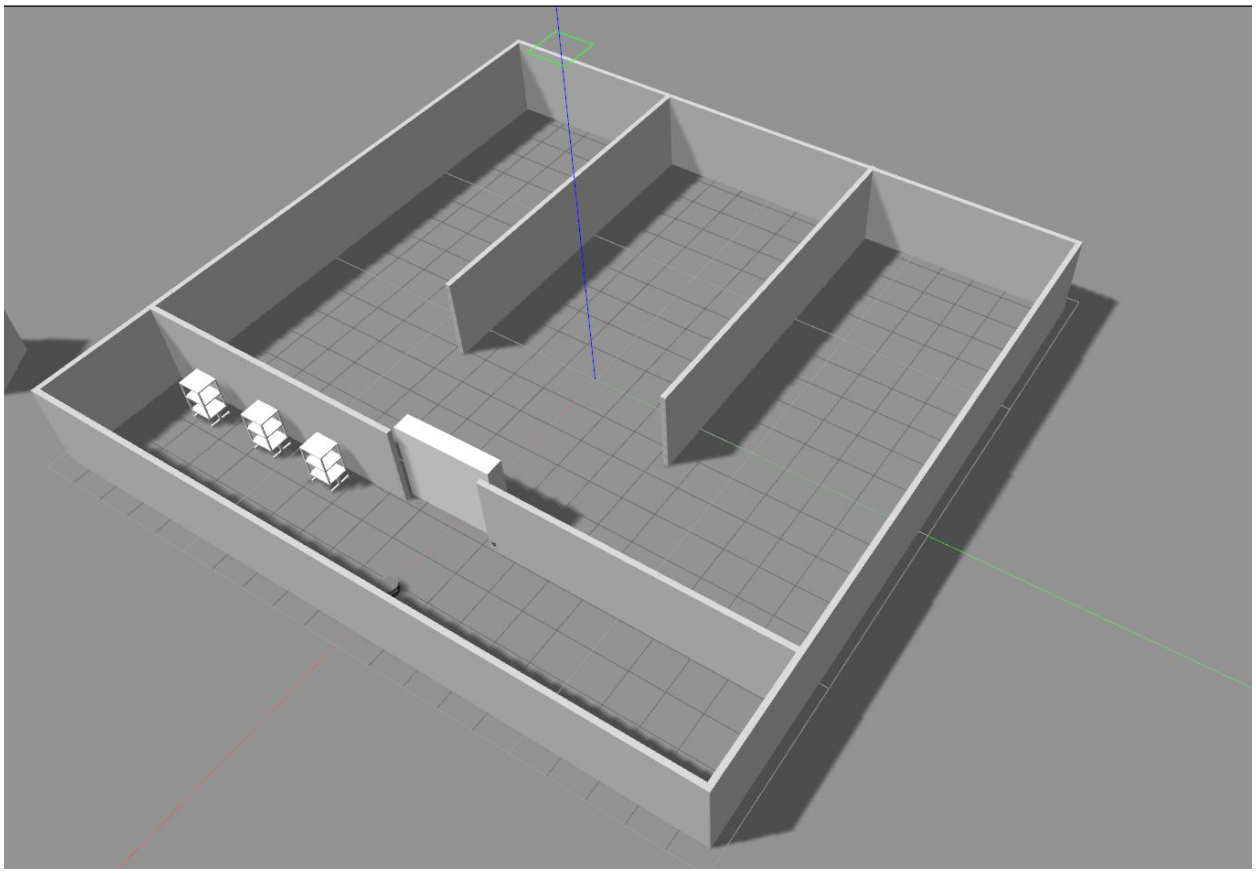
Robotnik

Quickstart Brain-IoT Simulation

How to start the simulation of the navigation of the rb1 base robot

1. Introduction

The RB1-BASE software architecture is based on ROS (Robot Operating System www.ros.org). The packages provided enable a simulation of the robot and perform different navigation procedures.
The scenario included in the simulation is composed by a two rooms separated by a door and three different areas separated by walls. In the scenario there are 3 different carts that the robot can pick and place, each of them with a different QR code.



2. Installation

The first steps to follow are the following:

1. Install ROS-Kinetic as explained in http://wiki.ros.org/kinetic/Installation
2. Create a catkin workspace as explained in http://wiki.ros.org/catkin/Tutorials/create_a_workspace
3. Access the gitlab repository and follow the instructions to download the required packages.
4. Compile and source using a terminal window:

```
cd catkin_ws
rosdep -y install --from-paths src --ignore-src --rosdistro kinetic
catkin_make
source devel/setup.bash
```

In the `catkin_make` step some errors might appear due to uninstall dependencies. Install them and then try compiling again.

