Team leader:

Ahmed Mohamed aboelfetouh salem

Id_team_leader:
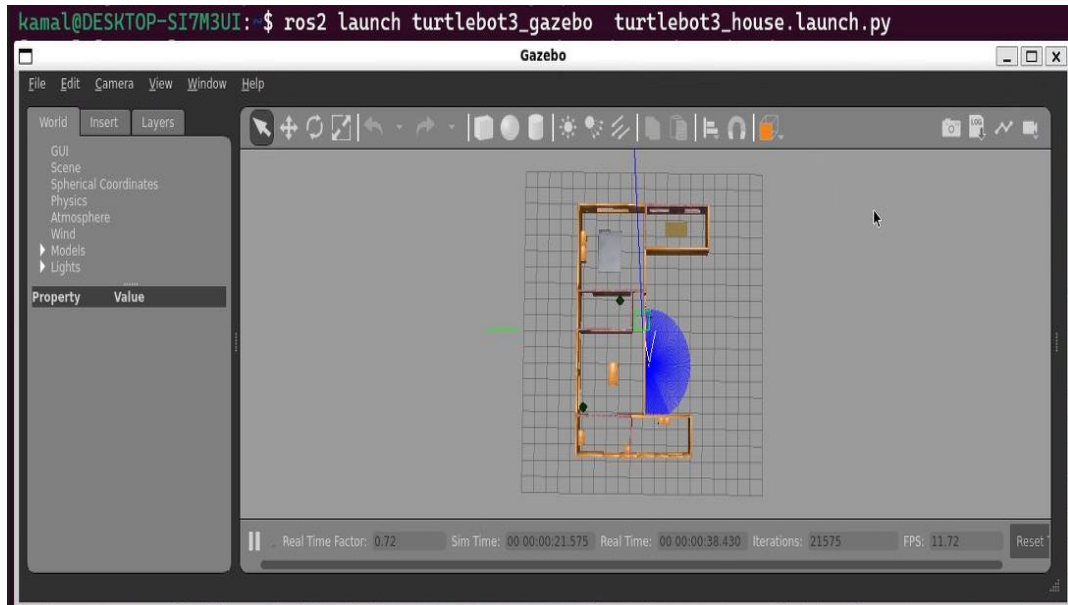
20191700061

- Team members
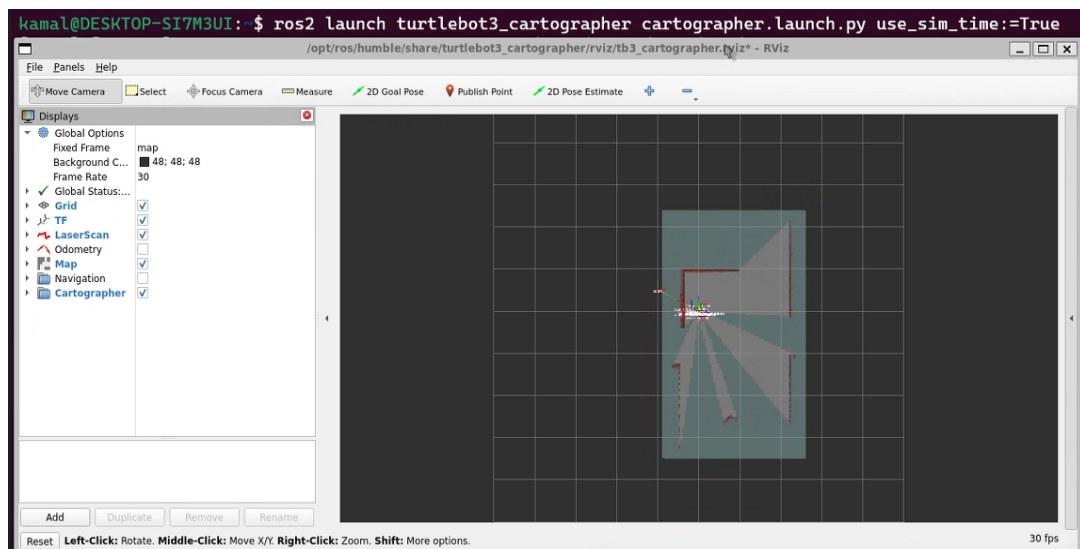
Ahmed mabrouk fekry abdelfattah	20191700054
Ahmed magdy ahmed ali	20191700055
Ahmed Mohamed aboelfetouh salem	20191700061
Bassam Mohamed kamal hassan	20191700181
Kamal salah kamal aboelkheir	20191700459

