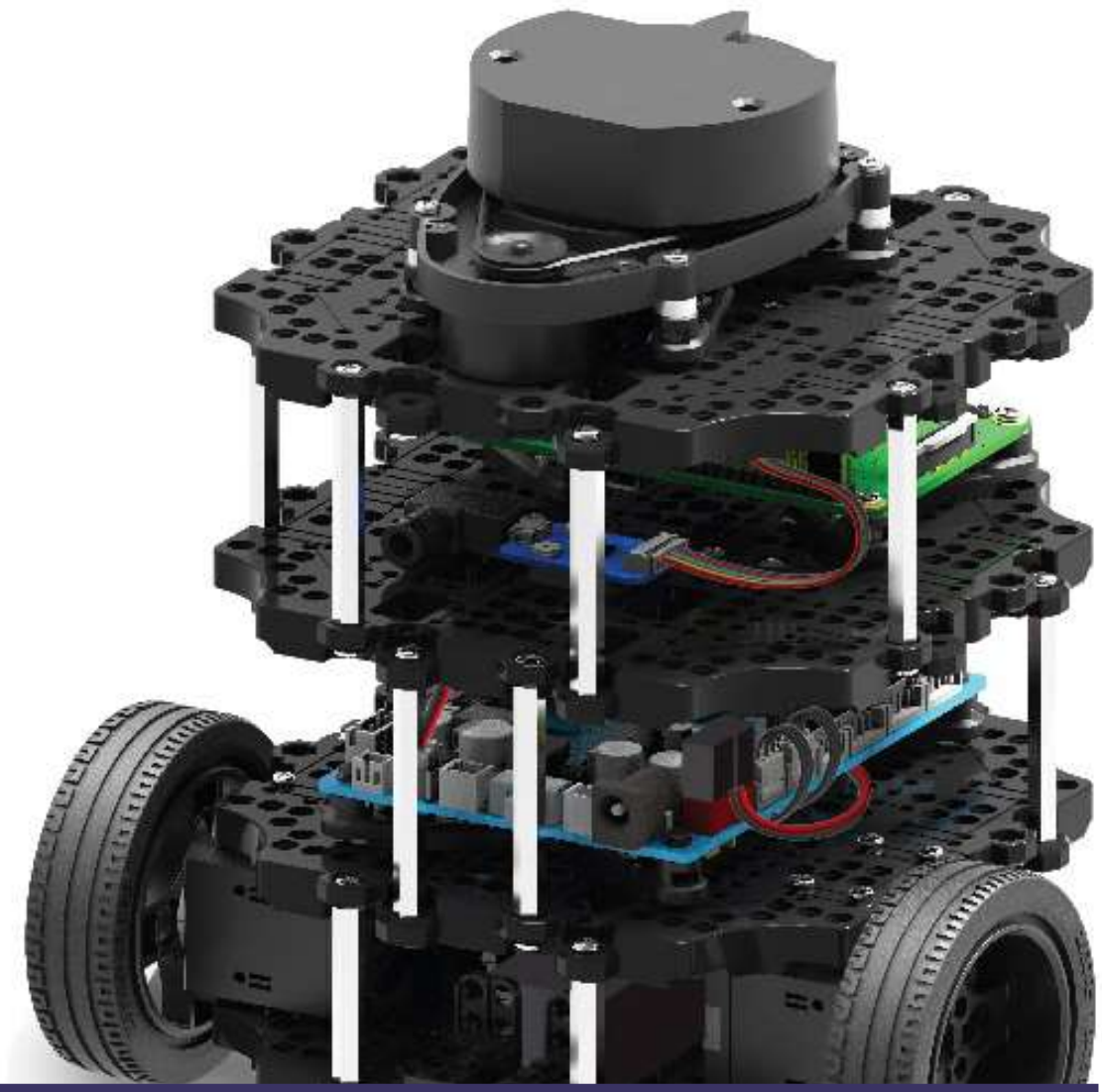


Virtual SLAM with TurtleBot3

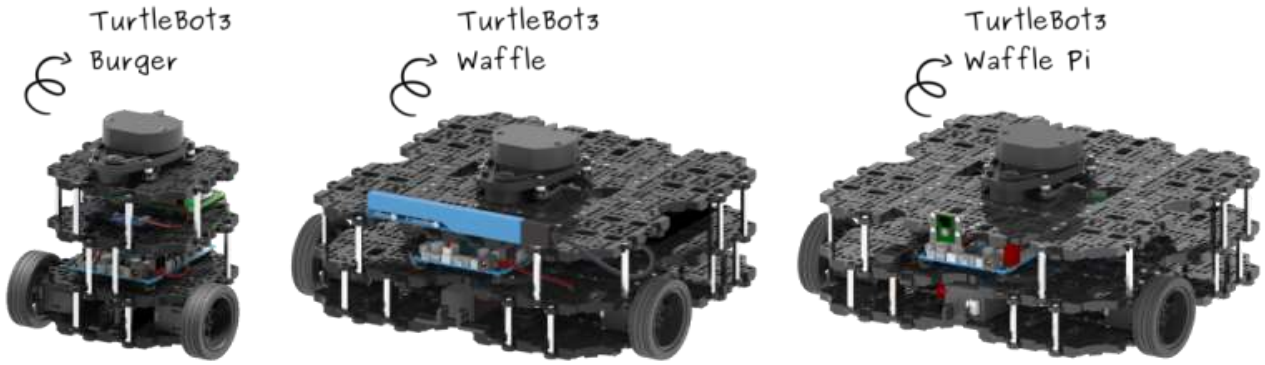
Manal Alsuwat

TURTLEBOT

TurtleBot is a ROS standard platform robot. Turtle is derived from the Turtle robot, which was driven by the educational computer programming language Logo in 1967. In addition, the turtlesim node, which first appears in the basic tutorial of ROS, is a program that mimics the command system of the Logo turtle program. It is also used to create the Turtle icon as a symbol of ROS. The nine dots used in the ROS logo derived from the back shell of the turtle. TurtleBot, which