ROS - The Turtlebot Simulator

ME 4140 - Introduction to Robotics - Fall 2016

1. First you need to install the 'ros stage' simulator into your ROS system. It is most likely installed already. Link Here

```
$ sudo apt-get install ros-indigo-stage-ros
```

2. Now you need to install the 'turtlebot' simulator into your ROS system.

```
$ sudo apt-get install ros-indigo-turtlebot-simulator
```

3. Now install the physical 'turtlebot' drivers into your ROS system. This step may only be necessary if you are using a real robot. Link Here

```
$ sudo apt-get install ros-indigo-turtlebot ros-indigo-turtlebot-apps ros-indigo-turtlebot-interactions ros-indigo-turtlebot-simulator ros-indigo-kobuki-ftdi ros-indigo-rocon-remocon ros-indigo-rocon-qt-library ros-indigo-ar-track-alvar-msgs
```

4. This simulates a physical robot in a 2D world. Next we neeed to setup the world. There are 3 important files that control the world. Your installation came with a demo world.

   - `/opt/ros/indigo/share/turtlebot_stage/maps/maze.png`
   - `/opt/ros/indigo/share/turtlebot_stage/maps/maze.yaml`
   - `/opt/ros/indigo/share/turtlebot_stage/maps/stage/maze.world`

5. First try the simulator in the demo world called *maze*. We will export the files as *environment variables*

```
$ export TURTLEBOT_STAGE_MAP_FILE=
"/opt/ros/indigo/share/turtlebot_stage/maps/maze.yaml"
```

```
$ export TURTLEBOT_STAGE_WORLD_FILE=
"/opt/ros/indigo/share/turtlebot_stage/maps/stage/maze.world"
```

6. Now use the launch file (available upon install) to start the simulator.
   `$ roslaunch turtlebot_stage turtlebot_in_stage.launch`

7. Now you can modify the world you have just simulated. To do this copy all three files and rename them something sensible. Open the *.png* file with any image editor, and draw on it and save. You also need to modify just a few lines in the *.yaml* file and the *.world* file. (Note: This step will be detailed in the next tutorial. Continue at your own risk or contact me for help.)