

ARKAJYOTI BASAK

ROBOTICS

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EDUCATION

Thapar Institute of Engineering & Technology
B.E. in Mechanical Engineering

Patiala, India
Jun 2018-Jun 2022

EMPLOYMENT

ROBOTICS LAB - UNIVERSIDAD REY JUAN CARLOS, SPAIN

Software Developer, Part-time

Sep 2021-Present

Working on navigation of UAV using visual landmarks. Developing a Drone Package Delivery robot based on PX4, MAVLink, ROS, Gazebo. Under the guidance of Prof. JoseMaria Cañas, and Pedro Arias.

GOOGLE SUMMER OF CODE 2021

JdeRobot

May 2021-Aug 2021

Built the Robotics Academy Docker Image for ROS-Noetic and extended the drone exercises from ROS node to web-based template. Under the guidance of Pedro Arias, and Nikhil Khedekar. [Link](#)

ATALKI

Machine Learning, Freelance

Feb 2021-Mar 2021

Developed an algorithm for sentence simplification where the aim is to split a complex sentence into a meaning preserving sequence of shorter sentences. Worked on PyTorch, T5-Transformer, NLTK, Dependency Parser, TF-IDF. [Link](#)

PROJECTS

DRONE 3D MAPPING & NAVIGATION

Present

Developing an algorithm for autonomous navigation of drones in GPS denied environments using SLAM.

EKF & UKF SLAM ON TURTLEBOT3

2021

Built EKF & UKF SLAM with landmark detection using laser scanner. Feature detection pipeline includes points clustering, circle fitting, and circle classification. Sensor fusion of 2D-LiDAR and odometry data. Implemented using ROS, Gazebo, C++. [Link](#)

PATH PLANNING & CONTROL

2021

Implemented a local navigation algorithm with Artificial Potential Field. [Link](#)

Implemented a coverage path planning algorithm for autonomous vacuum cleaner [Link](#)

Stabilization of a line following robot based on a PID controller. [Link](#)

FOLDABLE MOTORCYCLE HELMET

2021

Designed and analyzed a foldable helmet for easy storage. Project **selected for funding** by Mechanical Department, TIET, Patiala and Dassault Systemes, India. Under the guidance of Prof. A. S. Jawanda, and Dr. Bikramjit Sharma.

AI LEARNS TO PARK

2020

Created a 3D parking-lot game in Unity simulator. Worked on setting up the communication networks using socket networking interface. Trained a ANN using the modified Rainbow-DQN algorithm for the agent to self-park. Implemented using Python, and C# [Link](#)

LINE FOLLOWING ROBOT USING NVIS3302ARD

2019

Project completed as a part of ED2. Worked on Arduino ATmega 328P, gyroscope, accelerometer, IR, ultrasonic, and zigbee.

SKILLS

PROGRAMMING LANGUAGES: C++, Python, Bash

TOOLS / FRAMEWORKS: ROS, Gazebo, Unity3D, OpenCV, PyTorch, TensorFlow

3D SOFTWARES: SolidWorks, Ansys, PTC Creo, Blender