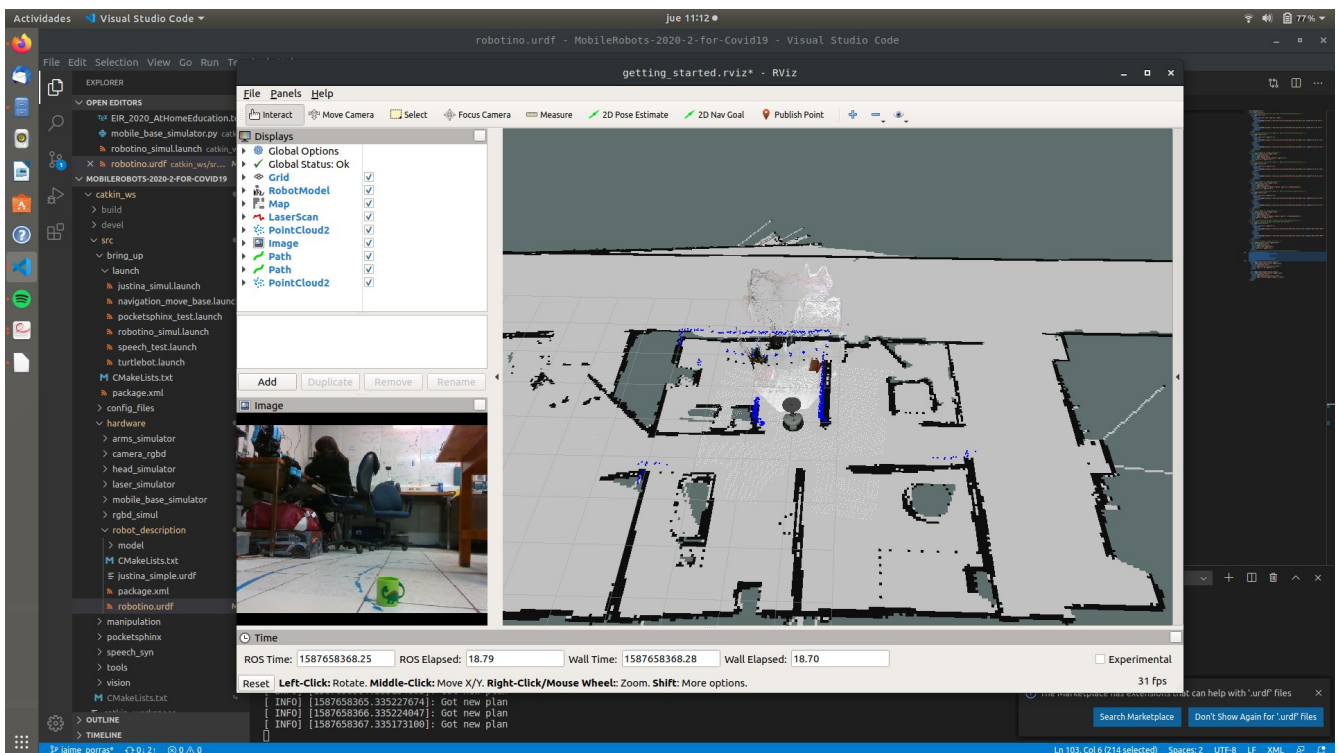
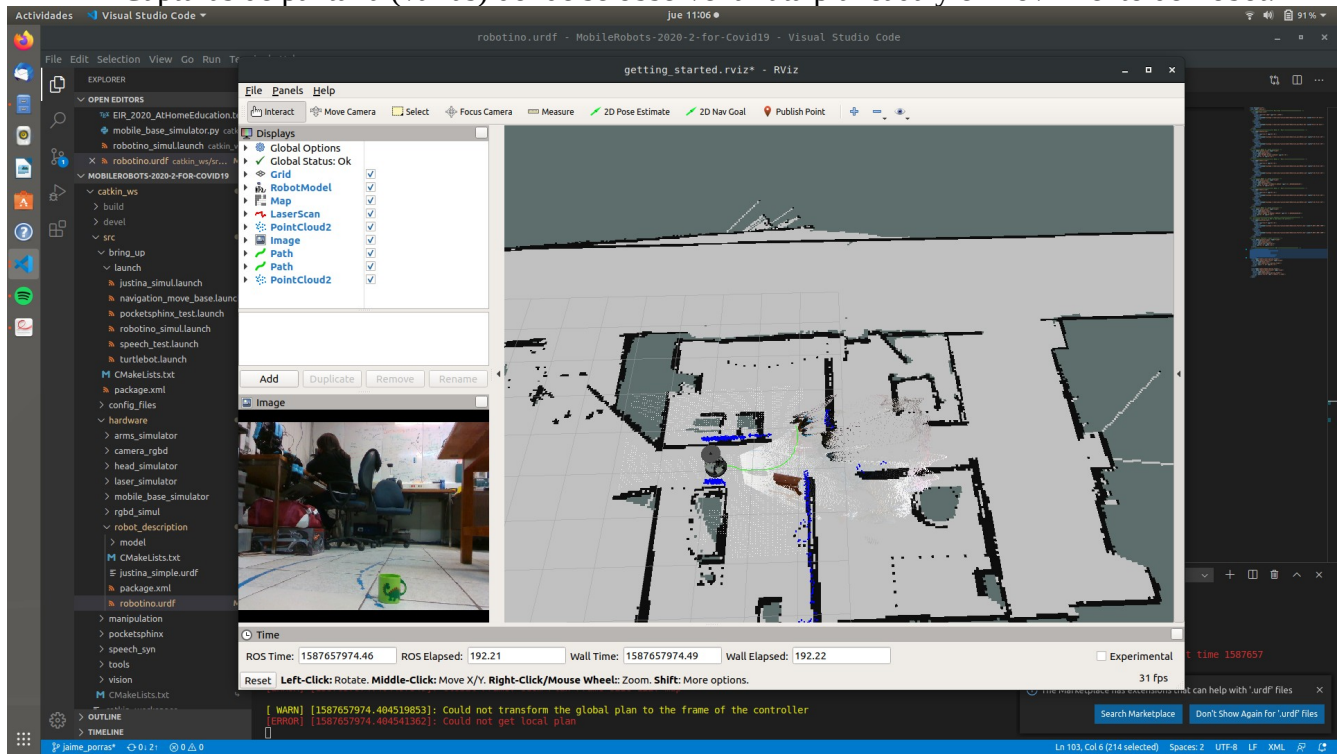


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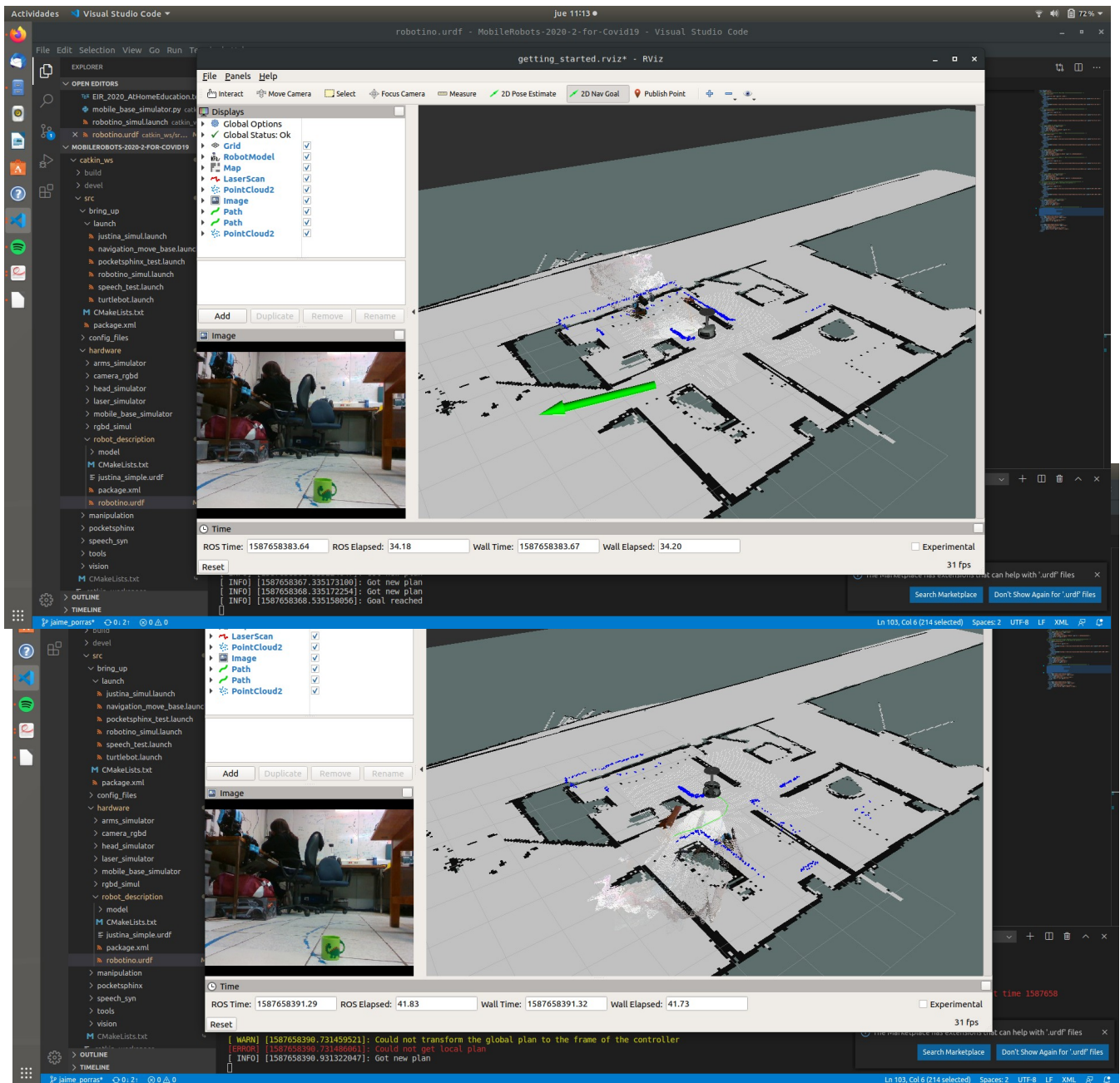
Práctica 3. Uso del navigation stack para navegación en 2D.
Realizar los ejercicios de las diapositivas 16 y 17.

Entregables:

- Archivo pdf con lo siguiente:
 - Capturas de pantalla (varias) donde se observe la ruta planeada y el movimiento del robot.



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- Comentarios sobre lo sucedido al cambiar los parámetros indicados en el ejercicio.

Al cambiar `cost_scalinf_factor` e `inflation_radius`:

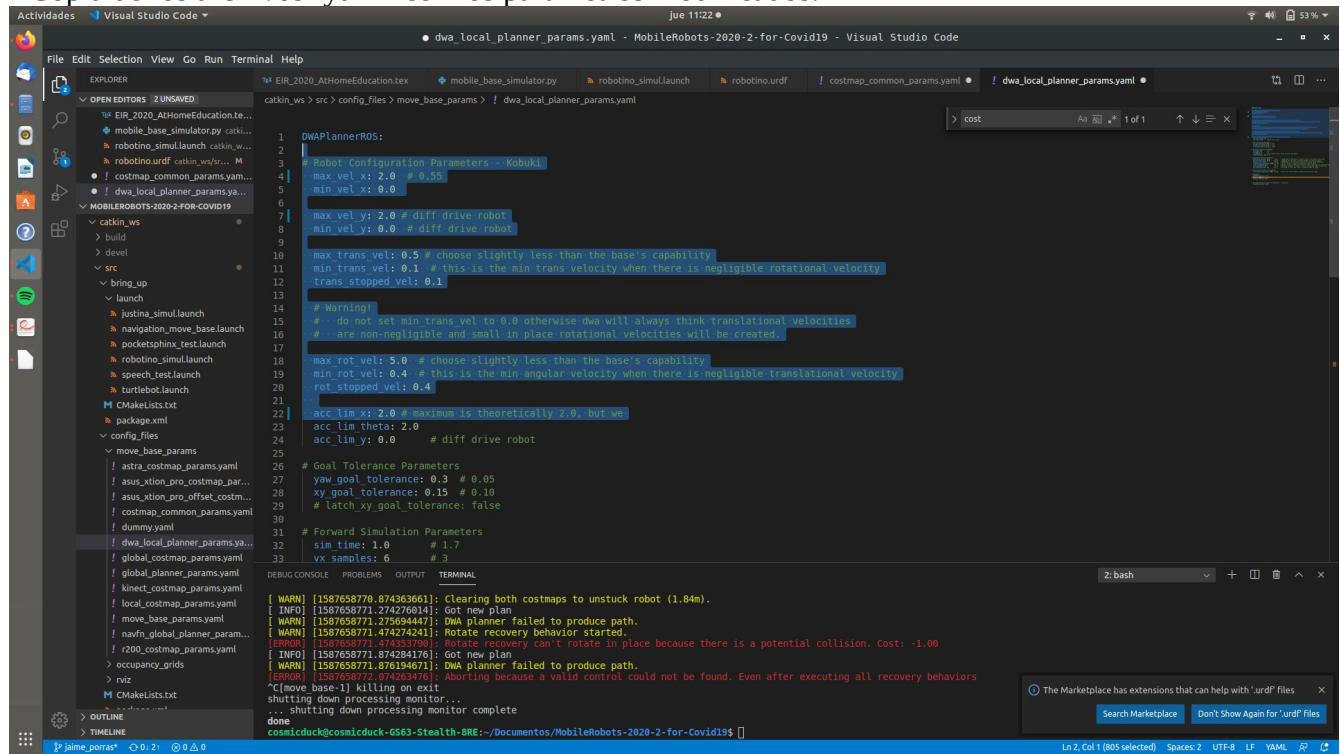