- Map creation

1-Open house world

2-Open Rviz2

3- Including keyboard control

```
kamal@DESKTOP-SI7M3UI:~$ ros2 run turtlebot3_teleop teleop_keyboard

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

w/x : increase/decrease linear velocity (Burger : ~ 0.22, Waffle and Waffle Pi : ~ 0.26)
a/d : increase/decrease angular velocity (Burger : ~ 2.84, Waffle and Waffle Pi : ~ 1.82)

space key, s : force stop

CTRL-C to quit
```
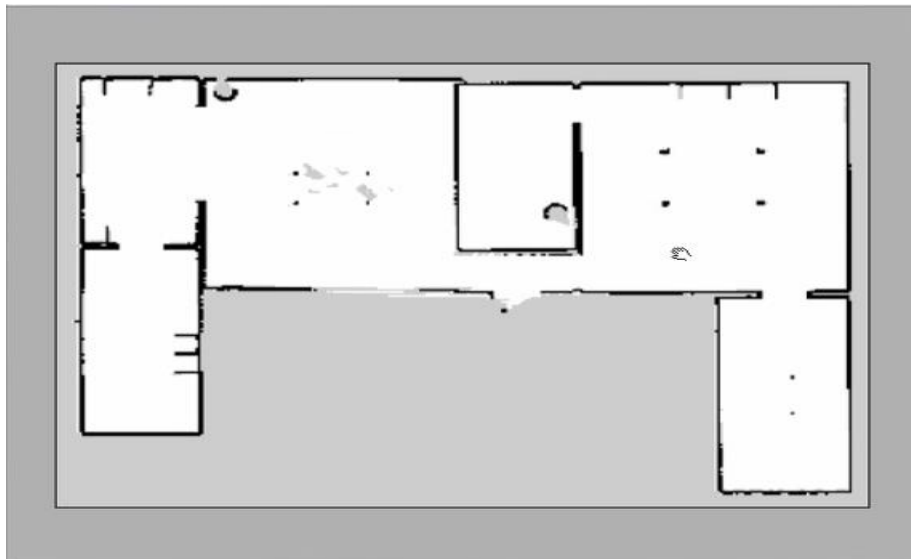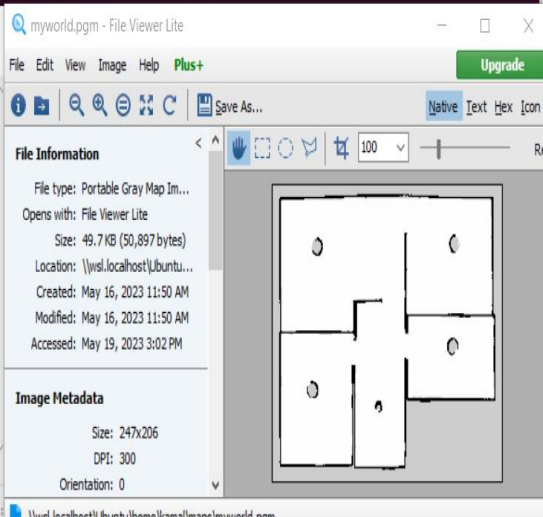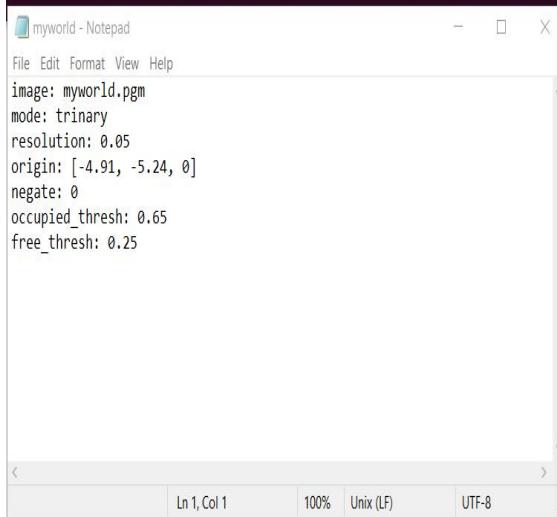
4- Building the map

To save this map

```
kamal@DESKTOP-SI7M3UI:~$ ros2 run nav2_map_server map_saver_cli -f maps/myworldp
```


myworld - Notepad

```
image: myworld.pgm
mode: trinary
resolution: 0.05
origin: [-4.91, -5.24, 0]
negate: 0
occupied_thresh: 0.65
free_thresh: 0.25
```

