



Interfacing with the Raspberry Pi

It is assumed that you have a working Raspberry Pi SD card booting in your Pi. If not, head to the Raspberry Pi website and install Raspbian on your Pi.

At this point, your robotics system should be powered on and ready to go. Now we need to interface with the Raspberry Pi. There are many ways to do this and each is up to you.

1. Connect the Raspberry Pi display and a keyboard
2. Connect a display via HDMI and a keyboard
3. Connect the Raspberry Pi to a router via Wifi/Ethernet
4. Have the Raspberry Pi generate a network and connect to that

Any of these methods will work. You will not need a display for this so connecting via SSH is preferred. More information for how to connect to the Pi can be found on the Raspberry Pi foundation website.

Your Pi will need network connection to install the libraries required to run the robot.

Enabling the Interface

First we need to enable the SPI and I2C hardware interfaces on the Raspberry Pi. To do this, type the following command into a terminal or terminal emulator.

```
$sudo raspi-config
```

This will open up a configuration utility that can be navigated with the keyboard arrow keys. We want to do the following.

- Advanced Options (or Interfaces) > SPI > enable? (YES)
- Advanced Options (or Interfaces) > I2C > enable? (YES)

Now you can exit this utility.

Install Slush

Installing Slush is done automatically with the following command. If you have a slow network setup this may take a while as there are several packages that get loaded and installed.

```
$ sudo wget https://raw.githubusercontent.com/Roboteurs/slushengine/master/install.pl -O - | perl
```

Install the Robot Software

The robot doesn't actually need any software installed. Instead, the robot operates from a Python script. Python is a scripting language that is included with the Raspberry Pi. In a terminal, enter the following command to clone the code that runs the robot.

```
$ git clone https://github.com/Roboteurs/rbx1-software
```



Moving the Robot

Now that we have all of the required software to run the robot, we just have to run the robot.py script. Make sure your controller is plugged in at this point or the robot will not operate. Enter the following command.

```
$ cd rbx1-software  
$ python3 robot.py
```

Now you will be able to drive the robot around with the joystick.

Scripting the Robot

The more advanced functionality of the robot software is outlined on the wiki where the software is hosted. As the software is updated, so will this wiki. Questions and issues can also be posted to this wiki.

Wiki Root: <https://github.com/Roboteurs/rbx1-software/wiki>

Controller Layout: <https://github.com/Roboteurs/rbx1-software/wiki/Controller-Usage>

Scripting the Robot: <https://github.com/Roboteurs/rbx1-software/wiki/Scripting-the-Robot>