ADITYA NAIR

(773)-956-4720 | AdityaNair2024@u.northwestern.edu | linkedin.com/in/aditya-nair-robotics/ | GogiPuttar
PORTFOLIO: https://adityanairs.website/

EDUCATION

Northwestern University, Evanston, Illinois Sep 2023 - Aug/Dec 2024
Master of Science - Robotics *GPA: 3.8*

Birla Institute of Technology and Science, Pilani, India Aug 2019 - May 2023
Bachelor of Engineering - Mechanical Engineering *GPA: 3.6*

RESEARCH EXPERIENCE

MARMot Lab, National University of Singapore Aug 2022 - Aug 2023
Visiting Researcher | Advisor: Dr. Guillaume Sartoretti

- ▷ Invented a novel optimal torque-control strategy in Python for hexapod robots, accomplishing payload carrying.
- ▷ Devised an optimal admittance control trajectory planner for lifting objects using a hexapod robot's front legs.

Research Intern: Apr 2022 - Aug 2022

- ▷ Developed a Python Library for $SE(3)$ body-pose control of legged robots, using PyBullet.

Robotics Research Centre, IIIT Hyderabad May 2022 - Aug 2022
Research Assistant

- ▷ Implemented a Model-Predictive controller in Python for single-agent box pushing manipulation in PyBullet.
- ▷ Designed and tested under-actuated perching mechanisms on drones for power line inspection.

Inspire Lab, BITS Pilani Dec 2021 - May 2022
Undergraduate Researcher

- ▷ Led a team in developing a ROS pipeline in Python for teleoperation of robot swarms (FireBird VI robots).
- ▷ Implemented Iterative Closest Point (ICP) using PCL Library in Python for structural depth estimation.

PROFESSIONAL EXPERIENCE

The Port of Singapore Authority - National University of Singapore Oct 2022 - Jan 2023
Industrial Research Engineer (Python)

- ▷ Collaborated with multiple teams to engineer pioneering software for robotic manipulation and locomotion.

FEATURED PROJECTS

Dexterous Manipulation through Virtual Reality Oct 2023 - Nov 2023

- ▷ Developed a ROS2 pipeline in a team of 5 for teleoperation of a humanoid robot avatar with haptic feedback.
- ▷ Created a custom Python wrapper for the MoveIt2 API.

Search and Rescue Missing Person with a Robot Dog (in progress) Jan 2024 - Mar 2024

- ▷ Creating an autonomous robot dog (UnitreeGo1) for outdoor search and rescue using ROS2, Python, and C++.

EKF SLAM pipeline in C++ from scratch (in progress) Jan 2024 - Mar 2024

- ▷ Programming a complete ROS2 pipeline in C++ for SLAM on a Turtlebot, from scratch.

Mobile Manipulation with KUKA youBot Nov 2023 - Dec 2023

- ▷ Devised a controller for pick-and-place manipulation on an omnidirectional KUKA youBot, in MATLAB.

Navigation and Kalman Filter Localization of Self-Driving Car Oct 2021 - Nov 2021

- ▷ Wrote a Python library to integrate $A*$ path planning, sensor fusion and steering on a self-driving car in Webots.

TECHNICAL SKILLS

Programming	C, C++, Python, Git, Linux, Unit Testing, MATLAB, Bash, Java, Lua, Documentation
Robotics	Motion Planning, SLAM, Machine Learning, Computer Vision, Nonlinear Optimization
ROS/ROS2 Packages	Nav2, SLAM_Toolbox, MoveIt2, TF2, AprilTag, RealSense2, Isaac ROS
Simulation	Gazebo, MuJoCo, PyBullet, CoppeliaSim, Webots, Simulink, ANSYS, Fusion360, Blender
Hardware	ABB, KUKA, NVIDIA Jetson, Unitree, Arduino, RaspberryPi, Teensy, HEBI, Franka