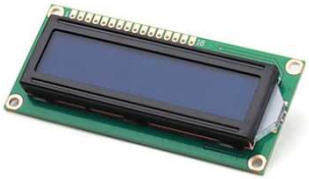
MotoPiduino : Arduino Shield與 Raspberry Pi 的橋樑

Motoduino lab

www.motoduino.com

Raspberry Pi 與 Arduino Shield橋樑



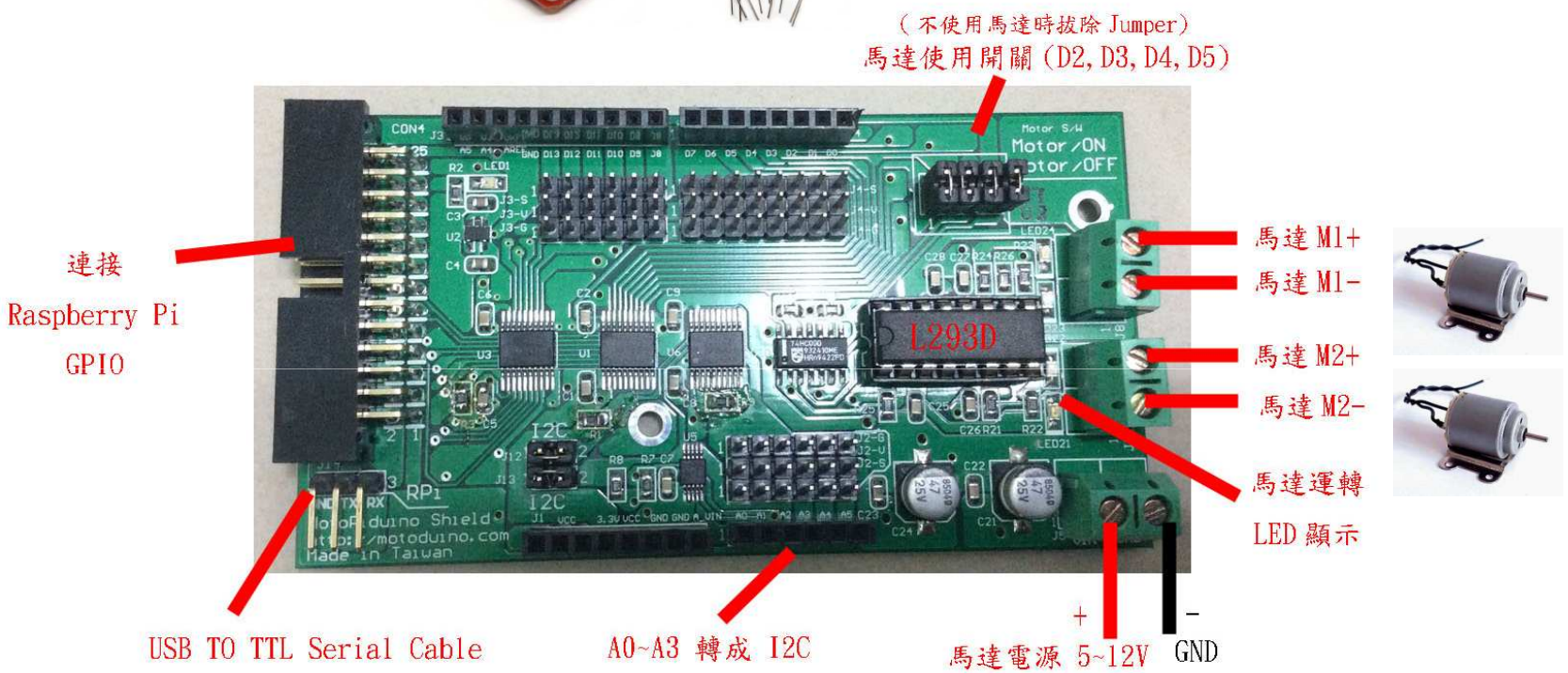
MotoPiduino

3.3V

5.0V

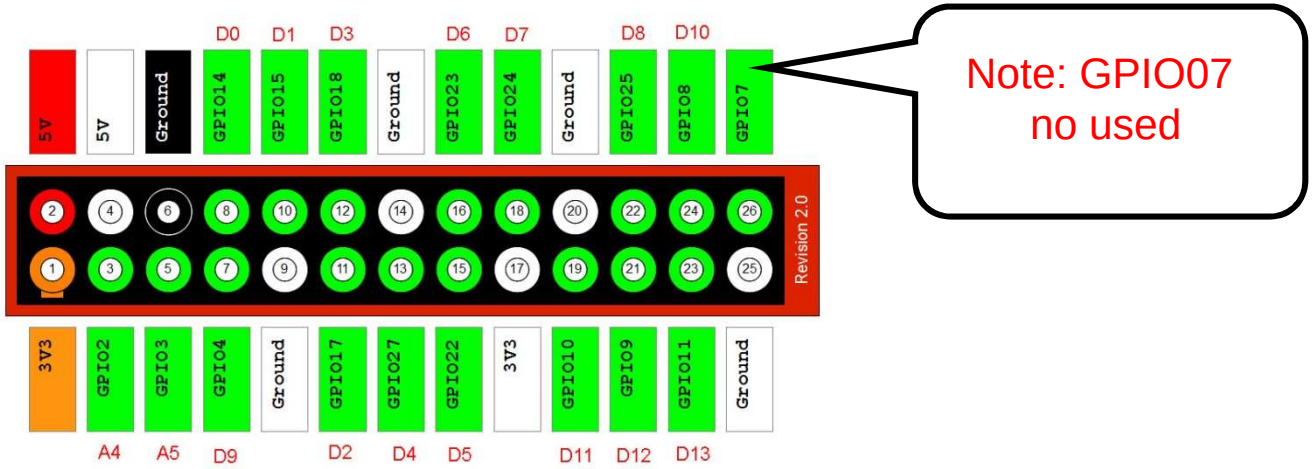
Motoduino lab
www.motoduino.com
Start your creative engine