Ln 1, Col 1   100%   Unix (LF)   UTF-8

myworld.pgm - File Viewer Lite

File Information

File type: Portable Gray Map Im...
Opens with: File Viewer Lite
Size: 49.7 KB (50,897 bytes)
Location: \\wsl.localhost\Ubuntu...
Created: May 16, 2023 11:50 AM
Modified: May 16, 2023 11:50 AM
Accessed: May 19, 2023 3:02 PM

Image Metadata

Size: 247x206
DPI: 300
Orientation: 0

\\wsl.localhost\Ubuntu\home\kamal\maps\myworld.pgm

• Navigation inside the house world
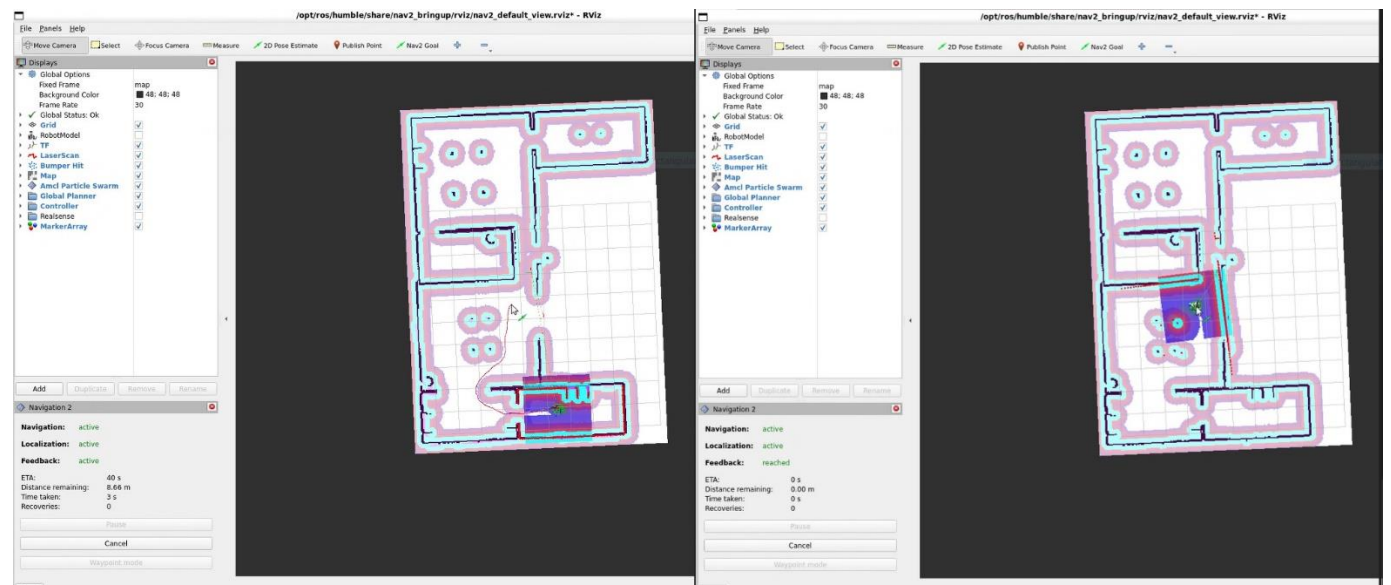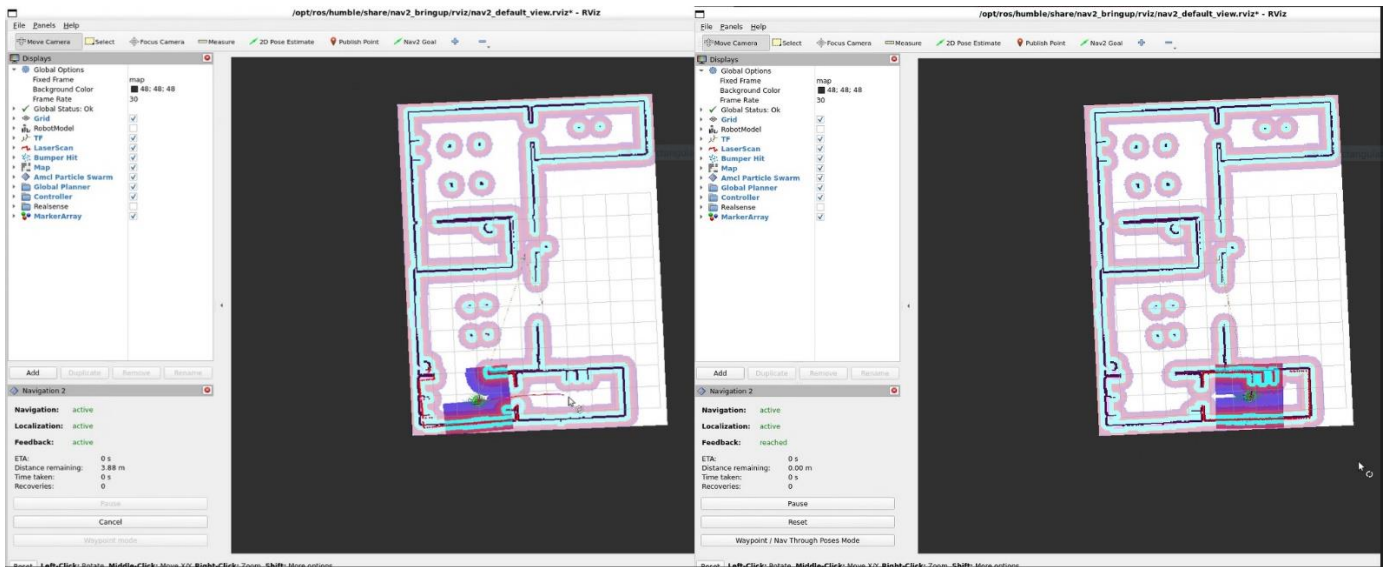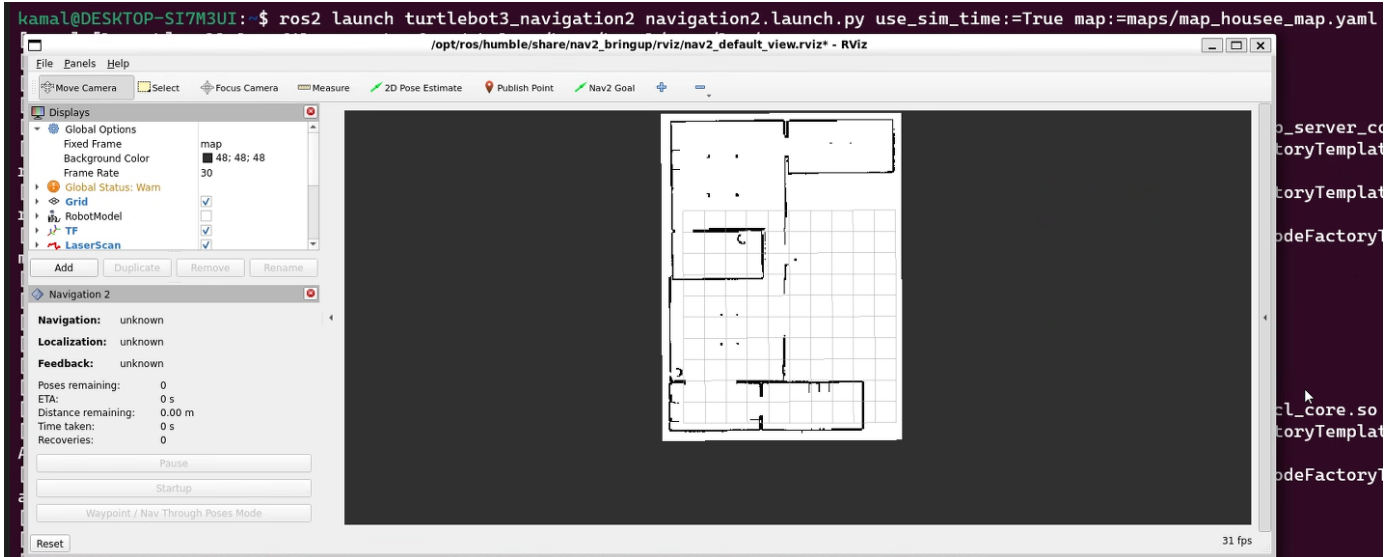
• Model creation

