

HOME SERVICE ROBOT IN RO

List of packages used in the project

1. My robot
2. Teleop twist keyboard
3. Slam gmapping
4. Navigation stack
5. Where am i
6. Pick objects
7. Add markers

My robot:

It contains a urdf folder for defining a two-wheel differential robot that gazebo and rviz can understand with lidar odometry and camera sensors on board to simulate in rviz and gazebo. We can launch all necessary nodes to move the robot in gazebo such as laser scan from lidar odometry values and camera topics

Teleop twist keyboard:

Teleop twist keyboard is a package which publishes command velocities to the robot by getting input values from the keyboard we can increase or decrease the velocities of the robot can be used in mapping teleoperating a robot

Slam gmapping:

Gmapping is an important package which subscribes laser scan values use it to build occupancy 2d grid map of the world that program computer can understand use it navigation. Gmapping uses particle filter to estimate robot pose in the world using sensor model and control model filter out the current pose of the robot in world by building the map and store the information of map using tree data structure.

Navigation stack:

Ros navigation package which includes

1. AMCL for localizing robot in world
2. Move base for path planning

Adaptive Monte Carlo localization:

AMCL is an adaptive probabilistic pose detection in known map using particle filter randomly spread the particle in the known map and estimate the robot poses with laser scan values to localize it in the map.

Move base for path planning:

Move base is important package in navigating robot in ros which include global path planner and local path planner global planner includes many path planning algorithms such as navcore dwa and a* which has an own global cost map include obstacles in known map. local path planner which has a local cost map of obstacles which get information from laser scan used to avoid local obstacle in map.