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Github - https://github.com/mananmadan

MANAN MADAN

SKILLS

> **Languages:** C,C++,Python

> **FrameWorks:** Robot Operating System, Gazebo simulator, NLTK (Natural Language ToolKit), Pandas, Matplotlib, Networkx, BeautifulSoup, TextBlob, Regex

EXPERIENCE

Team ARES Robotics, Delhi — *Software Engineer*

August 2018 - PRESENT

- Coded an **autonomous differential drive robot** with various sensors such as Depth Camera, IMU, GPS, from scratch in **Gazebo**.
- Coded various **Path Planning** algorithms and tested them on **turtle bot** simulator in ROS
- Came up with a novel path planning technique based on A* Algorithm to plan the **path according to kinetics constraints** of the robot.

NSIT, Delhi — *Research Intern*

April 2020 - PRESENT

- Worked on several algorithms and tools for natural language processing and web-scraping such as **chunking, chinking, regex parser**, etc.
- Coded a software that makes an **ontology** from a given set of material with the help of the **WikiData corpus**.
- Applied various **graph mining** techniques to derive meaningful information from ontologies.

EDUCATION

Netaji Subash Institute of Technology, Delhi — *B.tech Instrumentation and Control*

August 2018 - August 2022

PROJECTS

- **OpenPiBot:**
  - Uptill now in this project I have coded a simulation of a simple **differential drive robot** consisting of various sensors like IMU, Depth Camera in **Gazebo from Scratch**. I have also implemented a simple controller to make the robot navigate in between 2 co-ordinates.
  - This is an ongoing project, and I plan on implementing an **Extended Kalman Filter for sensor fusion**, I also plan to implement **SLAM and Path Planning Algorithms**.

- **Simulating Path Planning Algorithms using ROS Infrastructure (Turtlebot and Gazebo)** :
  - In this project, we used the **Kinodynamic Path Planner with the turtlebot** differential drive robot to simulate the rover on Martian surface

- **Coding Kinodynamic A* Path Planning Algorithm with simulation in OpenCV**:
  - In this project, I coded a **path planning algorithm** that takes into consideration the robot's constraint while planning the trajectory. Further, I also **simulated it in OpenCV** for testing purposes.

- **Lane Detection Using OpenCV**:
  - In this project, **lane detection** was performed using the **canny edge detector**, **masking** and **contour detection** by using the footage from the **DASH-CAM** of a car.

- **Ontology Construction:**
  - The aim of this research project was to build a **concept graph** from the given notes of a student. The graph is made using **Wikidata** and **NLTK**. After this several graph algorithms, were applied to applied different inferences from the graph.

CERTIFICATIONS

- Currently Pursuing **Robotics Software Engineer** NanoDegree by Udacity
- **Data Structures** (University of California, SanDiego)
- **Algorithms on Graph**(University of California, San Diego)
- **Algorithms and Data Structure**(University of California, San
- Diego)
- **C++ and Data Structures**(Coding Ninjas)
- **Arduino Programming** (Udemy)

ACHIEVEMENT AND AWARDS

- Represented team ARES - NSIT in **Indian Rover Championship (IRC)**, Chennai in 2019, and came in 10th place.
- Top 1% in JEE Advanced 2018