PS4: URDF design and control

Request:

Modify the minimal robot description to add an additional link and movable joint.

Modify the minimal controller to control this 2nd joint as well.

Command your robot in Gazebo to oscillate the two movable joints in sinusoids (at a different frequency for joint 1 vs joint 2).

Submit all of your modified code, plus a movie (screen capture) of your robot's chaotic motion. (You can use Kazaam for this).

Model:

Fig.1 and *Fig.2* shows the model of my two_DOF_robot in rviz and in gazebo

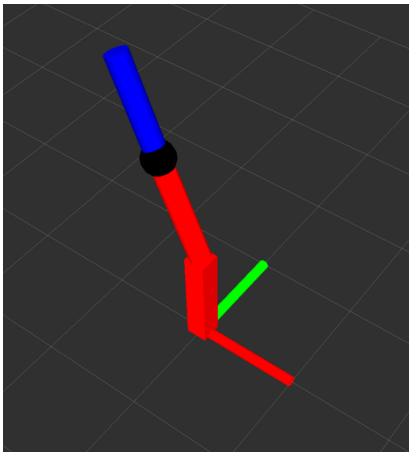

Fig.1

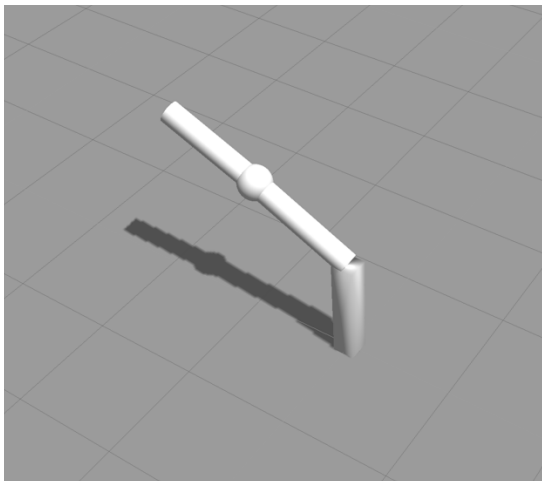

Fig.2

The model has one base link, two flexible link and a fixed ball link (black) which looks like the joint of human body. The joint between base link and lower link (red) is called “joint1” and the joint between ball link and upper joint (blue) is called “joint3”.

How to run:

1. unzip file robot_simulator@ps4.zip and put the folder into the src folder in your catkin workspace.
2. Compile the package using catkin_make with following command:

```
cd (workspace_dir)
```

```
catkin_make
```

3. Start roscore

```
roscore
```

4. Start minimal_simulator, minimal_controller and action_commander with roslaunch:

```
roslaunch robot_simulator robot_simulator.launch
```

5. If you want to change the range and speed of each joint's motion, you can use following command:

```
Rostopic pub jnt1_amp_cmd std_msgs/Float64 1.0 # this will change joint1
moving range to 1.0(rad)

Rostopic pub jnt1_feq_cmd std_msgs/Float64 1.0 # this will change joint1
moving speed to one cycle per second

Rostopic pub jnt2_amp_cmd std_msgs/Float64 0.5 # for joint2

Rostopic pub jnt2_feq_cmd std_msgs/Float64 1.5
```