El robot tenía más problemas en encontrar soluciones, se quedaba atascado incluso después de reiniciar la posición del robot al inicio.

Al cambiar los parámetros en local planner params:

El robot se movía mucho más rápido y su aceleración se incrementó notablemente.

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- Copia de los archivos 'yaml' con los parámetros modificados.



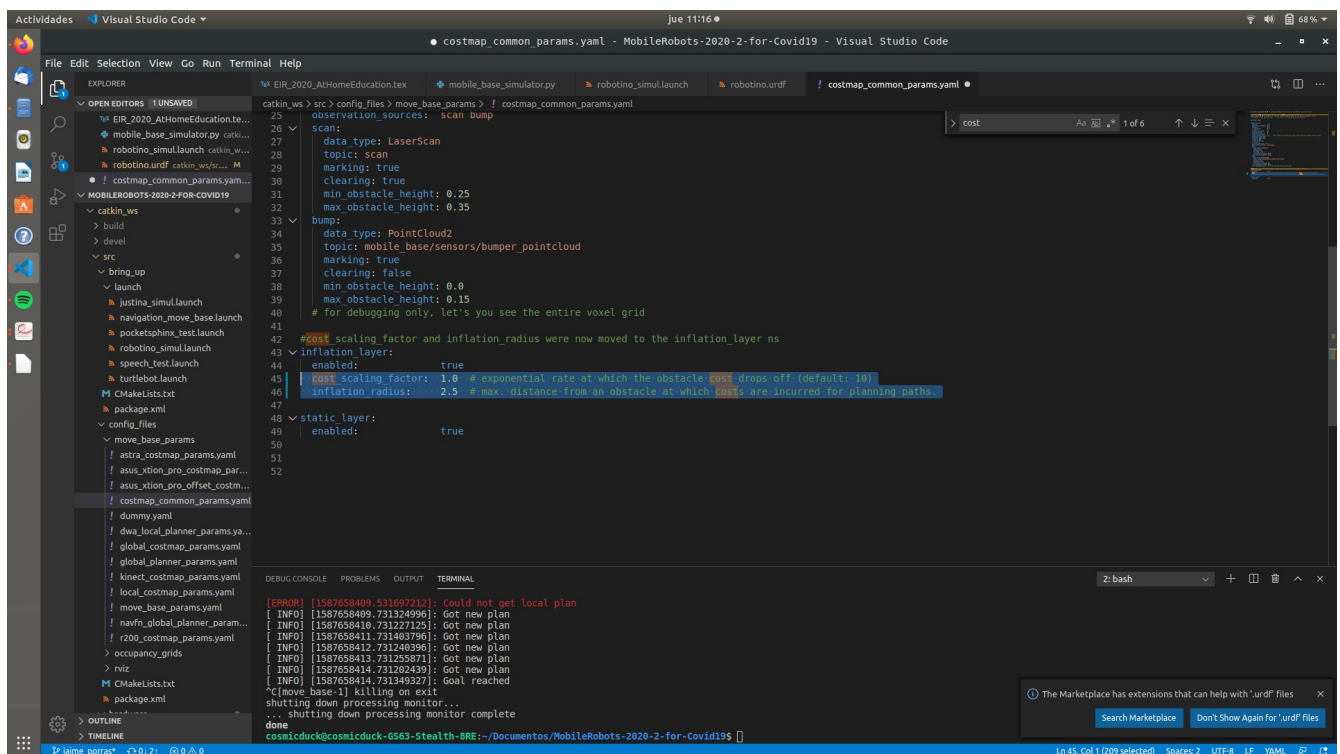
```
File Edit Selection View Go Run Terminal Help
• dwa_local_planner_params.yaml - MobileRobots-2020-2-for-Covid19 - Visual Studio Code

EXPLORER
• EIR_2020_AtHomeEducation.tex
• mobile_base_simulator.py catkin_ws
• robotino_simu.launch catkin_ws
• robotino.urdf catkin_ws
• ! costmap_common_params.yaml
• ! dwa_local_planner_params.yaml