1-Open gazebo
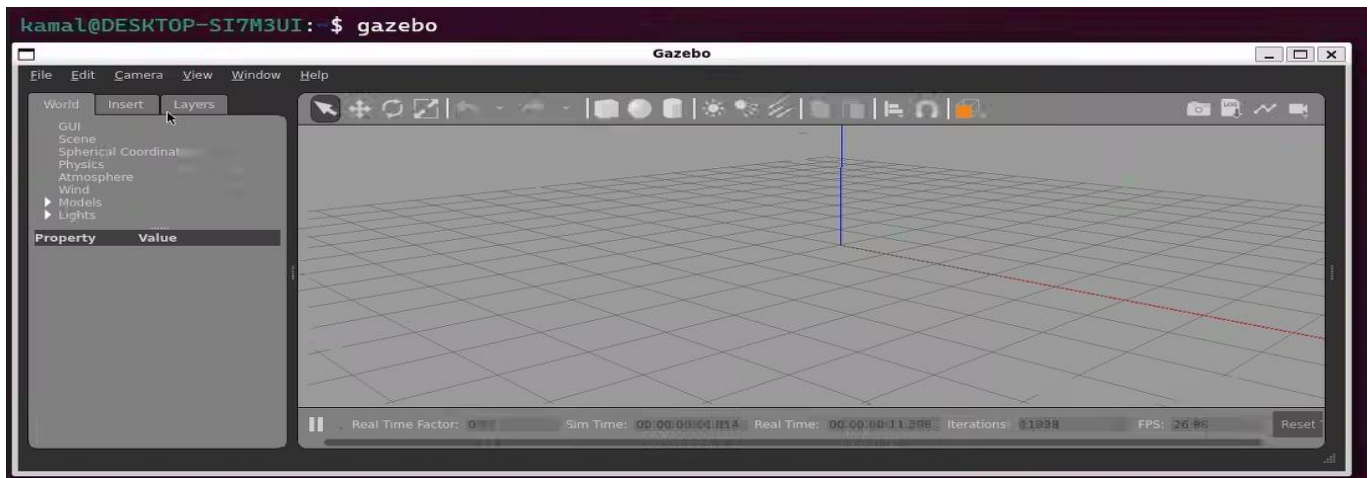
2- create our model

2-create maze model
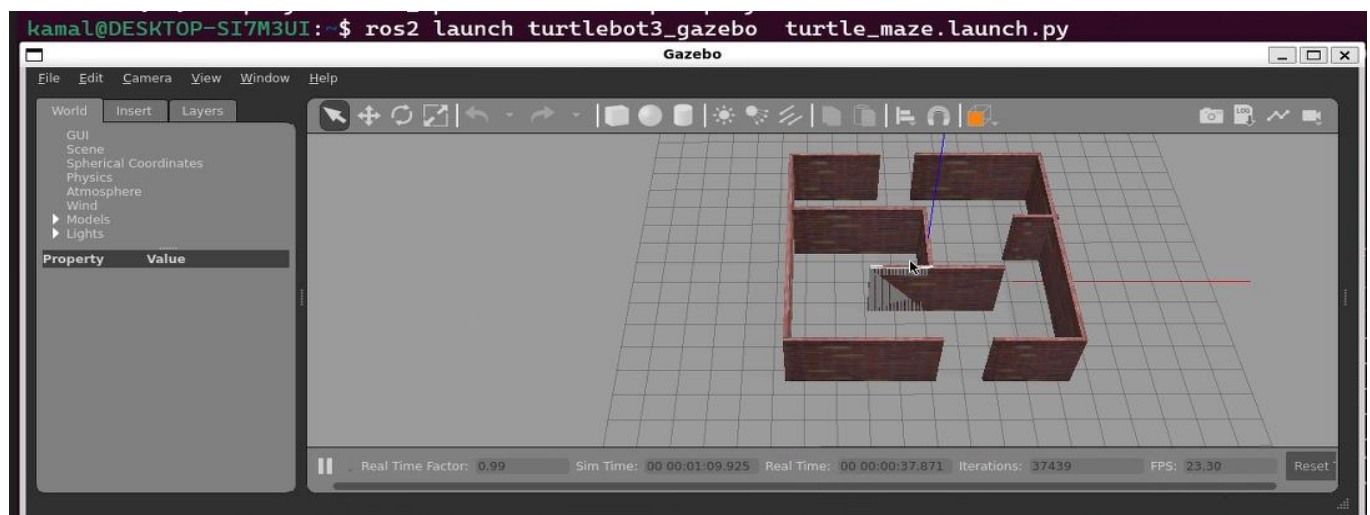
3- Save all previous models with extension ".wold"
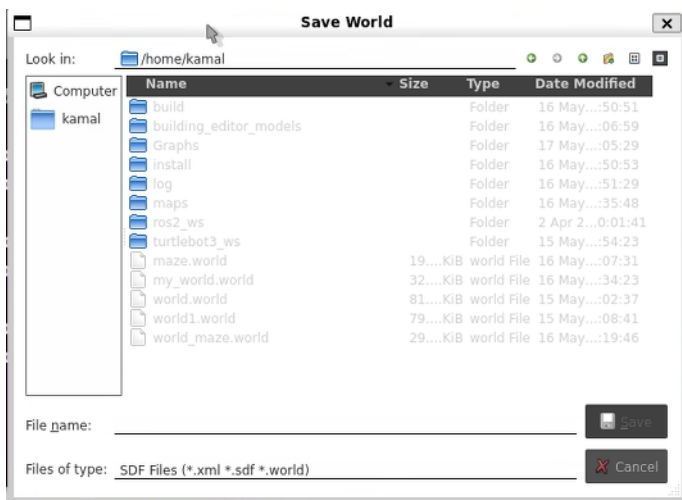
•Navigation in my world
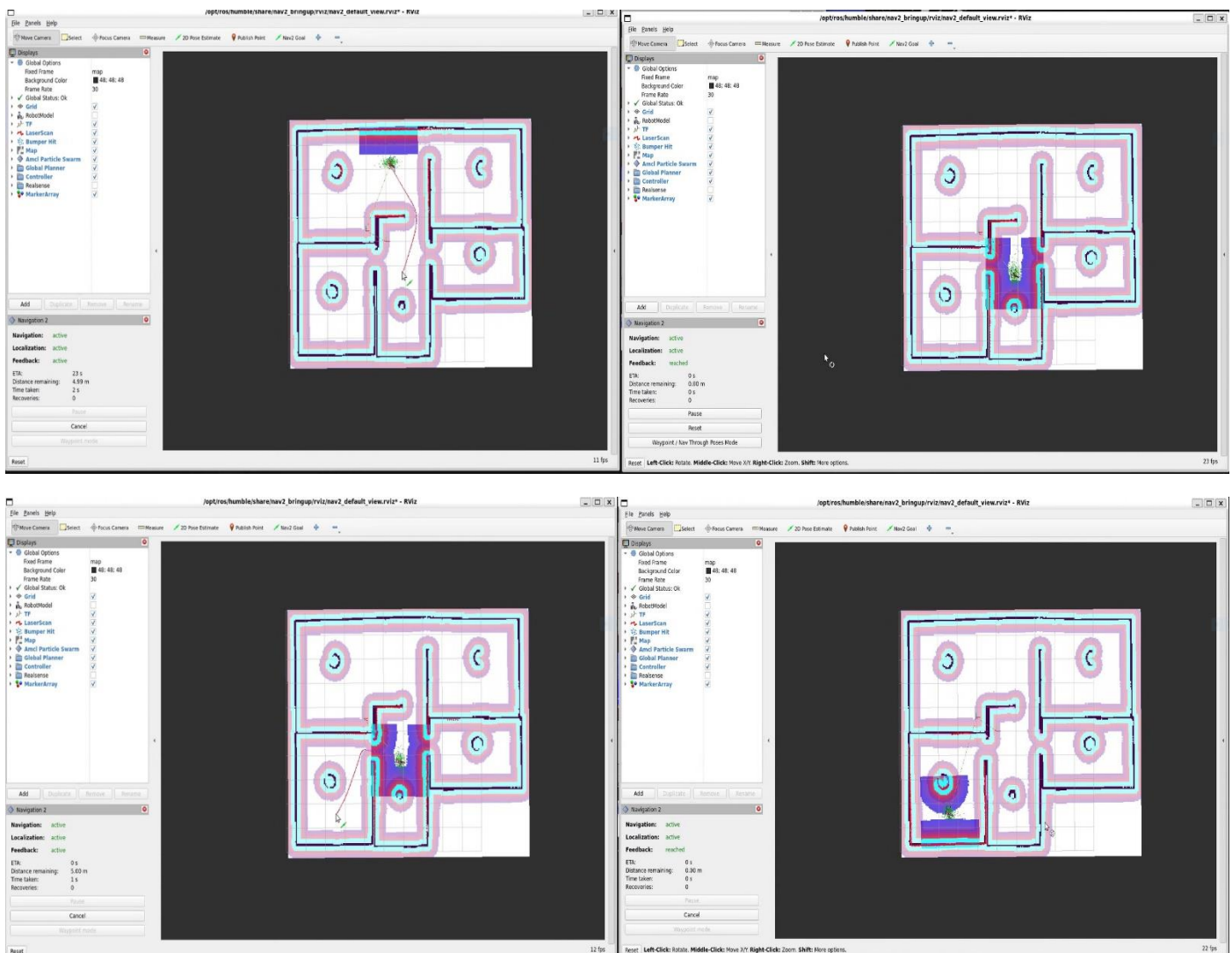
Explore topics and goals when navigating


```
kamal@DESKTOP-SI7N3UI: $ ros2 topic list
/camera/camera_info
/camera/image_raw
/clock
/cmd_vel
/imu
/joint_states
/odom
/parameter_events
/performance_metrics
/robot_description
/rosout
/scan
/tf
/tf_static
```

```
kanal@DESKTOP-SI7M3UI: $ ros2 topic list
/amcl/transition_event
/amcl_pose
/behavior_server/transition_event
/behavior_tree_log
/bond
/bt_navigator/transition_event
/camera/camera_info
/camera/image_raw
/clicked_point
/clock
/cmd_vel
/cmd_vel_nav
/controller_server/transition_event
/cost_cloud
/diagnostics
/downsampled_costmap
