How to Create a SLAM Map With Turtlebot

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This tutorial assumes the Turtlebot has already been paired with the workstation. If it has not been paired, please follow the tutorial titled "How to Pair Turtlebot with Workstation".

1) On the Turtlebot, open a terminal window and run:
   This can also be done from the workstation if you SSH into the Turtlebot, as shown in step 2c.

```
$ roslaunch turtlebot_bringup minimal.launch
```

2) There are three ways to teleop the Turtlebot from this point. The first way is to control the Turtlebot from the workstation, the second way is to teleop the Turtlebot directly, and the third method is to SSH into the Turtlebot from the workstation.

   a. To teleop from the workstation, run the following command:

```
$ roslaunch kobuki_keyop keyop.launch
Or
$ roslaunch turtlebot_teleop keyboard_teleop.launch
```

   b. To teleop from the Turtlebot, run the following command:

Note: The easiest method of mapping I have found is to teleop the Turtlebot using a wireless keyboard so you can follow the Turtlebot around as it is mapping.

```
$ roslaunch kobuki_keyop keyop.launch
Or
$ roslaunch turtlebot_teleop keyboard_teleop.launch
```

   c. To SSH into the Turtlebot from the workstation, run the following commands:

```
$ ssh turtlebot@<IP_OF_TURTLEBOT>
Password = Ask Dr. Pranav
$ roslaunch turtlebot_bringup minimal.launch
$ roslaunch kobuki_keyop keyop.launch
Or
$ roslaunch turtlebot_teleop keyboard_teleop.launch
```

3) Now that you are able to remotely operate the Turtlebot, you can create a SLAM map by running the following commands:

On the Turtlebot, run:

```
$ roslaunch turtlebot_navigation gmapping_demo.launch
```

On the Workstation, run:

```
$ roslaunch turtlebot_rviz_launchers view_navigation.launch
$ roslaunch kobuki_keyop keyop.launch
Or
$ roslaunch turtlebot_teleop keyboard_teleop.launch
```

4) Use teleoperation to navigate the area that needs to be mapped. When mapping has been completed, use the terminal to navigate to the directory you wish to save the map and run:

```
$ rosrun map_server map_saver -f my_map
```