originated from the Turtle of Logo, is designed to easily teach people who are new to ROS through TurtleBot as well as to teach computer programming language using Logo. Since then TurtleBot has become the standard platform of ROS, which is the most popular platform among developers and students.

"Use SLAM approach to create and save a map"

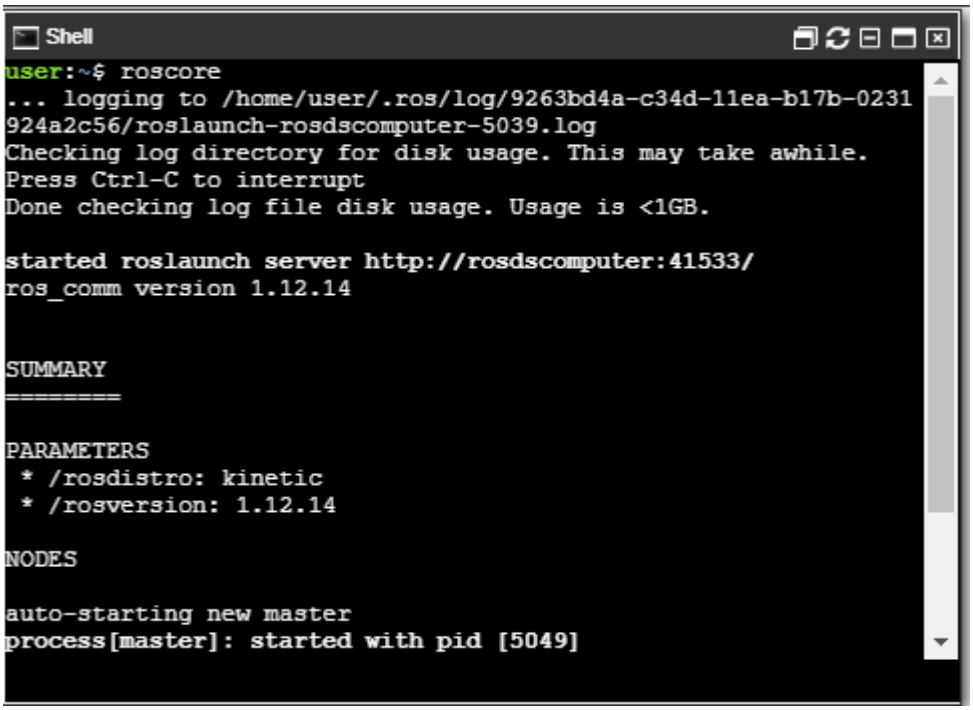
For virtual SLAM in Gazebo, instead of running the actual robot, you can select the various environments and robot models (burger,waffle,waffle_pi), and the SLAM-related commands will use the ROS packages used in the SLAM .