/downsampled_costmap_updates
/evaluation
/global_costmap/clearing_endpoints
/global_costmap/costmap
/global_costmap/costmap_raw
/global_costmap/costmap_updates
/global_costmap/footprint
/global_costmap/global_costmap/transition_event
/global_costmap/published_footprint
/global_costmap/voxel_grid
/global_costmap/voxel_marked_cloud
/goal_pose
/imu
/initialpose
/joint_states
/local_costmap/clearing_endpoints
/local_costmap/costmap
/local_costmap/costmap_raw
/local_costmap/costmap_updates
/local_costmap/footprint
/local_costmap/local_costmap/transition_event
/local_costmap/published_footprint
/local_costmap/voxel_grid
/local_costmap/voxel_marked_cloud
/local_plan
/map
/map_server/transition_event
/map_updates
/marker
/mobile_base/sensors/bumper_pointcloud/odom
/parameter_events
/particle_cloud
/performance_metrics
/plan
/plan_smoothed
/planner_server/transition_event
/received_global_plan
/robot_description
/rosout
/scan
/smoother_server/transition_event
/speed_limit
/tf
/tf_static
/transformed_global_plan
/velocity_smoother/transition_event
/waypoint_follower/transition_event
```
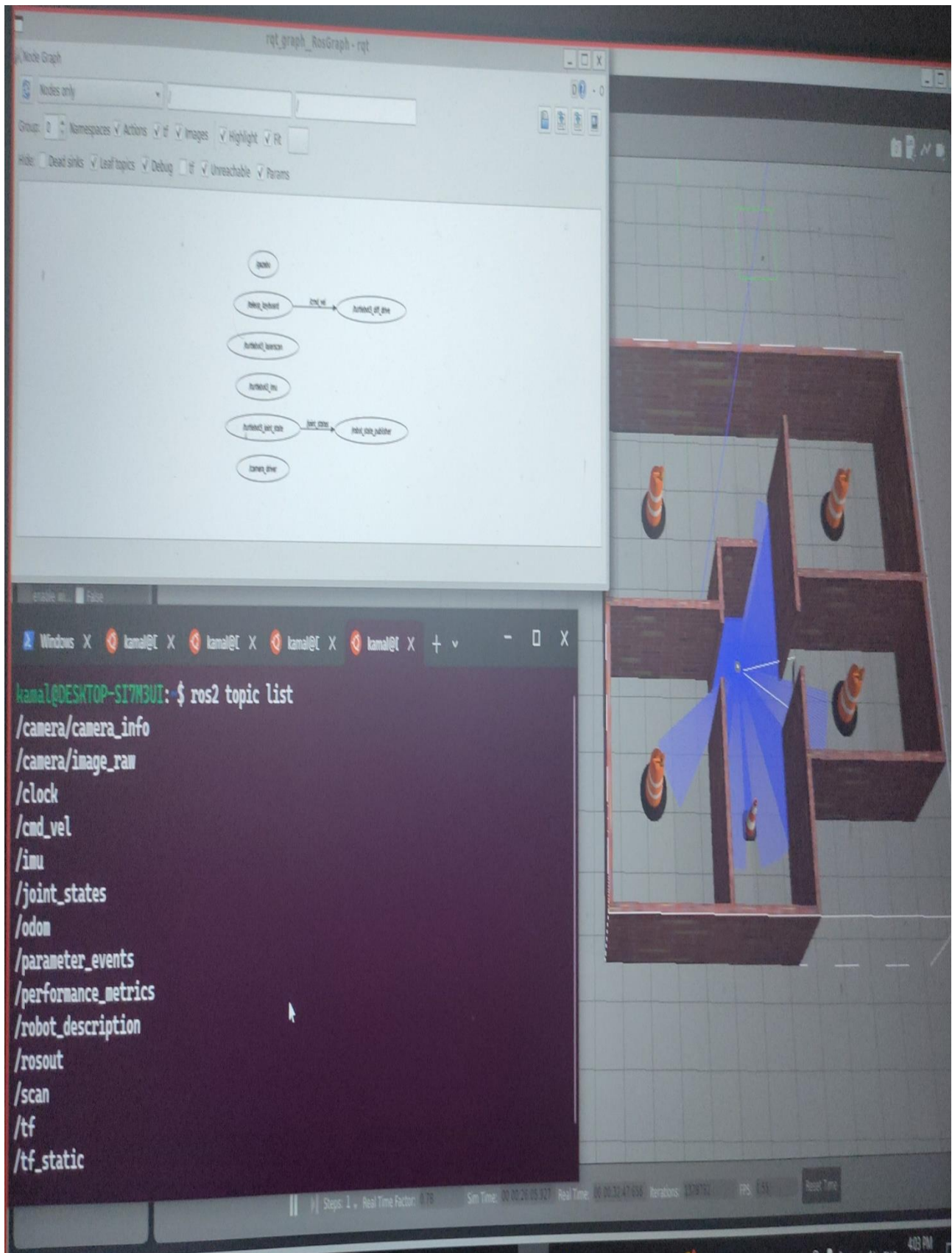
```
kamal@DESKTOP-SI7M3UI:~$ ros2 topic info /initialpose
Type: geometry_msgs/msg/PoseWithCovarianceStamped
Publisher count: 1
Subscription count: 1
```

```
kamal@DESKTOP-SI7M3UI:~$ ros2 action list
/backup
/compute_path_through_poses
/compute_path_to_pose
/drive_on_heading
/follow_path
/follow_waypoints
/navigate_through_poses
/navigate_to_pose
/smooth_path
/spin
/wait
kamal@DESKTOP-SI7M3UI:~$ ros2 action info /navigate_to_pose
Action: /navigate_to_pose
Action clients: 4
    /rviz2
    /rviz2
    /bt_navigator
    /waypoint_follower
Action servers: 1
    /bt_navigator
kamal@DESKTOP-SI7M3UI:~$
```