3. REST communication with Postman

In order to communicate with the robot simulation using the REST interface it is recommended to use the Postman software. It can be installed following the guide provided in: https://learning.getpostman.com/docs/postman/launching_postman/installation_and_updates/

From the gitlab repository it is also possible to download the Postman template provided. This one includes the basic commands to interact with the simulation:

- **GoTo** : to make the robot move to a chosen position. The position provided in the Postman makes the robot go in front of the first cart.
- **Pick**: to pick a certain cart with the robot. The robot has to be in front of the QR for being able to pick it, this is why it is recommended to perform previously a GoTo command in front of the cart.
- **Availability**: to check the current robot situation
- **Markers in sight**: this one provides a list of the ID's of the QR the robots is seeing and their position with respect to the camera of the robot.
- **getPosition**: the position of the robot in the map in x, y, z and theta is provided.
- **Place**: the robot places the object that it is carrying.
- **openDoor**: the door in the simulation opens
- **closeDoor**: the door in the simulation closes

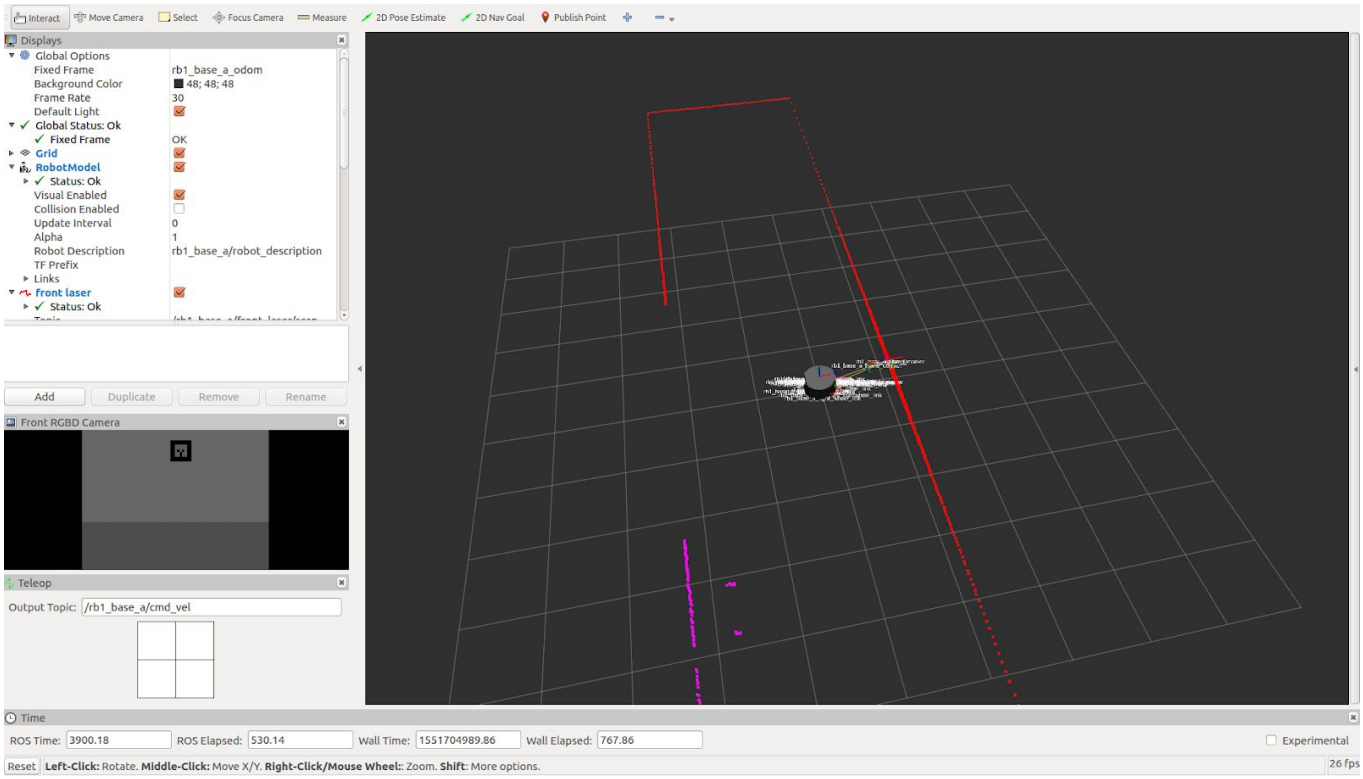
Press Send to perform any of the actions

4. Gazebo

The robot is simulated in Gazebo, where it is possible to see the robot interaction with its environment. A gazebo window will be opened when launching the complete simulation.
If it wasn't installed with the default ros kinetic installation it should be installed to execute this simulation. The Gazebo version to use is ***gazebo7.***
More information about Gazebo can be found in http://gazebosim.org/tutorials?tut=ros_installing

5. RVIZ

An rviz window will be also opened when launching the simulation. It should look like this:



The view of the lasers can be seen in the main panel and also the view of the camera.
For moving manually the robot, drag carefully the mouse around the white teleop panel.