VIRTUAL SLAM EXECUTION PROCEDURE

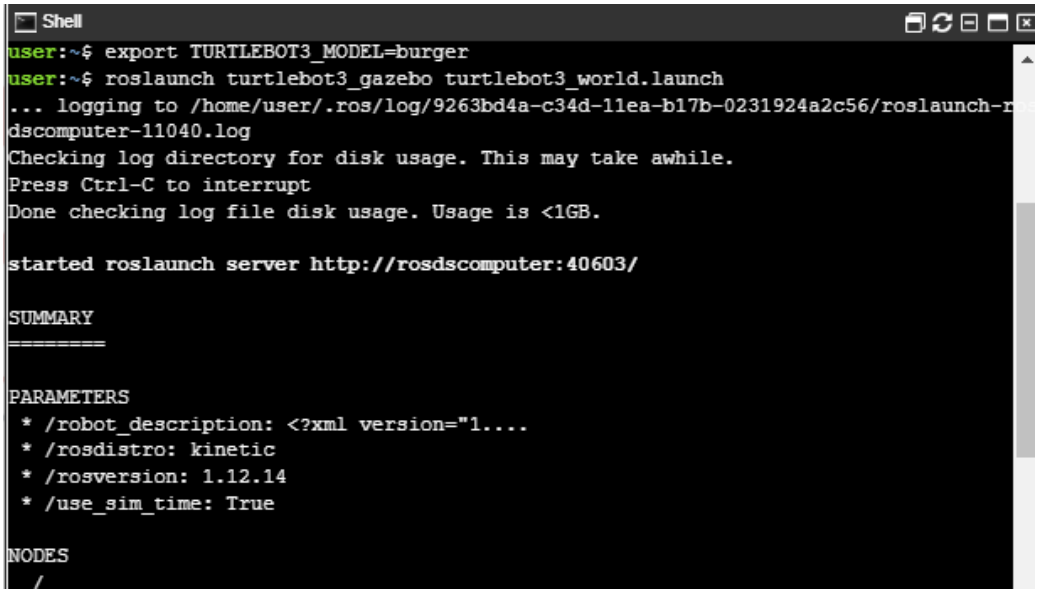
The following commands are examples of using the TurtleBot3 Waffle Pi model and the turtlebot3_world environment.