- ## To get clone from git gub


```
kamal@DESKTOP-SI7M3UI:~$ git clone https://github.com/ROBOTIS-GIT/turtlebot3_
Cloning into 'turtlebot3_simulations'...
remote: Enumerating objects: 3160, done.
remote: Counting objects: 100% (681/681), done.
remote: Compressing objects: 100% (126/126), done.
remote: Total 3160 (delta 596), reused 555 (delta 555), pack-reused 2479
Receiving objects: 100% (3160/3160), 15.40 MiB | 1.06 MiB/s, done.
Resolving deltas: 100% (1852/1852), done.
```

- ## To update at bashrc


```
kamal@DESKTOP-SI7M3UI:~$ gedit ~/.bashrc

** (gedit:123): WARNING **: 10:24:37.566: Could not load theme icon text-x-generic: Icon
present in theme Adwaita
```

```
.02 # See /usr/share/doc/bash-doc/examples in the bash-doc package.
.03
.04 if [ -f ~/.bash_aliases ]; then
.05     . ~/.bash_aliases
.06 fi
.07
.08 # enable programmable completion features (you don't need to enable
.09 # this, if it's already enabled in /etc/bash.bashrc and /etc/profile
.10 # sources /etc/bash.bashrc).
.11 if ! shopt -oq posix; then
.12   if [ -f /usr/share/bash-completion/bash_completion ]; then
.13     . /usr/share/bash-completion/bash_completion
.14   elif [ -f /etc/bash_completion ]; then
.15     . /etc/bash_completion
.16   fi
.17 fi
.18
.19 export TURTLEBOT3_MODEL=waffle
.20 export RMW_IMPLEMENTATION=rmw_cyclonedds_cpp
.21
.22 source /opt/ros/humble/setup.bash
.23 source /usr/share/colcon_argcomplete/hook/colcon-argcomplete.bash
.24 source ~/ros2_ws/install/setup.bash
.25 source ~/turtlebot3_ws/install/setup.bash
```

sh ▼   Tab Width: 8 ▼   Ln 114, Col 41 ▼

- To change the mode of the node
    chmod +x turtlebot3_node.launch.py

Thank you ♡