Swapneel Bhatt

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SUMMARY

Robotics Developer with internship, research and full-time experience in the development and maintenance of robotic software applications. A fast and willing learner with a proven ability to create, optimize, and manage software applications for robotics deployment.

EXPERIENCE

Robotics Software Developer

Augmentus **July 2022 - July 2024, Singapore**

- Developed C# code for a no-code robotics platform for operators and businesses, to reduce up to 73% in engineering costs for clients.
- Engineered algorithms for robot kinematics and motion planning to efficiently carry out over 5 major robotic manufacturing and finishing processes with high degrees of accuracy and speed.
- Spearheaded application deployment at customer sites for welding, spraying and sandblasting applications. Reduced robot programming time by up to 21 times and increased productivity by 10 times.
- Utilized test-driven development and rigorous code reviews to ensure only high-quality code deployed at customer sites.
- Experienced with using UR, ABB, Yaskawa, Kawasaki and Mitsubishi robots.
- Implemented industrial computer vision enhancements for robots such as Keyence CV-X, and LMI Gocator Scanners.

Corporate Research (Robotics) Intern

Robert Bosch SEA **January 2021 - December 2021, Singapore**

- Robotics intern for an R&D Project developing a new automated plastic-waste sorting system for SEA markets.
- Developed code integration of ABB Robot and ROS with Vision AI-based plastic waste sorting system to increase productivity by 60%.
- Created a digital twin for the robotic arm and supporting mechatronic systems on the conveyor belt.
- Designed proof-of-concept demo utilising a smaller 6-degree-of-freedom robotic arm and supporting sensors for sorting application.

Robot Navigation Intern

Transforma Robotics **May 2020 - August 2020, Singapore**

- Developed navigation package with the software team for novel disinfectant robot designed to tackle COVID-19 spread.
- Collaborated with software leads to gain knowledge about the application, and learn ROS architecture.
- Utilised ROS Navigation Stack to program robot path planning for application tasks in a mapped environment, leading to 4x faster disinfection.

PROJECTS

Final Year Project

August 2021 - April 2022

- Developed code for integrating camera feed features in a human-machine interface for a construction site stair-climbing robot.
- Conducted a literature review of existing image stitching methods to achieve 360-degree views for automobiles and robots with fish-eye cameras, and sourced appropriate fish-eye cameras for the project.
- Carried out image stitching to achieve 360-degree views and prepared frames for individual directional camera feeds as well.
- Integrated camera feed and different views with javaScript UI server and implemented bi-directional communication to let the user select camera view.

intelliJob - Intelligent Job Seeking Platform

iNTUition Hackathon - JobTech Track Winner • March 2022 - March 2022

- Developed a job-seeking platform that provides a curated list of jobs keeping in mind the user's cognitive, sensory and mobile impairments, and delivers appropriate roles to their fingertips.
- Utilised a combination of NLP algorithms and trained over 1000 job postings to find suitable job postings for users with impairments on Indeed.com.
- Explored development on this project to expand it for freshly graduated students and internship seekers with over 100 student surveys.

Robotic Dishwasher

Robotics Course Project • August 2021 - October 2021

- Engineered a 6-DOF Robotic Arm and surrounding mechatronic systems to automate dishwashing in households.
- Designed a system consisting of the robotic arm, trays for dirty and clean utensils, and a rinsing and scrubbing station to clean over 5 types of utensils.
- Led the robotic control team and utilized ROS, MoveIt!, and Dynamixel Workbench to carry out motion planning and actuation of the robot.

EDUCATION

Master of Science in Mechanical Engineering

Columbia University • New York, NY • 2025

- Pursuing specialisation track in Robotics and Control
- Expected completion date - Dec. 2025

Bachelor of Engineering in Mechanical Engineering

Nanyang Technological University • Singapore • 2022 • 4.32 GPA

- Specialised in Robotics and Mechatronics

SKILLS

Software:
ROS, Computer Vision, Python, C++, C#, Java, Unity, Solidworks, AutoCAD, OOP, ABB RAPID, URSCript