1. ROS Robotics By Example -- Carol Fairchild & Dr.Thomas L.Harman

* Complete chapter 1,2 & 3 from above book.

1. Creating own Two wheeled Differential Robot

Reference : Learning Robotics Using Python by Lentin Joseph(chapter 3)

1. Launching and moving robot

* **roslaunch ros\_robotics diff\_wheeled\_gazebo\_final.launch**
* Files required:
* diff\_wheeled\_gazebo\_final.launch
* diff\_wheeled\_robot\_with\_sensor\_final.xacro
* wheel.urdf .xacro
* **cd ~/catkin\_ws\_1/src/matlab/propotional\_matlab**
* **python propotinal\_head\_.py**
* **python circularpath.py**
* **python move\_robot.py**
* **python Propotional.py**

1. ROBOT moving along given waypoints using proportional controller

* **roslaunch ros\_robotics diff\_wheeled\_gazebo\_final.launch**
* **cd catkin\_ws\_1/src/matlab/propotional\_matlab/**
* **python waypoints.py**

1. Two ROBOTS moving along given waypoints using proportional controller

* **roslaunch ros\_robotics main.launch**
* Files required:
* main.launch
* robot\_1.launch
* diff\_wheeled\_robot\_with\_sensor\_1.xacro
* wheel\_1.urdf .xacro
* robot\_2.launch
* diff\_wheeled\_robot\_with\_sensor\_2.xacro
* wheel\_2.urdf .xacro

* **cd catkin\_ws\_1/src/matlab/propotional\_matlab/**
* **python waypoints\_test.py**

1. One ROBOT following another ROBOT and controlling the master robot using proportional controllers.

* **roslaunch ros\_robotics main.launch**
* **roslaunch ros\_robotics irobot\_follow\_turtle.launch**
* Files Required:
* run\_turtle\_tf\_broadcaster.launch
* run\_turtle\_tf\_listener.launch
* turtle\_tf\_broadcaster.py
* turtle\_tf\_listener.py
* turtle\_tf\_3d
* **cd ~/catkin\_ws\_1/src/matlab/propotional\_matlab**
* **python propotinal\_head\_.py**
* **python tele\_keyborad.py**

Reference : <https://www.theconstructsim.com/make-robot-follow-another-robot/>

1. Launching N number of robots and common proportional controller

In kinetic : 0-7 number of robots can be launched

* **roscore**
* **cd catkin\_ws\_1/src/ros\_robotics/launch/**
* **python multi16.py**
* Files Required:

(Are in catkin\_ws/src/ros\_robotics/launch/robots)

* diff\_wheeled\_gazebo\_full.launch
* diff\_wheeled\_gazebo\_full\_1.launch
* diff\_wheeled\_gazebo\_full\_2.launch
* diff\_wheeled\_gazebo\_full\_3.launch
* diff\_wheeled\_gazebo\_full\_4.launch
* diff\_wheeled\_gazebo\_full\_5.launch
* diff\_wheeled\_gazebo\_full\_6.launch

(Are in catkin\_ws/src/ros\_robotics/urdf/robots\_des)

* diff\_wheeled\_robot\_with\_sensor.xacro
* wheel.urdf .xacro
* diff\_wheeled\_robot\_with\_sensor\_1.xacro
* wheel\_1.urdf .xacro
* diff\_wheeled\_robot\_with\_sensor\_2.xacro
* wheel\_2.urdf .xacro
* diff\_wheeled\_robot\_with\_sensor\_3.xacro
* wheel\_3.urdf .xacro
* diff\_wheeled\_robot\_with\_sensor\_4.xacro
* wheel\_4.urdf .xacro
* diff\_wheeled\_robot\_with\_sensor\_5.xacro
* wheel\_5.urdf .xacro
* diff\_wheeled\_robot\_with\_sensor\_6.xacro
* wheel\_6.urdf .xacro
* **cd ~/catkin\_ws\_1/src/matlab/propotional\_matlab**
* **python comm\_controller.py (proportional controller)**
* **python comm\_move.py (move to a point)**

1. Launching N number of robots IN MELODIC (in Chandan’s laptop)

* **cd pooja/robo\_ws/**
* **catkin\_make**
* **source devel/setup.bash**
* **cd src/ros\_robotics/launch/**
* **python multi26.py**
* Files Required:

( /home/user/catkin\_ws\_1/src/melodic files/src/ros\_robotics/launch)

* multi26.py
* diff\_arg\_1.launch

( /home/user/catkin\_ws\_1/src/melodic files/src/ros\_robotics/urdf)

* diff\_wheeled\_robot\_with\_sensor.xacro
* wheel.urdf .xacro
* **cd ~/catkin\_ws\_1/src/melodic files/src/ros\_robotics/src**
* **python comm\_controller.py (proportional controller)**
* **python comm\_move.py (move to a point)**

**Reference :** <http://wiki.ros.org/roslaunch/XML>

<https://answers.ros.org/question/229489/how-do-i-create-dynamic-launch-files/>

<https://github.com/ros/ros_comm/issues/1734>



