AuE 8230: Sp'23: Autonomy Science and Systems

Department of Automotive Engineering

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ASSIGNMENT 1c

(Due: Thursday, 9th February 2023. 12:59PM)

Create a new ROS package called `assignment1c_turtlebot3` .

PART 1:

In Assignment 1b, you began the process of developing a TurtleSim simulation – you developed simulation code in Python to move the turtle along a circle and a square. In this assignment, we will extend and reuse this developed code to now move the Turtlebot3 in a 3D Simulation environment offered by Gazebo:

Create a `scripts` folder in your new package.

1. Copy and modify the code (`circle.py`) to publish a simple twist message to make the TurtleBot3 Burger move in a circle in Gazebo in a similar fashion to the TurtleSim homework. Then, create runs for slow, medium and fast speed.
2. Copy and modify the code (`square.py`) to publish a simple twist message to make the TurtleBot3 Burger move in a square with 0.3 angular velocity and 0.3 linear velocity in Gazebo in open loop. Then, create runs for slow, medium and fast speed.
3. Create a launch file " `move.launch` " that takes in an argument `code` which the user can define as `square` or `circle` in the terminal window. The launch file should bring up Turtlebot3 burger in Gazebo in an empty world and run the specified node. For example:

```
$ roslaunch assignment3_turtlebot3 move.launch code:=square
```

   should run the *square.py* node in Gazebo.

PART 2:

Create a 5-10 slide PPT on how you implemented the Part 1 Tasks and also, provide an analysis on the behavior as you increase the speed. On the 1st slide, include all the team member names and a github link with embedded videos.