

moveit

Official website:

kinetic: http://docs.ros.org/kinetic/api/moveit_tutorials/html/index.html

melodic: <https://moveit.ros.org/>

github: <https://github.com/ros-planning/moveit>

pepper_moveit_config: https://github.com/ros-naoqi/pepper_moveit_config

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install

```
sudo apt-get install ros-kinetic-moveit
```

Official tutorials

Moveit tutorial1 - Getting started

Follow the official tutorial

kinetic:

http://docs.ros.org/kinetic/api/moveit_tutorials/html/doc/getting_started/getting_started.html

melodic:

https://ros-planning.github.io/moveit_tutorials/doc/getting_started/getting_started.html

Moveit tutorial2 - MoveIt! Quickstart in RViz

Follow the official tutorial

Kinetic:

http://docs.ros.org/kinetic/api/moveit_tutorials/html/doc/quickstart_in_rviz/quickstart_in_rviz_tutorial.html

Melodic: [https://ros-](https://ros-planning.github.io/moveit_tutorials/doc/quickstart_in_rviz/quickstart_in_rviz_tutorial.html)

[planning.github.io/moveit_tutorials/doc/quickstart_in_rviz/quickstart_in_rviz_tutorial.html](https://ros-planning.github.io/moveit_tutorials/doc/quickstart_in_rviz/quickstart_in_rviz_tutorial.html)

Rviz Visual Tools

if can not find RvizVisualToolsGui under the Panels menu, then go to Panels→Add New Panel, then select the RvizVisualToolsGui under the rviz visual tools section for pepper

change Planning Group to head since the project is mainly about to move the head

Moveit tutorial3 - Move Group Python Interface

kinetic

http://docs.ros.org/kinetic/api/moveit_tutorials/html/doc/move_group_python_interface/move_group_python_interface_tutorial.html

melodic

https://ros-planning.github.io/moveit_tutorials/doc/move_group_python_interface/move_group_python_interface_tutorial.html

Solution on pyassimp bug

<https://answers.ros.org/question/316515/cannot-add-mesh-files-to-moveit/>

Moveit tutorial4 - Commander Scripting

Official tutorial

Kinetic

http://docs.ros.org/kinetic/api/moveit_tutorials/html/doc/moveit_commander_scripting/moveit_commander_scripting_tutorial.html

Melodic

https://ros-planning.github.io/moveit_tutorials/doc/moveit_commander_scripting/moveit_commander_scripting_tutorial.html

moveit official launching tutorial with Pepper for Rviz and gazebo

https://github.com/ros-naoqi/pepper_moveit_config

Launch moveit with demo pepper for rviz

```
roslaunch pepper_moveit_config demo.launch
```

NOTE: if launch is not successful, e.g rviz did open, but no pepper shown and after few second stops running. Has to launch for few times, eventually will work.

Pepper with gazebo (has bug)

https://github.com/ros-naoqi/pepper_virtual/tree/master/pepper_gazebo_plugin
launch

```
roslaunch pepper_gazebo_plugin pepper_gazebo_plugin_Y20.launch
```

Note: first time launch can take long time
see the topics that gazebo has published

```
rostopic list
```

press play button on the bottom of the window (important, if not pressed, then rviz can not be launch)

launch rviz

```
roslaunch pepper_moveit_config moveit_planner.launch
```

Note: once the play button pressed, and launched rviz, pepper in the gazebo may start to rotate automaticaly away from the floor. Gravity Bug

Run the commander

```
roslaunch moveit_commander moveit_commander_cmdline.py
```

```
> use head
> current
> rec c
> show
> goal = c
> show
> goal[0] = 1
> plan goal
> execute
> Should have something like this
```

```
> use head
[ INFO] [1555043469.562548442]: Ready to take commands for planning group head.
OK
head> current
joints = [0.0 0.0]
Head pose = [
header:
  seq: 0
  stamp:
    secs: 1555043484
    nsecs: 870244979
  frame_id: "/odom"
pose:
  position:
    x: -0.038
    y: 0.0
    z: 0.1699
  orientation:
    x: 0.0
    y: 0.0
    z: 0.0
    w: 1.0 ]
Head RPY = [0.0, -0.0, 0.0]
head> rec c
Remembered current joint values under the name c
head> show
c = [0.0 0.0]
head> goal = c
goal is now the same as c
head> show
c = [0.0 0.0]
goal = [0.0 0.0]
head> goal[0] = 1
Updated goal[0]
head> plan goal
Planned to goal
head> execute
Plan submitted for execution
head> current
joints = [0.999927851254 4.0849144198e-05]
Head pose = [
header:
  seq: 0
  stamp:
    secs: 1555043621
    nsecs: 870251893
  frame_id: "/odom"
pose:
  position:
    x: -0.038
    y: 0.0
    z: 0.1699
  orientation:
    x: -9.79141486625e-06
    y: 1.79246015377e-05
    z: 0.479393879952
    w: 0.877599856112 ]
Head RPY = [0.0, 4.0849144198000425e-05, 0.9999278512541204]
head>
```

Pepper joint info

[0] is to move head left or right (HeadYaw)

[1] is to move head up or down (HeadPitch)

bounds

[1] must be in range $-0.7068 \leq [1] \leq 0.6371$

- negative is to move head up
- positive is to move head down

[0] must be in range $-2.0857 \leq [0] \leq 2.0857$

- negative is to move head to left(right in pepper's view)
- positive is to move head to right(left in pepper's view)

Pepper joint info from official site

http://doc.aldebaran.com/2-0/family/juliette_technical/joints_juliette.html

Head info

HeadYaw: left to right -119.5 to 119.5 in degrees, -2.0857 to 2.0857 in radians

HeadPitch: up to down -40.5 to 36.5 in degrees. -0.7068 to 0.6371 in radians

Running on the real pepper

<pre>roslaunch pepper_dcm_bringup pepper_bringup.launch network_interface:=<network> roscore_ip:=<roscore_ip></pre>

<pre>roslaunch naoqi_driver naoqi_driver.launch nao_ip:=<pepper_ip> network_interface:=enp2s0 roscore_ip:=<roscore_ip></pre>
--

<pre>roslaunch pepper_moveit_config moveit_planner.launch</pre>

Then can control the movement in the rrv2 or use commander or create own source code.