

GAZEBO SIMULATION SETUP GUIDE

Requirements

Ubuntu 18.04

ROS melodic

Turtlebot

1. Clone and build the following 3 repositories in your catkin workspace

```
cd ~/catkin_ws/src/  
git clone https://github.com/ROBOTIS-GIT/turtlebot3_msgs.git  
git clone https://github.com/ROBOTIS-GIT/turtlebot3.git  
git clone https://github.com/ROBOTIS-GIT/turtlebot3_simulations.git  
cd ~/catkin_ws  
catkin_make  
source devel/setup.bash
```

2. Set which model of the Turtlebot you want to use (TurtleBot3 has three models, [Burger](#), [Waffle](#), and [Waffle Pi](#))

```
gedit ~/.bashrc
```

Add the following line to the bottom of your bashrc file, save and close

```
export TURTLEBOT3_MODEL=burger
```

Reload .bashrc

```
source ~/.bashrc
```

3. Launch different turtlebot simulation environments.

Note: Some of the simulations require Gazebo to download several environment assets. This may take some time (2~5 mins depending on your internet speed) the first time you launch it.

Empty world:

```
roslaunch turtlebot3_gazebo turtlebot3_empty_world.launch
```

Turtlebot world:

```
roslaunch turtlebot3_gazebo turtlebot3_world.launch
```

House:

```
roslaunch turtlebot3_gazebo turtlebot3_house.launch
```

4. To control the Turtlebot using your keyboard

```
roslaunch turtlebot3_teleop turtlebot3_teleop_key.launch
```

Note: The terminal windows that is running teleop_key has to be active when giving control commands (while using W-A-S-D etc on your keyboard)

5. If required, you can also launch the Turtlebot model on Rviz using

```
roslaunch turtlebot3_fake turtlebot3_fake.launch
```

And control it using teleop key

```
roslaunch turtlebot3_teleop turtlebot3_teleop_key.launch
```

Additional resources:

1. Turtlebot3 E-manual (Contains instructions and tutorials on many applications):
<http://emanual.robotis.com/docs/en/platform/turtlebot3/overview/>
2. Turtlebot3 ROS Wiki:
<http://wiki.ros.org/Robots/TurtleBot>
3. Simulation setup source:
<https://automaticaddison.com/how-to-launch-the-turtlebot3-simulation-with-ros/#gazebo>

Fetch

1. Install the general Fetch packages from the ROS Melodic Debians

```
sudo apt install ros-melodic-fetch-calibration ros-melodic-fetch-open-auto-dock \
ros-melodic-fetch-navigation ros-melodic-fetch-tools -y
```

2. Clone and build the Fetch Gazebo simulations and demos in your catkin workspace

```
cd ~/catkin_ws/src/
git clone https://github.com/fetchrobotics/fetch_gazebo.git
cd ~/catkin_ws
catkin_make
source devel/setup.bash
```

3. Launch different Fetch simulation environments

Note: Some of the simulations require Gazebo to download several environment assets. This may take some time (2~5 mins depending on your internet speed) the first time you launch it.

Empty world

```
roslaunch fetch_gazebo simulation.launch
```

Fetch playground

```
roslaunch fetch_gazebo playground.launch
```

4. To control the Fetch robot using your keyboard

```
roslaunch teleop_twist_keyboard teleop_twist_keyboard.py
```

Note: The terminal windows that is running teleop_twist_keyboard has to be active when giving control commands (while using U-I-O-J-K-L-M etc on your keyboard)

Additional resources:

1. Fetch Documentation (Contains instructions and tutorials on many applications):
http://docs.fetchrobotics.com/indigo_to_melodic.html