Swapneel Bhatt

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EDUCATION

Columbia University, *New York, NY*   Aug 2024 - Dec 2025
M.S in Mechanical Engineering, Robotics and Control Concentration, GPA:3.7/4
- Relevant courses: Applied Robotics, Model Predictive Control, Modern Control, Robotics Studio, Data Science, Convex Optimization

Nanyang Technological University, *Singapore, SGP*   Aug 2018 - Jun 2022
B. Engg, Mechanical Engineering, Mechatronics and Robotics Specialization, GPA: 4.32/5
- Relevant courses: Intro. To Robotics, Machine Vision, Mechatronics System Design, Theory of Mechanicms, CAD/CAM

PROFESSIONAL EXPERIENCE

Augmentus, *Singapore, SGP*   Jul 2022 - Jul 2024
Robotics & Application Engineer
- Developed C# code for a no-code robotics platform for robot operators to reduce up to 73% in engineering costs for clients.
- Engineered robot kinematics and motion planning solvers to execute over 5 different robotic manufacturing processes.
- Spearheaded robotic deployment at customer sites for welding, spraying and sandblasting applications for major customers including ST Engineering, Caterpillar, Applied Materials.

Bosch, *Singapore, SGP*   Jan 2021 - Dec 2021
Corporate Research Intern (Robotics)
- Programmed industrial robot arm motion for development of novel automated plastic-waste sorting system for SEA markets.
- Created a digital twin on ROS for ABB robotic arm and supporting mechatronic systems on conveyor belt.
- Integrated ABB programs and digital twin with Vision AI-based plastic waste sorting system to increase productivity by 60%.
- Organised regular research progress presentations to Bosch Corporate Research Scientists and management.

PROJECTS

Mini Bi-Manual, *Research Project – ROAM Lab, Columbia University*   Jan 2025 - Present
- Developing Mini Bi-Manual, a miniature bi-fingered end effector for improved robot dexterity under supervision of Prof. Matei Ciocarlie and ROAM Lab research group.
- Conducting kinematic analysis and optimization of end effector design using ROS2 to maximize workspace utilization and end effector finger performance.

Bipedal Walking Robot, *Robotics Studio Project, Columbia University*   Sep 2024 - Dec 2024
- Designed, fabricated, assembled and programmed a bipedal walking robot from scratch with a teammate.
- Performed kinematic analysis of bipedal walking gait for robot using keyframing from CAD software and function smoothening.
- Achieved a final robot walking speed of 10.4cm/s

Final Year Project, *Robotics Research Centre, NTU*   Aug 2021 - Apr 2022
- Developed software to integrate vision features in operator interface for a construction site stair-climbing robot.
- Conducted literature review of existing image stitching methods to achieve 360-degree views of the robot with fish-eye cameras
- Carried out image stitching to achieve 360-degree views and prepared frames for individual directional camera feeds.

intelliJob - Intelligent Job Seeking Platform, *iNTUition Hackathon, NTU*   Mar 2022 - Mar 2022
- Won the iNTUition Hackathon's JobTech Track in 2022 by developing job-seeking platform to provide a curated list of jobs keeping in mind user's cognitive, sensory and mobile impairments.
- Utilized a combination of NLP algorithms and trained over 1000 job postings to find suitable job postings for users with impairments on various job-seeking platforms.

Robotic Dishwasher, *Robotics Course Project - NTU*   Aug 2021 - Oct 2021
- Engineered a 6 degree of freedom Robotic Arm and supporting mechatronic systems to automate dishwashing.
- Led robotic control team and utilized RViZ, ROS MoveIt!, and Dynamixel Workbench to execute motion planning and actuation of robot.

SKILLS

Technical: ROS2, Python, OpenCV, ABB RAPID, URSCript, C#, Unity, Solidworks, AutoCAD.
Spoken languages: Fluent in English and Hindi, elementary German (A2 Certified).
Interests: Drumming (Rockschool UK Grade 5) , SCUBA (SSI Advanced Certified), Soccer, Trekking, Running.