ARKAJYOTI BASAK

(+91)9051902862 arkajbasak1211@gmail.com Portfolio

EDUCATION

THAPAR INSTITUTE OF ENGINEERING & TECHNOLOGY Patiala, India
B.E. in Mechanical Engineering 2018-2022(Expected)

WORK EXPERIENCE

Software Developer, Robotics Lab URJC, Spain, Part-time Feb'21-Present
JdeRobot develops framework based on ROS, Docker & Django to simplify learning AI/CV

- Working on navigation of UAVs using visual landmarks. Developing a Drone Package Delivery robot based on PX4, MAVLink, ROS, Gazebo.
- Under the guidance of Prof. JoseMaria Cañas, Associate Professor, URJC, and Pedro Arias, Aerospace & Telecommunication Engineer.

Google Summer of Code 2021, JdeRobot May'21-Aug'21

- Built the Robotics Academy Docker Image for ROS-Noetic and extended 9 Robotics Academy exercises from ROS node to web-based template. *Link*
- Contributed to the migration from ROS-Melodic to ROS-Noetic of 18 other exercises. Worked on Python, C++, ROS, Html/Css/Js, Docker, OpenCV.
- Under the guidance of Pedro Arias, and Nikhil Khedekar, PhD, University of Nevada, Reno.

Freelance NLP @ *atalki.com* Feb'21-March'21

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

PROJECTS

Drone 3D Mapping & Navigation Present

- Developing an algorithm for autonomous navigation of drones in GPS denied environments using SLAM and a depth sensing camera for object avoidance. *Link*

EKF & UKF SLAM on Turtlebot3 2021

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

Solved Robotics Academy Exercises 2021

- Implemented a local navigation algorithm with Virtual Force 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

- Project **selected for funding** by Mechanical Department, TIET, Patiala.
- Selected for **funding by Dassault Systemes**, India.
- Designed and analyzed a foldable helmet for easy storage based on 3DEXPERIENCE platform, SolidWorks, xDesign, Simulia, and Ansys.

Faculty Coordinator: Prof. A. S. Jawanda, and Dr. Bikramjit Sharma, TIET, Patiala.

AI Learns to Park 2020

- Created a 3D parking-lot game in Unity simulator. *Link*
- 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#

Line following Robot using NVIS3302ARD 2019

- Project completed as a part of ED2, CSE Department, TIET.
- Worked on Arduino ATMega 328P, gyroscope, accelerometer, IR, ultrasonic, and zigbee.