

ISHANI NARWANKAR

ishaninarwankar2024@u.northwestern.edu | (408) 642-4476 | ishani-narwankar.github.io | github.com/ishani-narwankar

EDUCATION

Northwestern University
Masters of Science in Robotics

Evanston, IL
December 2024

The University of Texas at Austin
Bachelor of Science, Aerospace Engineering, Minor in Entrepreneurship

Austin, TX
May 2023

SKILLS

- **Hardware:** Solidworks/Fusion360/CATIA/OnShape, Quadcopters, Additive Manufacturing, Rapid Prototyping, Soldering
- **Programming:** Python, C++, C, MATLAB, Lisp, Jekyll, Bash
- **Robotics:** ROS/ROS2, Feedback/Control Systems, Embedded Systems, SLAM, MoveIt, OpenCV, RVIZ, Gazebo
- **Software:** Linux, Git, CMake, Unit Tests, Ardupilot/ArduSub/PX4, Visual Studio, QGroundControl, ANSYS

WORK & RESEARCH EXPERIENCE

Skydio, San Mateo, CA

Hardware Reliability and Test Intern – Electronics Development Lead

May - Sept 2023

- Constructed and programmed proof-of-concept water test rig for long term rain IPX2 testing
- Lead electronics development of new generation controller for reliability team
- Evaluated production quality differences between batches of antennas and hinges to finalize supplier choice

Hardware Reliability and Test Intern – Windwall Engineer

May - Aug 2022

- Designed, built, and programmed open-air windwall to mimic customizable gust patterns for product development and testing
- Implemented full-feedback system for project in C and Python to improve data analysis, test repeatability, and customizability
- Designed waterproofing solutions and finalized manufacturing line instructions to include solution in product's final assembly
- Lifecycle tested products with thermal chamber, windwall, and spinracks

Texas Aerial Robotics (TAR) UT Austin, Texas *President*

Aug 2019 – June 2023

- Founded and co-lead 2023 UT Raytheon Drone Innovation Competition Team (won 2nd place overall)
- Designed, manufactured, and implemented sensors for unmanned ground vehicle
- Planned organization showcases and oversaw obstacle avoidance and swarm technology projects
- Engineered 3-ft quadcopter frame and electronics for International Aerial Robotics competition

Autonomous Group of Texas Robotics and Oden Institute, UT Austin, Research Assistant

June 2021-May 2022

Data Driven Cyber Physical Systems, Demonstrate Additive Manufacturing Functionality on Hexacopter

- Optimized 3D printer's nozzle holder design using CAD with Fusion360
- Coded and validated inertia matrix model in MATLAB using flight data from PX4
- Integrated singletact force sensors to improve print quality of 3D printer module

Swarm Technology Research Project

- Created flock workspace to connect and control TELLO edu drones using ROS2
- Developed test programs to determine success of controlling multiple drones using Python and C++

Texas Rocket Engineering Lab (TREL), UT Austin, Recovery Avionics Responsible Engineer

Sept 2019 - 2021

- CADded and built prototype mounts and hardware for recovery system using Solidworks and SLA printers
- Self-learned ANSYS for finite element analysis of designs to understand impact on design and materials
- Outlined and managed first set of ground and drop tests for recovery avionics hardware system

PROJECTS

Simultaneous Localization and Mapping (SLAM) from Scratch (C++, ROS2)

Dec 2023 – Apr 2024

(In Progress)

- Programming an Extended Kalman Filter SLAM pipeline using C++ and ROS2 for simulation and real-life turtlebot3 robot
- Designing a kinematics control and odometry C++ library for the simulated turtlebot3

Autonomous Waypoint Navigation and Obstacle Avoidance for Underwater Rover (Python, ROS2)

Dec 2023 – Apr 2024

(In Progress)

- Developing a Python, ROS2 Package for autonomous underwater waypoint navigation and obstacle avoidance
- Coding Python library for underwater depth control and stabilization
- Updating mechanical design of existing low-cost underwater rover to achieve neutral buoyancy in indoor pool

7-DOF Robot Arm for Autonomous Hangman Game (Python, ROS2)

Sept – Dec 2023

- Led a team of 4 to develop a Python, ROS2 package for a Franka 7-DOF robot arm to play hangman with a human player
- Implemented a game setup ROS2 service for hangman gameplay with april tag calibration, MoveIt motion planning, and force control
- Designed and manufactured spring-loaded pen holder for Franka (designed to achieve team's fallback goal)