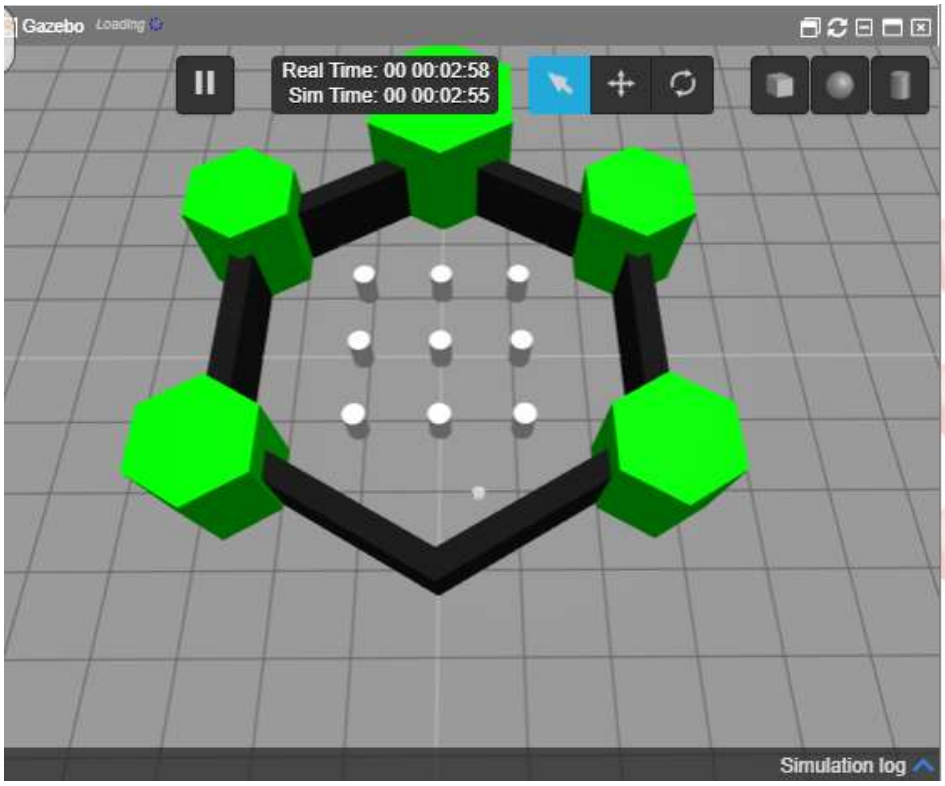
- Rosrun



- Launch Gazebo

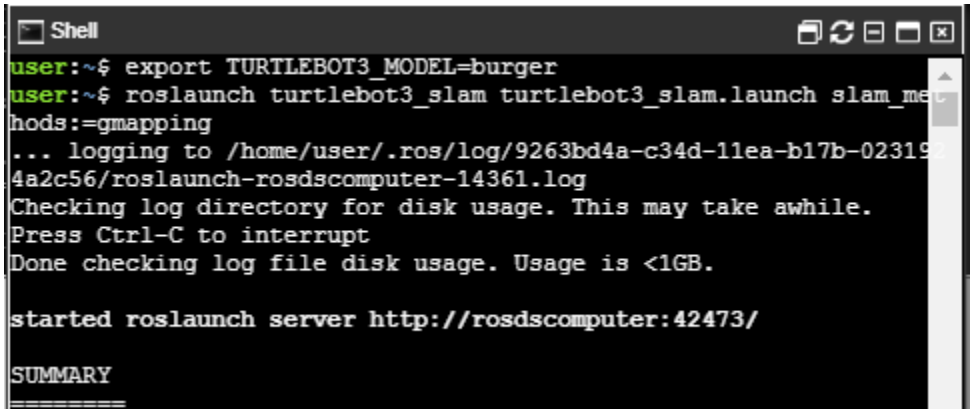
```
export TURTLEBOT3_MODEL=burger
roslaunch turtlebot3_gazebo turtlebot3_world.launch
```

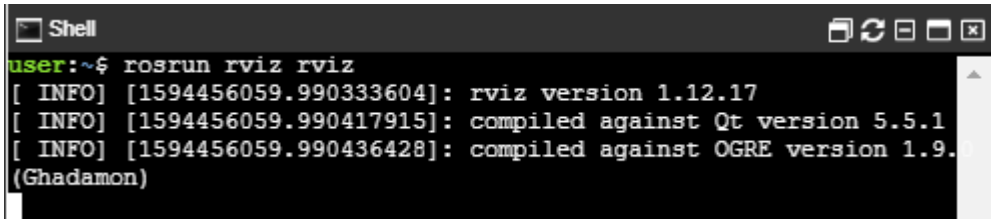


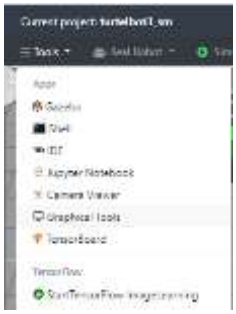


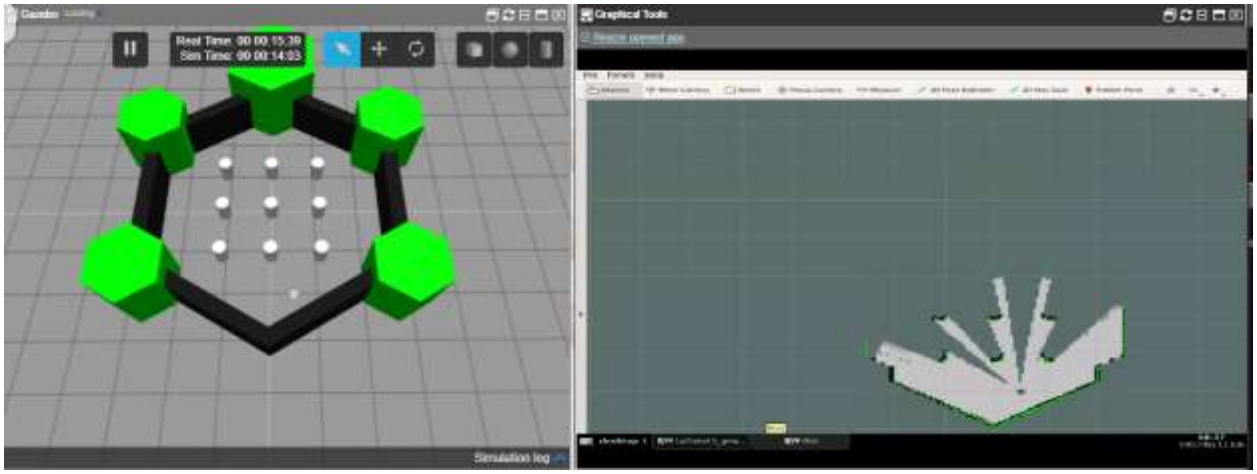
- Launch SLAM

```
export TURTLEBOT3_MODEL=waffle_pi
roslaunch turtlebot3_slam turtlebot3_slam.launch slam_methods:=gmapping
```



