Suhrudh. S

Undergradutate · Robotics Enthusiast

(+91) 9390262933 | suhrudhs@gmail.com | suhrudhsarathy.github.io | SuhrudhSarathy | @SuhrudhS

Education

BITS Pilani, KK Birla Goa Campus

Goa, India

B.E. in Electrical Engineering

Aug 2019 - Present

- Major in Electrical and Electronics Engineering
- Minor in Physics
- $CourseWork$: Calculus, Linear Algebra, Probability and Statistics, Differential Equations, Signals and Systems, Communication Systems, Control Systems, Modern Control Systems
- CGPA: $7.78/10$

Experience

Ottonomy Inc.

India

Robotics Intern

Sep 2021 - Present

- Built a stack for Simulation of Robot in 3D Urban environment with ramps, walls etc.
- Looked into integration of move base for 3D Environments using packages like STVL, Voxblox, Octomap.
- Learnt about volumetirc mapping and the usage of Voxblox for Path Planning in 3D
- Learnt about planners like BIT*, AIT*, RABIT* for efficiently planning a path in 3D environments.
- Development of a 3D Path Planning algorithm and testing it in the urban environments is in progress

Peppermint Robots

India

Robotics Intern

May 2021 - Jul 2021

- Built a GUI based on Qt Quick and QML
- Integrated the GUI with ROS and tested it out on the Robot
- Researched about State Lattice Based Path Planning for Indoor Robots. Found out that there was a better way to perform local planning using incremental Graph Search Path Planning.
- Developed a Graph based Local Planning Algorithm and implemented a move base flex plugin for the same

Projects

Indoor Autonomous Drone

GOA

Personal

July 2020 - Dec 2020

- Worked on the navigation stack of an Indoor Aerial Robot
- During the project, I came learned more about agile autonomous drones, path planning in complex 3D environments and trajectory optimisation.
- Used ROS and several Open Source packages to develop a navigation stack on Simulation for an Indoor Autonomous Drone
- Wrote an $article$ on the project

Trotbot

BITS, Goa

Club

Jan 2020 - PRESENT

- I am leading the team on building an indoor autonomous Robot capable of traversing in indoor environments. The robot is omnidrive based and is called $Trotbot$
- Wrote software and tested the software on simulation. The physical robot is being built on which we aim to showcase and test the real software
- Currently we are exploring Visual inertial Odometry to obtain good estimate of the Robots position

Gennav

BITS Goa

Contributor

Jun. 2020 - Dec. 2020

- Gennav is a python package aimed to be a one stop location for learning, deploying and testing Robot Navigation Algorithms
- It was developed to be modular with things that can be changed and plugged in. We also developed Gennav ROS which is a ROS Wrapper for Gennav.

Drone Mapping of Mangrove Swamps in Goa

Goa

Member

Sep. 2021 - Present

- Under the guidance of Prof. Shibu Clement funded by the Forest Department of Goa, we aim to 3D Map Mangrove Swamps in and around Goa using a DJI Phantom 4 V2.
- The approximate area covered so far is around 28.6 sq. km. Using the top down images clicked by the drone, we stich the images and reconstruct the 3D Model of the Mangrove Forest.
- I also built a Deep learning model to identify 16 different species of Mangrove that are present in Goa. The model is a learned using Transfer Learning Techniques and achieved and accuracy of 86%.
- I also built a Desktop application using Tkinter to run the inference of the Model built.

Extracurricular Activity

Center for Technical Education
BITS, Goa

President
May 2021 - PRESENT

- I lead a motivated team of 30+ students from different backgrounds and collectively we work in the largest Technical Organisation in BITS Goa, Campus with the sole aim of improving the Technical Culture of Campus
- We collaborate with all the technical clubs of campus and host many events together. We host industry professionals to talk about their fields of expertise etc.
- We conduct courses, workshops, Hackathons, provide Project Funding to prospective projects on campus
- In my previous years as a Core Member, I improved systems of Automation in areas of Emailing, Certificate Generation etc.
- I also worked as the Lead for Academic Assistance Program, where we aim to help out Juniors in academics by organising informal peer-to-peer discussion sessions and study groups.

Project Kratos
BITS, Goa

Member
Aug 2020 - August 2021

- Project Kratos is student run team which aims to participate in the Univesity Rover Challenge
- I was part of the Autonomous subsystem. I contributed to the navigation pipeline of the Rover an implemented obstacle avoidance.

Teaching

Introduction to Aerodynamics and Aerial Robotics
BITS Goa

Instructor, CTE
Feb 2021 - May 2021

- I was an instructor for the course and designed Course Material on Aerial Robotics
- I taught introduction to Path Planning, Perception and State Estimation

Robot Automation using ROS
BITS Goa

Mentor, QSTP
Summer 2021

- I was one of the mentors for the course. We taught the basics of Robotics with the Introduction of Robot Operating System, Control and basics of Path Planning

Aerial Robotics
BITS Goa

Mentor, QSTP
Summer 2021

- I was one of the mentors for the course. We taught Path Planning and State Estimation of Drones.

Tech-Stack

Tools	Robot Operating System, Arduino Programming, Pytorch, Tensorflow, Simulink, Fusion 360, Eagle
Programming	Python, C/C++, MATLAB, RUST, LaTeX
Languages	English, Telugu, Hindi, Tamil

Clubs and Departments

2020	**AAP Head,** Center for Technical Education	*BITS, Goa*
2020	**Senior Core Member,** Electronics and Robotics Club	*BITS, Goa*
2020	**Senior Core Member,** Aerodynamics Club	*BITS, Goa*
2020	**Core Member,** Project Kratos	*BITS, Goa*