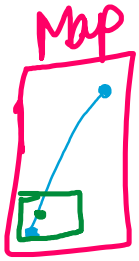
S#2 Navigation Stack

Sunday, October 24, 2021 11:51 AM

Move-base Node

The move_base package provides an implementation that,

- Given a goal in the world, will attempt to reach it with a mobile base.
- The move_base node, to accomplish its global navigation task. links together
  - Global planner
  - Local planner



Requirements

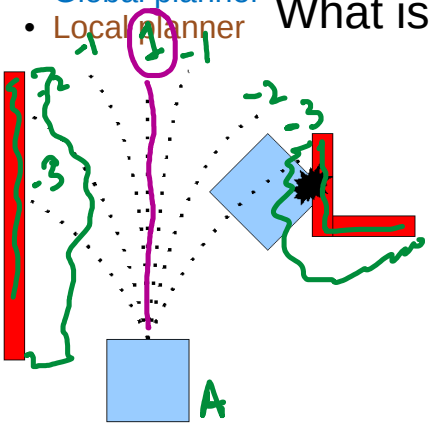
It takes in information

- Odometry
- Sensor streams (Lidar , IMU ,Barometer) .

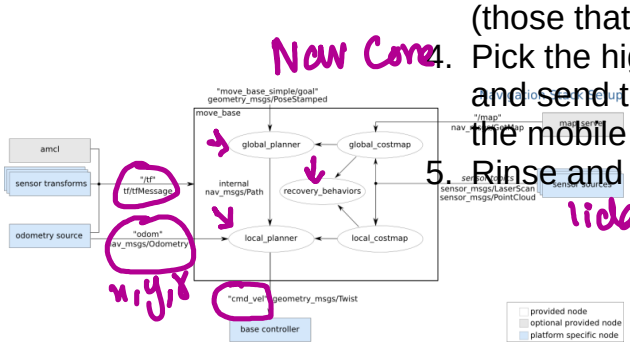
Outputs

Velocity commands to send to a mol

What is Planning?



1. Discretely sample in the robot's control space (dx,dy,dtheta)
2. For each sampled velocity, perform forward simulation from the robot's current state to predict what would happen if the sampled velocity were applied for some (short) period of time.
3. Evaluate (score) each trajectory resulting from the forward simulation, using a metric that incorporates characteristics such as: proximity to obstacles, proximity to the goal, proximity to the global path, and speed. Discard illegal trajectories (those that collide with obstacles).
4. Pick the highest-scoring trajectory and send the associated velocity to the mobile base.
5. Rinse and repeat.



https://emanual.robotis.com/docs/en/platform/turtlebot3/navigation/