# Anushree Sabnis

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## Education

**Veermata Jijabai Technological University** **August. 2019 – May 2023**
*Bachelor of Technology in Mechanical Engineering* *Mumbai, Maharashtra*

## Experience

**Linux Foundation Fall Term Intern** **September 2021 – November 2021**
*Open Horizon* Edge Computing, Github Actions, Bash, Scala, Go, Docker, Kubernetes

- Enhanced a service to automatically perform a set of unit tests daily on a product in development in order to decrease time needed for team members to identify and fix bugs/issues.
- Enhancing end-to-end tests for Open Horizon anax, an agent(node) control system for deployment of over 40,000 nodes.
- Developed new Github actions workflow for analysing and creating issues from orphan pages in the project documentation.

**Open Source Developer and Mentee with OSRF, ROS2** **July 2021 – September 2021**
*Open Source Promotion Plan* *C++, ROS2, Navigation2*

- Implemented a new action server in Navigation2 stack that provided more control to user over existing Recovery Server.
- Added Assisted Teleop feature to Navigation2 stack which improves upon Joystick teleoperation of Mobile and Telepresence robots.
- Developed algorithm for robot footprint-based projection and velocity reduction so that robot always remains N seconds away from collision.
- Worked with Planning and Control of mobile robots (Turtlebot3).

**Airpix** **July 2021 – September 2021**
*Project Intern* Pixhawk, Ardupilot, Solidworks, Ansys, C++

- Studied drone hardware development and currently developing a drone satisfying NPNT (No Permission No Takeoff) Protocol for drones in India.
- Worked with Ardupilot GCS and improved upon implementation of NPNT in Ardupilot codebase.

**Magnes Motors** **May 2021 - September 2021**
*Summer Intern* Embedded systems, Dart, Flutter, C, ESP32

- Assisted in development of the front end of a mobile application for Android using Dart and the Flutter framework.
- Implemented communication of app with ESP32 over WiFi AP via HTTPS protocol.
- Utilized Android Studio and Arduino IDE as development environments in order to visualize the application in Android and test communication with ESP32.

## Projects

**Nirikshak Bot** | *Python, CoppeliaSim, Control Systems, Image Processing* **January 2021**

- Designed a 2 DOF industry manufacturing ball balancing platform with a maze on top of it and simulated it in CoppeliaSim.
- Developed a PID-based Control System for precision control of the platform, and BFS path-planning algorithm for maze-solving by a series of balls and Image Processing for detection of multi-coloured balls and maze walls.
- Developed scheduler algorithm for multiple balls to solve mazes on interconnected platforms.
- Led team to top 18 in the National Level e-Yantra Robotics Competition

**Mobile Manipulator** | *Python, ROS, Gazebo, CoppeliaSim, Mechanical Design, Hardware* **November 2020**

- Designed a 5 DoF Mobile Manipulator to perform dexterous tasks for industrial purposes, using Solidworks and simulated it in CoppeliaSim and Gazebo.
- Perform Pick and place operations, implemented object detection and classification using YOLO, enable localisation with sensors and use SLAM for mobile manipulator.
- Developed FK and IK for 5 DOF Manipulator, with discrete trajectory generation by computing set of N SE(3) configuration matrices for point-to-point movement of end-effector.
- Currently testing algorithms on 5 DOF manipulator arm hardware.

**Quadruped Actuator** | *Solidworks, Fusion360, Rapid Prototyping(3D Printing)* **August 2021**

- Designed an economic actuator using BLDC motors, for a Quadruped Robot.

- Designed compact, anti-Backlash, backdriveable dual-stage cycloidal gearbox with reduction ratio 110:1.
- Used Rapid Prototyping (3D Printing) to test designed cycloidal gearbox. Currently designing 2-segmented compliant leg for Quadruped.

**Moodylyser** | *Keras, Tensorflow, Python, Pandas, OpenCV* **June 2020**

- Implemented Facial Emotion Detection for Live Webcam input using CNN model trained from scratch, libraries used were Keras, Tensorflow.
- Detected 68 Facial Landmarks using dlib's facial landmark detector and OpenCV.

**Wall-E-Sim** | *C++¡ CoppeliaSim, Solidworks* **April 2021**

- Designed and simulated a Line-Follower bot, equipped to follow lines and solve mazes.
- Developed a CMake build system for the C++ Tech stack.
- Conducted workshop for over 150 freshmen using this simulation as an educational tool for PID and Maze-Solving as a supplement to hardware.

## Technical Skills and Certificates

**Languages**: Python, C++, C, Scala, Go, Matlab
**Developer Tools**: VS Code, Eclipse, Google Cloud Platform, Android Studio
**Technologies/Frameworks**: Linux, Kubernetes, GitHub, Docker, Github Actions
**Hardware**: Catia, Creo, Fusion360, Ansys, Rapid Hardware Prototyping (3D Printing)
**Certifications**: Solidworks (CSWA certified)

## Leadership / Extracurricular

**Society of Robotics and Automation** **July 2021 – Present**
*Joint General Secretary* *VJTI, Mumbai*

- Managed and co-conducted Wall-E-2.1(Self-Balancing Robot), MARIO(3 DOF Robotic arm) Workshops and Pixels(Image Processing, Git, Python and Computer Vision) Seminar for over 200 freshmen students for each
- Led chapter of 30+ members to work towards research and innovation in Robotics, Automation and Embedded Systems.