moveit

Offcial 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

Last update: 23/05/2019
Student name: Kate

Table of Contents

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-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, the 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 succussful, e.g rviz did open, but no pepper shown and after few second stops running. Has to launch for few times, enventually 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

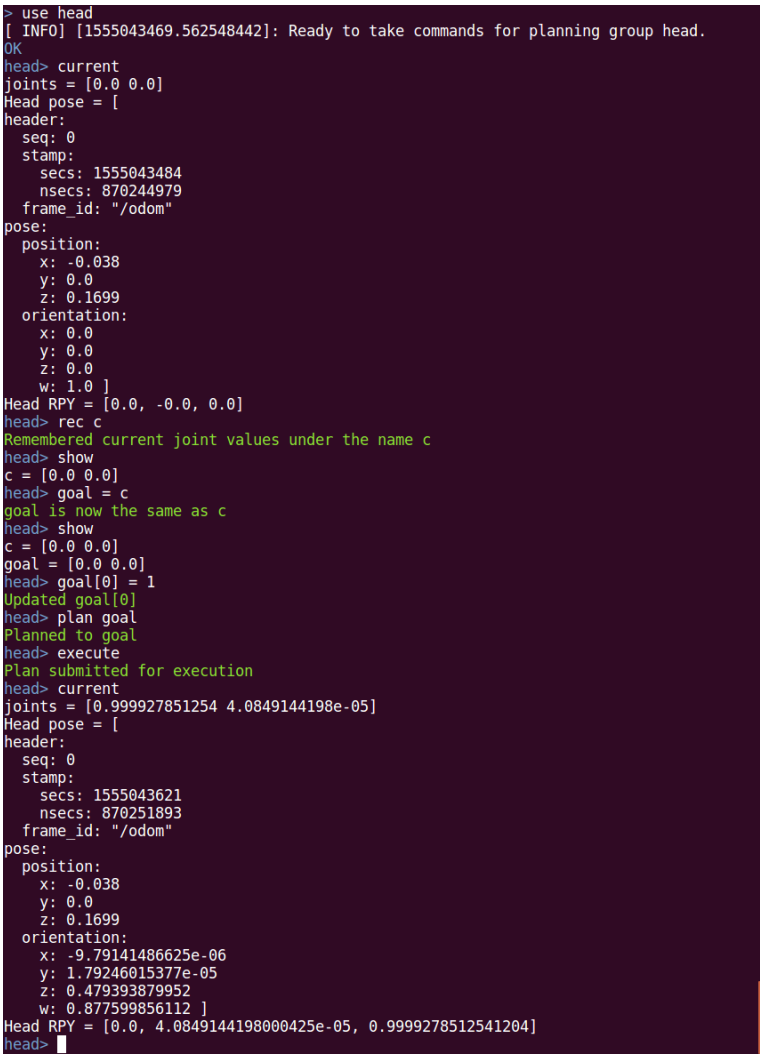
```
roslaunch pepper_moveit_config moveit_planner.launch
```

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

```
rosrun 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
```



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 <= [1] <= 0.6371
      - negative is to move head up
      - positive is to move head down
[0] must be in range  -2.0857 <= [0] <= 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 offical 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

roslaunch pepper_dcm_bringup pepper_bringup.launch network_interface:=<network> roscore_ip:=<roscore_ip>
roslaunch naoqi_driver naoqi_driver.launch nao_ip:=<pepper_ip> network_interface:=enp2s0 roscore_ip:=<roscore_ip>
roslaunch pepper_moveit_config moveit_planner.launch

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