Robot navigation in ROS

Updated 15 Days Ago All Users

Actions

Last Author huyong

Subscribers *None*

Ros Navigation Package

Create Barriers in ROS demo.

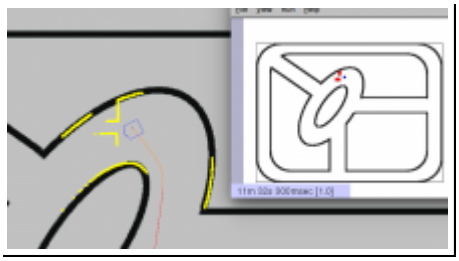
With stage-ros, we would add barriers models in the configure file such as 'track.world'.

```
# define the basic stage model based on stage inherited type 'model'
define floorplan model
(
  # sombre, sensible, artistic
  color "gray30"

  # most maps will need a bounding box
  boundary 1

  gui_nose 0
  gui_grid 0

  gui_outline 0
  gripper_return 0
  fiducial_return 0
  ranger_return 1
)

# set the resolution of the underlying raytrace model in meters
resolution 0.02

# define a block model which simulates barriers
define block model
(
  size [0.500 0.500 0.750]
  gui_nose 0
)

# load an environment bitmap
floorplan
(
  name "willow"
  bitmap "../maps/real_track.png"
  size [36.0 27.0 1.000]
  pose [0 0 0 0.000 ]
)

# throw in a robot and a barrier block
pr2( pose [ 0 0  0 0 ] name "pr2" color "blue")
block(size [1.00 0.500 0.750] pose [ -15.251 10.586 0 180.000 ] color "re
```

Then in the launch file, add the stage_ros pkg with the configure file track.world.

Table of Contents

```
<launch>
  <master auto="start"/>
  <param name="/use_sim_time" value="true"/>
  <include file="$(find navigation_stage)/move_base_config/move_base.xml"
  <node name="map_server" pkg="map_server" type="map_server" args="$(find
  <node pkg="stage_ros" type="stageros" name="stageros" args="$(find navi
    <param name="base_watchdog_timeout" value="0.2"/>
  </node>
  <include file="$(find navigation_stage)/move_base_config/amcl_node.xml"
  <node name="rviz" pkg="rviz" type="rviz" args="-d $(find navigation_sta
</launch>
```



Create a track in ROS.

- Python pyplot
- PPT plot

Note: Tracks should not be symmetric, which is hard for localization.

Display robot trace in RVIZ

- Add --> By topic --> /base_pose_ground_truth-->Odometry
- Edit the added Odometry. Angle Tolerance: 0.4, Keep: 100, Length:1.4.

Global and Local planning

- Demo: gpu4: scp ucar@10.110.0.214:/home/yonghu/Reports/ros-navigation-barriers-plan.mkv ./

passwd: ucar is number one