MOBILEROBOTS-2020-2-FOR-COVID19
  catkin_ws
  build
  devel
  src
  bring_up
  launch
    justina_simu.launch
    navigation_move_base.launch
    pocketphinx_test.launch
    robotino_simu.launch
    speech_test.launch
    turtlebot.launch
  M CMakeLists.txt
  package.xml
  config_files
    move_base_params
      astra_costmap_params.yaml
      asus_xtion_pro_costmap_params.yaml
      asus_xtion_pro_offset_costmap_params.yaml
      costmap_common_params.yaml
      dummy.yaml
      dwa_local_planner_params.yaml
      global_costmap_params.yaml
      global_planner_params.yaml
      kinect_costmap_params.yaml
      local_costmap_params.yaml
      move_base_params.yaml
      navfn_global_planner_params.yaml
      r200_costmap_params.yaml
      occupancy_grids
      rviz
      M CMakeLists.txt
      package.xml
    OUTLINE
    TIMELINE

catkin_ws > src > config_files > move_base_params > ! dwa_local_planner_params.yaml

1 DWAPlannerROS:
2
3 Robot Configuration Parameters - Kobuki
4   max_vel_x: 2.0 # 0.55
5   min_vel_x: 0.0
6
7   max_vel_y: 2.0 # diff drive robot
8   min_vel_y: 0.0 # diff drive robot
9
10 max_trans_vel: 0.5 # choose slightly less than the base's capability
11 min_trans_vel: 0.1 # this is the min trans velocity when there is negligible rotational velocity
12 trans_stopped_vel: 0.1
13
14 # Warning!
15 # do not set min trans vel to 0.0 otherwise dwa will always think translational velocities
16 # are non-negligible and small in place rotational velocities will be created.
17
18 max_rot_vel: 5.0 # choose slightly less than the base's capability
19 min_rot_vel: 0.4 # this is the min angular velocity when there is negligible translational velocity
20 rot_stopped_vel: 0.4
21
22 acc_lim_x: 2.0 # maximum is theoretically 2.0, but we
23 acc_lim_theta: 2.0
24 acc_lim_y: 0.0 # diff drive robot
25
26 # Goal Tolerance Parameters
27 yaw_goal_tolerance: 0.3 # 0.05
28 xy_goal_tolerance: 0.15 # 0.10
29 latch_xy_goal_tolerance: false
30
31 # Forward Simulation Parameters
32 sim_time: 1.0 # 1.7
33 vx_samples: 6 # 3

DEBUG CONSOLE PROBLEMS OUTPUT TERMINAL
2: bash
[ WARN ] [1587658770.874363661]: Clearing both costmaps to unstuck robot (1.04m).
