4.3.1

MoveIt! Setup Assistant - Part1

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MoveIt! Setup Assistant

First setup your ROS environment and launch the setup assistant.

```
$ source $HOME/hrwros_ws/devel/setup.bash
$ roslaunch moveit_setup_assistant setup_assistant.launch
```

This gives a graphical interface where you will need to perform the following steps:

- Click on Create New Moveit Configuration Package
- Add the URDF file path of the Robot Model
- Browse to $HOME/hrwros_ws/src/hrwros_support/urdf/hrwros.xacro or add the full path to that file (i.e. replacing $HOME by the actual folder name)
- Click on Load Files to load the model

On the right side, a graphical view of the factory will be provided

The TurtleBot will no be seen on your display as we will not use MoveIt to control it

Function explanation

Self-Collision Checking (left pane) here we set up information regarding what pairs of robot links should be checked for collision.

This saves execution time:

- Set the Sampling Density to High and Click on Generate Collision Matrix.

MoveIt checks Self-Collision by sampling random joint values and checking if the configuration collides

This is done using the collision geometry of the URDF files. This process provides a list of link pairs that can be disabled because the can never collide with each other.

Function explanation

Virtual joints are an optional step to give MoveIt a fixed reference in our world this is handy for robot arms on mobile platforms:

- Define that our URDF is a fixed reference point with respect to *robot1_base_link*. The same needs to be done for *robot2_base_link*.

Function explanation

Planning Groups indicate a set of links and joints for which we intend to plan motions using MoveIt We want to do this for our two robot arms:

- Add Group
    - Give the group a name
    - Kinematic Solver: *trac_ik_kinematics_plugin/TRAC_IKKinematicsPlugin*
    - Group Default Planner: *RRTConnect*
    - Add Kinematic Chain
        - Start: *robot1_base_link*
        - End: *vacuum_gripper1_suction_cup*

This needs to be done for any number of robots we would like to control with MoveIt.