Navigation of Turtlebot using ROS and ARMarkers

Introduction

Task

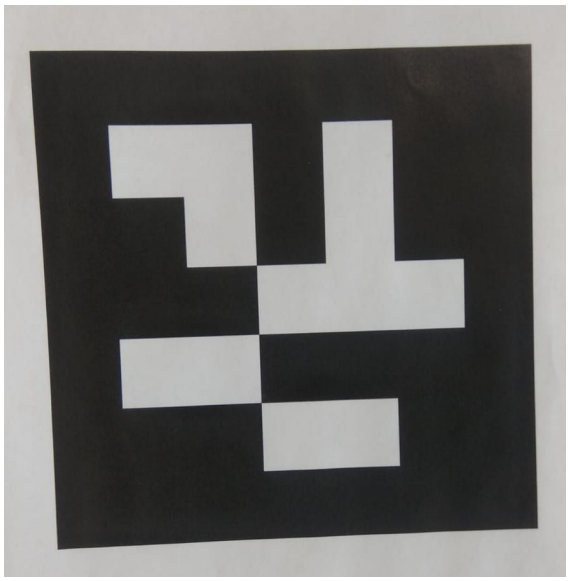
The goal of the project is the implementation of turtlebot leader and follower using ROS framework and AR marker.

1. The first step of task is to Generate a AR marker

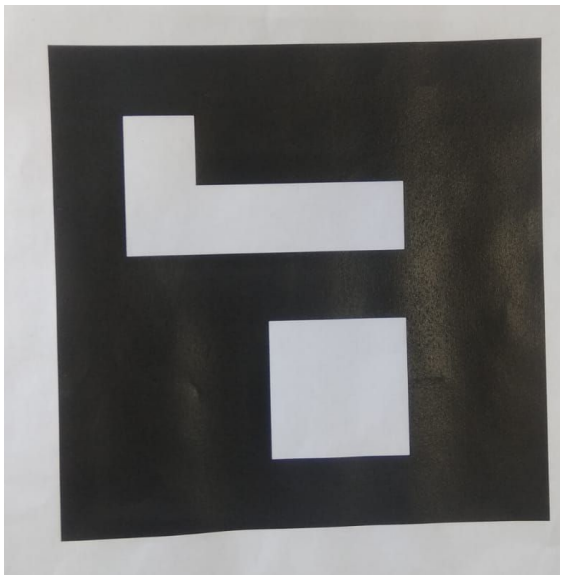
   `$ rosrun ar_track_alvar createMarker 0`

2. Next, we try to detect the AR marker using the above generated ar marker print form by the turtlebot.
3. After succesfully detecting AR marker we launch the leader turtlebot file in one of the turtlebots and assume it the leader for the rest of the document.
4. We show the ar marker with id 1803 to the leader turtlebot to move it forward and then towards right for 1 meter
5. At this point we launch the follower turtlebot to make it follow the leader turtlebot

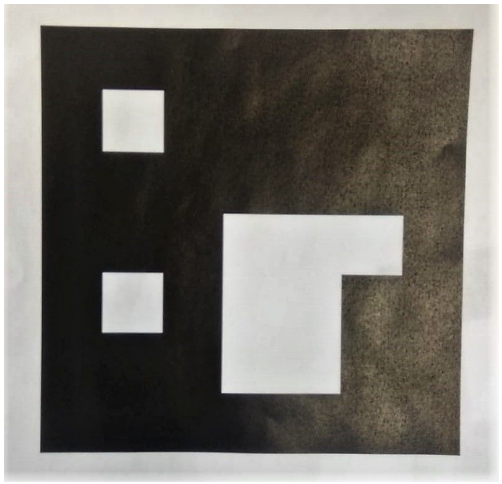
AR marker used :



Id = 3433



id=1803



Id = 123

Execution

Real Time

1. Bringup both the robots by entering the below commands in each of them.

   ```
   roslaunch turtlebot_bringup minimal.launch
   ```

2. Attach the leader turtlebot with the AR marker id = 3433 (*or the one shown above*) on the back side of the turtlebot and run the leader.py file

   ```
   Python leader.py
   ```

3. Place the follower turtlebot at some distance from the leader turtlebot and launch the follower.py file.

   ```
   Python follower.py
   ```

4. Place the AR marker id = 1803 in front of the leader turtlebot to make it move forward and take a right turn
5. Place the AR marker id = 123 in front of the leader turtlebot to make it take a left turn and move left.

   From the above steps you should see the follower turtlebot follow the leader turtlebot.

Videos

The video of real time turtlebot can be seen here :

https://www.youtube.com/watch?v=j6cIsOpVDAc

https://www.youtube.com/watch?v=zR-lTqiuCSI

https://www.youtube.com/watch?v=UkLTI7HGObw

Repository

https://github.com/zeeshansheikh15/turtlebot