internship Availability: June – December 2023

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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 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 propietary 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 – 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

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 Rasberry 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 extendibility and ease of modification.