示例9——dynamixel云台

参考：

http://wiki.ros.org/dynamixel_controllers/Tutorials/ConnectingToDynamixelBus

http://www.jianshu.com/p/b81783c3287e

http://wiki.ros.org/dynamixel_controllers/Tutorials

http://blog.csdn.net/yaked/article/details/45098549 //非常重要

Note: Make sure that the motor id matches the id assigned to your dynamixel actuator and dynamixel motor is on wheel mode. You can use the set_servo_config.py with the --ccw-angle-limit=0 argument to turn the wheel mode ON.

转据控制，需要使用set_servo_config.py 改变--ccw-angle-limit=0 打开 the **wheel mode** ON.

同时：修改2个地方

1、yaml文件

```
module: joint_torque_controller
type: JointTorqueController
```

2、launch文件

此时可以把机械比的关节当作轮子来看。

1、修改usb 端口

cd /home/ros/gohi_ws/src/dynamixel_motor/dynamixel_tutorials/launch

gedit controller_manager.launch

2、步骤2、

修改关节舵机的参数

2.1位置控制器

Shoulder_pan_controller:
controller:
package: dynamixel_controllers
module: **joint_position_controller**
type: **JointPositionController**
joint_name: Shoulder_pan_joint
joint_speed: 2.0
motor:
id: 1

init: 511
min: 0
max: 1023

2.2 扭矩控制器

pan_controller:
controller:
package: dynamixel_controllers
module: **joint_torque_controller**
type: **JointTorqueController**
joint_name: pan_joint
joint_speed: 1.17
motor:
id: 4
init: 0
min: 0
max: 4095

参考： **http://blog.csdn.net/yaked/article/details/45098549**

使用方法：

Note: Make sure that the motor id matches the id assigned to your dynamixel actuator and dynamixel motor is on wheel mode. You can use the set_servo_config.py with the --ccw-angle-limit=0 argument to turn the wheel mode ON.

扭矩控制，需要使用set_servo_config.py 改变--ccw-angle-limit=0 打开 the **wheel mode** ON.

同时：修改2个地方

2.2.1、yaml文件

```
module: joint_torque_controller
type: JointTorqueController
```

2.2.2、launch文件

此时可以把机械比的关节当作轮子来看。

3、

4、

roslaunch dynamixel_tutorials controller_manager.launch

roslaunch dynamixel_tutorials start_meta_controller.launch

rosrun dynamixel_tutorials trajectory_client.py

rosrun dynamixel_tutorials relax_all_servos.py

5、 控制关节位置、速度、扭矩

设置伺服位置----- 我们在话题上发布目标位置，以偏离中心的弧度来设置伺服电机的位置

查看主题

rostopic list

/Elbow_flex_controller/command
/Elbow_flex_controller/state
/Gripper_controller/command
/Gripper_controller/state
/Shoulder_lift_controller/command
/Shoulder_lift_controller/state
/Shoulder_pan_controller/command
/Shoulder_pan_controller/state
/Wrist_flex_controller/command
/Wrist_flex_controller/state

/tilt_controller/command topic expects a message of type std_msgs/Float64 which sets the angle of the joint.

通过这个消息设置关节角

/tilt_controller/state topic provides the current status of the motor, the message type used is dynamixel_msgs/JointState.

提供当前的电机状态

偏离 1.5rad

rostopic pub /Shoulder_pan_controller/command std_msgs/Float64 -- 1.5

发送正值

rostopic pub /Shoulder_pan_controller/command std_msgs/Float64 -- -1.5

发送负值

rostopic pub /Shoulder_lift_controller/command std_msgs/Float64 -- 1.5

rostopic pub /Elbow_flex_controller/command std_msgs/Float64 -- 1.5

rostopic pub /Wrist_flex_controller/command std_msgs/Float64 -- 1.5

rostopic pub /Gripper_controller/command std_msgs/Float64 -- 1.5

设置伺服速度----------

通过rosservice list查看

/Elbow_flex_controller/set_compliance_margin
/Elbow_flex_controller/set_compliance_punch
/Elbow_flex_controller/set_compliance_slope
/Elbow_flex_controller/set_speed
/Elbow_flex_controller/set_torque_limit
/Elbow_flex_controller/torque_enable
/Gripper_controller/set_compliance_margin
/Gripper_controller/set_compliance_punch
/Gripper_controller/set_compliance_slope
/Gripper_controller/set_speed
/Gripper_controller/set_torque_limit
/Gripper_controller/torque_enable
/Shoulder_lift_controller/set_compliance_margin
/Shoulder_lift_controller/set_compliance_punch
/Shoulder_lift_controller/set_compliance_slope
/Shoulder_lift_controller/set_speed
/Shoulder_lift_controller/set_torque_limit
/Shoulder_lift_controller/torque_enable
/Shoulder_pan_controller/set_compliance_margin
/Shoulder_pan_controller/set_compliance_punch
/Shoulder_pan_controller/set_compliance_slope
/Shoulder_pan_controller/set_speed
/Shoulder_pan_controller/set_torque_limit
/Shoulder_pan_controller/torque_enable
/Wrist_flex_controller/set_compliance_margin
/Wrist_flex_controller/set_compliance_punch
/Wrist_flex_controller/set_compliance_slope
/Wrist_flex_controller/set_speed
/Wrist_flex_controller/set_torque_limit
/Wrist_flex_controller/torque_enable
/dxl_manager/meta/restart_controller
/dxl_manager/meta/start_controller
/dxl_manager/meta/stop_controller
/dxl_manager/pan_tilt_port/restart_controller
/dxl_manager/pan_tilt_port/start_controller
/dxl_manager/pan_tilt_port/stop_controller
/dynamixel_manager/get_loggers
/dynamixel_manager/set_logger_level
/rosout/get_loggers
/rosout/set_logger_level

为了以弧度每秒设置伺服电机的速度，使用set_speed服务：

rosservice call /Shoulder_pan_controller/set_speed 0.5

控制伺服扭矩-------dynamixel控制器提供与两种扭矩服务：torque_enable 或者set_torque_limit。

$rosservice call /head_pan_joint/torque_enable False //力矩禁止
$rosservice call /head_pan_joint/torque_enable True //力矩使能

6、同时控制双关节（位置控制 主从机）

Creating a dual joint position controller

dual_motor_controller:

controller:
package: dynamixel_controllers
module: **joint_position_controller_dual_motor**
type: **JointPositionControllerDual**
joint_name: **dual_motor**
joint_speed: 1.17
motor_master:
id: 7
init: 0
min: -2047
max: 2047
motor_slave:
id: 15

7、同时控制双关节（力矩控制 主从机）

dual_motor_controller:
controller:
package: dynamixel_controllers
module: **joint_torque_controller_dual_motor**
type: **JointTorqueControllerDualMotor**
joint_name: **dual_motor**
joint_speed: 1.17
motor_master:
id: 7
init: 0
min: -2047
max: 2047
motor_slave:
id: 15