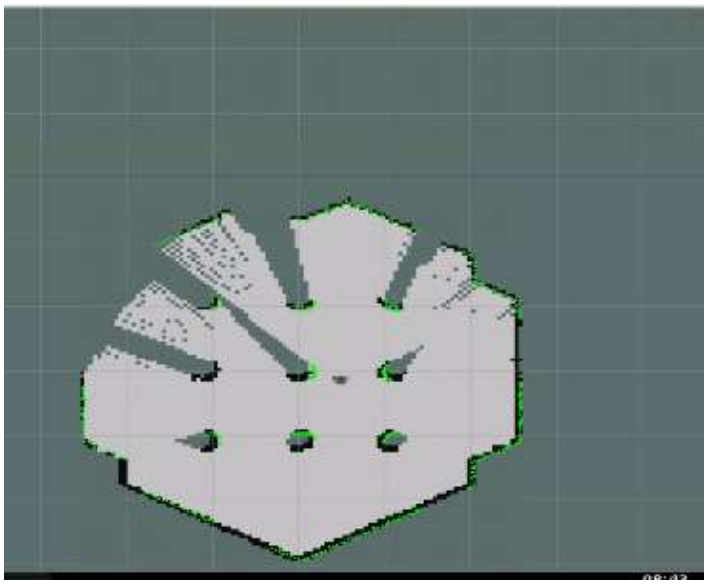


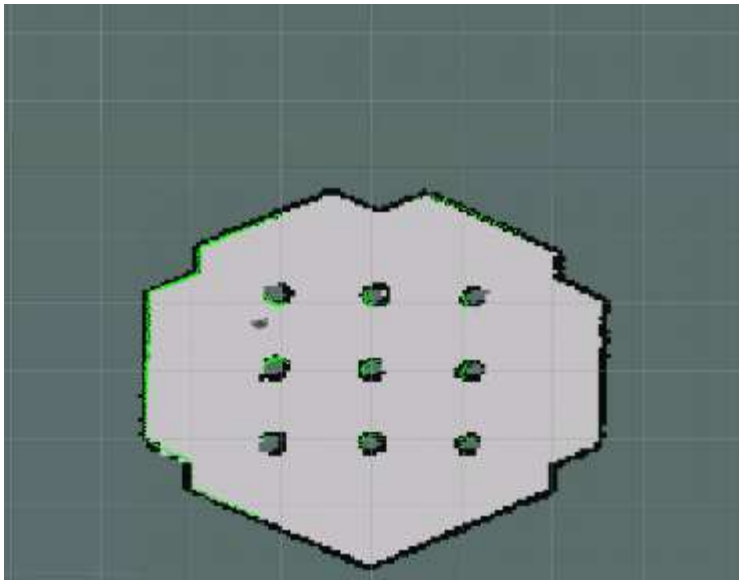




- Remotely Control TurtleBot3

```
Shell
user:~$ export TURTLEBOT3_MODEL=burger
user:~$  roslaunch turtlebot3_teleop turtlebot3_teleop_key.laun
ch
... logging to /home/user/.ros/log/9263bd4a-c34d-11ea-b17b-0231
924a2c56/roslaunch-rosdscomputer-16533.log
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://rosdscomputer:35959/

SUMMARY
========

PARAMETERS
 * /model: burger
 * /rosdistro: kinetic
 * /rosversion: 1.12.14

NODES
  /
    turtlebot3_teleop_keyboard (turtlebot3_teleop/turtlebot3_te
leop_key)

ROS_MASTER_URI=http://master:11311

process[turtlebot3_teleop_keyboard-1]: started with pid [16570]

Control Your TurtleBot3!
---------------------------
Moving around:
        w
   a    s    d
        x

w/x : increase/decrease linear velocity (Burger : ~ 0.22, Waffl
e and Waffle_Pi : ~ 0.26)
```





- Save the Map

```
rosrun map_server map_saver -f ~/map
```