

This page describes, how to create an Arduino based robot and control it wirelessly using ROS (Robot Operating System).

I am using "Arduino Fio" board on the Robot. Advantage of Fio board is that it comes with easy XBee integration.

Arduino Fio Setup:

Xbee Setup:

The XBee communication is not set up to do programming, and I program Arduino Fio using serial programmer from Sparkfun FTDI Basic.

<http://www.sparkfun.com/products/9873>

The Xbee is setup using simple configuration using X-CTU.

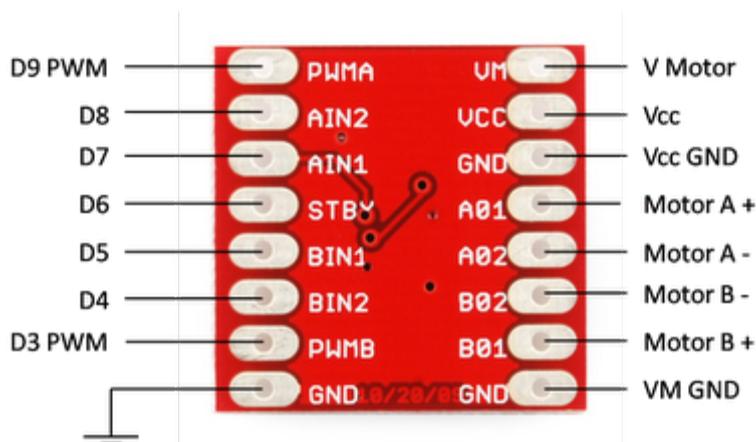
Parameter	Xbee on Computer	Xbee on Robot
BD	6 (57600)	6 (57600)
ID	3000	3000
MY	3001	3002
DL	3002	3001

MOTOR CONTROL:

The robot have simple DC motors, and hence the speed is controlled using Sparkfun 1A Dual Motor Driver TB6612FNG

<http://www.sparkfun.com/products/9457>

Pin Connections for Dual Motor driver and Arduino Fio:



To get commands from ROS over XBEE module, a simple Arduino Subscriber code is written, also see ([ROS Arduino](#)) for more details:

The image shows three terminal windows side-by-side, each with a dark background and light-colored text.

Top Left Terminal:

```
roscore http://roboticslab-iMac02:11311/
File Edit View Search Terminal Help
SUMMARY
=====
PARAMETERS
* /rosversion
* /rostdistro
NODES
auto-starting new master
process[master]: started with pid [17337]
ROS_MASTER_URI=http://roboticslab-iMac02:11311/
setting /run_id to 36be3480-9475-11e1-a555-002436af1838
process[rosout-1]: started with pid [17350]
started core service [/rosout]
```

Top Right Terminal:

```
shridhar@roboticslab-iMac02: ~
File Edit View Search Terminal Help
shridhar@roboticslab-iMac02:~$ rosrun beginner_tutorials OctoRoachCommand.py
Please enter a Left speed between 0.0 - 255.0: █
```

Bottom Terminal:

```
shridhar@roboticslab-iMac02: ~
File Edit View Search Terminal Help
shridhar@roboticslab-iMac02:~$ rosrun rosserial_python serial_node.py /dev/ttyUSB3
[INFO] [WallTime: 1335978839.478541] ROS Serial Python Node
[INFO] [WallTime: 1335978839.480508] Connected on /dev/ttyUSB3 at 57600 baud
[INFO] [WallTime: 1335978841.660928] Note: subscribe buffer size is 280 bytes
[INFO] [WallTime: 1335978841.661137] Setup subscriber on servoleft [std_msgs/Float64]
[INFO] [WallTime: 1335978841.676549] Setup subscriber on servoright [std_msgs/Float64]
```

