

MRT Assignment 2

ROS and Gazebo

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Ssup fellas!! This time we are gonna go big....yes, real big. We want to make a bot that can SEE stuff and detect markers when in vision. Okay, do we have hardware for it....no, unfortunately not. But Gazebo has got our backs!! We are going to make a simulation of our required bot, add a bunch of cameras to it and boom, we are ready to go....or are we? We need to get those images from the camera and detect some markers in it. Remember assignment 1? Let's get rolling...

1 Task 1

Your first task is to make a world in gazebo where you would have the markers and would spawn your bot. The markers would be something called aruco markers, link for which which you can find in references. Also add some walls in the world to fill up the world.

2 Task 2

Your next goal is to make your own custom urdf robot, yes, you read it right, just make whatever robot you can think of.. make it a simple [two rod design](#) or make your own Optimus Prime! Also add an upright camera to the bot which can publish the images to a rostopic.

3 Task 3

Here comes the final task, you need to make a subscriber of the rostopic(that gets the images) to process it further for the aruco marker detection process. You don't need to implement the detection algorithm pipeline, there are packages available for the detection process in python. You can(and should) use those packages.

4 References

1. Creating a Gazebo world:
https://classic.gazebosim.org/tutorials?tut=build_world&cat=build_world
2. Aruco detection: https://docs.opencv.org/4.x/d5/dae/tutorial_aruco_detection.html
3. URDF: <http://wiki.ros.org/urdf/Tutorials>
4. Camera: https://classic.gazebosim.org/tutorials?tut=ros_gzplugins
5. A 2-wheeled robot:
<https://www.theconstructsim.com/ros-projects-exploring-ros-using-2-wheeled-robot-part-1/>
(first two chapters)

Shinzou Wo Sasageyo!!