

Step 2.05 - RC control, launched remotely

ROS nodes can be launched in two ways:

- “local launch”: ssh into the Raspberry PI and log from there
- “remote launch”: run from a laptop

Which is better when is a long discussion that will be done later.

Here we set up the “remote launch”.

Setup Laptop

We assume that you have setup your laptop according to [Setting up Ubuntu Laptops and the Duckietops](#).

Run ROS joystick demo remotely

You can actually remotely launch nodes on your vehicle using roslaunch from your laptop.

To do so, on your laptop edit the machine file make sure that the machines file is up to date on your laptop (a git pull should do this since you pushed from the robot in [Setup Step 2.0 - From SD image to RC control](#))

Now you are ready to launch the joystick demo remotely.

```
laptop $ roslaunch duckietown joystick.launch veh:=duckiebot
```

You should be able to drive the vehicle with joystick just like the last example. Note that remotely launching nodes from your laptop doesn't mean that the nodes are running on your laptop. They are still running on the PI in this case.

Also, you might have notice that the terminal where you launch the launch file is not printing all the printouts (like `[/duckiebot/joy_mapper] left 0.000000, right 0.000000`) like the previous example. This is one of the limitation of remote launch. Don't worry though, we can still see the printouts using `rqt_console` (you will need to open a new terminal window). Do:

In a new terminal window:

```
laptop $ rqt_console
```

You should see a nice interface listing all the printouts in real time, completed with filters that can help you find that message you are looking for in a sea of messages.

You can Ctrl-C at the terminal where the roslaunch was executed to stop all the nodes launched by the launch file.