Abishek

18BEC0531

Vellore

Assignment 4:

Identify any of the following things and Make a document about their functionality and importance  
- 3 ROS Topics  
- 3 ROS Services  
- 3 Actions  
- Navigation messages, Geometry Messages, and sensor messages.

ROS Topics

Ros topics are buses by which nodes pass on messages.Ros topics are usually not aware of who they communicate with .They concentrate on nodes that are interested in data subcribe to the relevent topics and nodes that generate data publish to the relevant topic.There  can many publishers and subscribers in a topic.Topics are unidirectional.

ROS SERVICES:

A Service, which is defined by a pair of messages: one for the request and one for the reply. A providing ROS node offers a service under a string name, and a client calls the service by sending the request message and awaiting the reply. Client libraries usually present this interaction to the programmer as if it were a remote procedure call.

Various related services:

1) clear: Clears the turtlesim background and sets the color to the value of the background parameters.

2) reset: Resets the turtlesim to the start configuration and sets the background color to the value of the background.

3) kill: Kills a turtle by name.

ROS ACTIONS:

Asycnhronous call to another node functionality is called an action. An asynchrnous process here means that we don have to wait for the result and we can proceed to the other things that need to be done. The node providing the functionality will implement the Action Server.

Goal

The goal is to complete the tasks using action. The notion of goal is introduced in such a way that it can be sent to an Action Server by an Action client. While moving the base the goal would be a PoseStamped message that contains information about where the rovot should move .For instance in a arm which moves objects will have a goal containing parameters such as min speed min distance min angle etc.

Feedback

Feedback provides server implementers a way to tell an ActionClient about the incremental progress of a goal. For moving the base, this might be the robot's current pose along the path. For controlling the tilting laser scanner, this might be the time left until the scan completes.

Result :

A result is sent from the ActionServer to the ActionClient upon completion of the goal. This is different from feedback, since it is sent exactly once. This is extremely useful when the purpose of the action is to provide some sort of information. For move base, the result isn't very important, but it might contain the final pose of the robot. For controlling the tilting laser scanner, the result might contain a point cloud generated from the requested scan.