[ INFO ] [1587658771.274276014]: Got new plan
[ WARN ] [1587658771.275694447]: DWA planner failed to produce path.
[ WARN ] [1587658771.474274241]: Rotate recovery behavior started.
[ INFO ] [1587658771.474327761]: Rotate recovery can't rotate in place because there is a potential collision. Cost: -1.00
[ INFO ] [1587658771.874284176]: Got new plan
[ WARN ] [1587658771.876194671]: DWA planner failed to produce path.
[ INFO ] [1587658771.876224761]: Aborting because a valid control could not be found. Even after executing all recovery behaviors
[move_base-1] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
cosmicduck@cosmicduck-G563-Stealth-BRE:~/Documentos/MobileRobots-2020-2-for-Covid19$
```



```
File Edit Selection View Go Run Terminal Help
• costmap_common_params.yaml - MobileRobots-2020-2-for-Covid19 - Visual Studio Code

EXPLORER
• EIR_2020_AtHomeEducation.tex
• mobile_base_simulator.py catkin_ws
• robotino_simu.launch catkin_ws
• robotino.urdf catkin_ws
• ! costmap_common_params.yaml
MOBILEROBOTS-2020-2-FOR-COVID19
  catkin_ws
  build
  devel
  src
  bring_up
  launch
    justina_simu.launch
    navigation_move_base.launch
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      asus_xtion_pro_costmap_params.yaml
      asus_xtion_pro_offset_costmap_params.yaml
      costmap_common_params.yaml
      dummy.yaml
      dwa_local_planner_params.yaml
      global_costmap_params.yaml
      global_planner_params.yaml
      kinect_costmap_params.yaml
      local_costmap_params.yaml
      move_base_params.yaml
      navfn_global_planner_params.yaml
      r200_costmap_params.yaml
      occupancy_grids
      rviz
      M CMakeLists.txt
      package.xml
    OUTLINE
    TIMELINE

catkin_ws > src > config_files > move_base_params > ! costmap_common_params.yaml

26 observation_sources: scan bump
27 scan:
28   data type: LaserScan
29   topic: scan
30   marking: true
31   clearing: true
32   min_obstacle_height: 0.25
33   max_obstacle_height: 0.35
34 bump:
35   data type: PointCloud2
36   topic: mobile_base/sensors/bumper_pointcloud
37   marking: true
38   clearing: false
39   min_obstacle_height: 0.0
40   max_obstacle_height: 0.15
41   # for debugging only, let's you see the entire voxel grid
42
43 #cost scaling factor and inflation radius were now moved to the inflation_layer ns
44 inflation_layer:
45   enabled: true
46   cost scaling factor: 1.0 # exponential rate at which the obstacle cost drops off (default: 10)
47   inflation radius: 2.5 # max. distance from an obstacle at which costs are incurred for planning paths
48
49 static layer:
50   enabled: true

DEBUG CONSOLE PROBLEMS OUTPUT TERMINAL
2: bash
[ERROR] [1587658409.531697212]: Could not get local plan
[ INFO ] [1587658409.731324996]: Got new plan
[ INFO ] [1587658410.731227125]: Got new plan
[ INFO ] [1587658411.731483796]: Got new plan
[ INFO ] [1587658412.731483936]: Got new plan
[ INFO ] [1587658413.731235071]: Got new plan
[ INFO ] [1587658414.731202439]: Got new plan
[ INFO ] [1587658414.731493277]: Goal reached
[move_base-1] killing on exit
shutting down processing monitor...
... shutting down processing monitor complete
done
cosmicduck@cosmicduck-G563-Stealth-BRE:~/Documentos/MobileRobots-2020-2-for-Covid19$
```