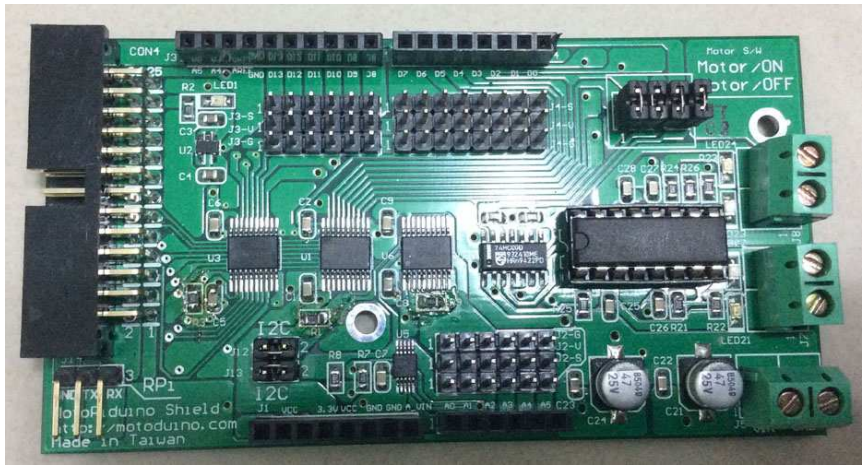
MotoPiduino 腳位說明



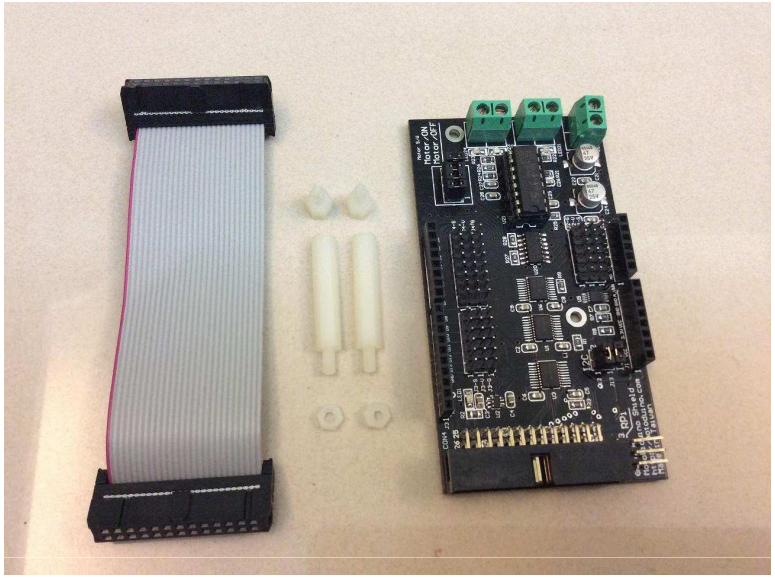
Motoduino lab
www.motoduino.com
Start your creative engine

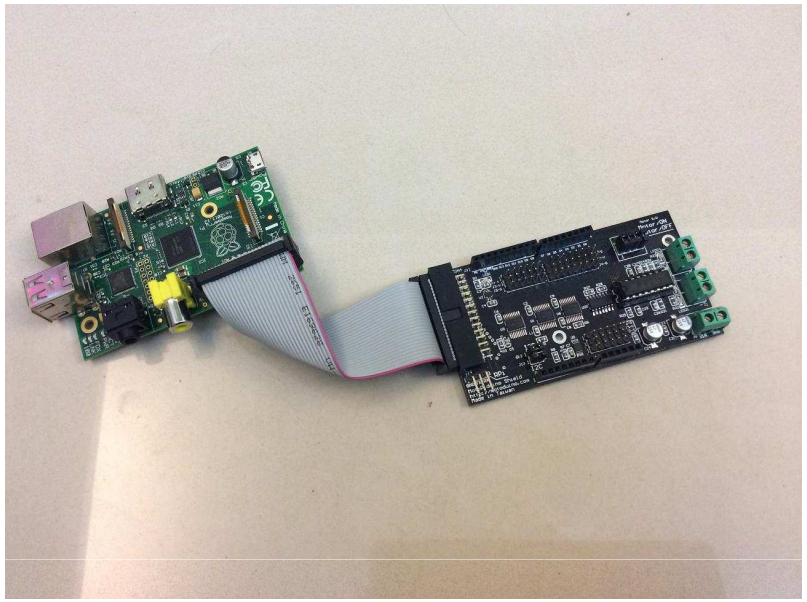
MotoPiduino – Pin Mapping

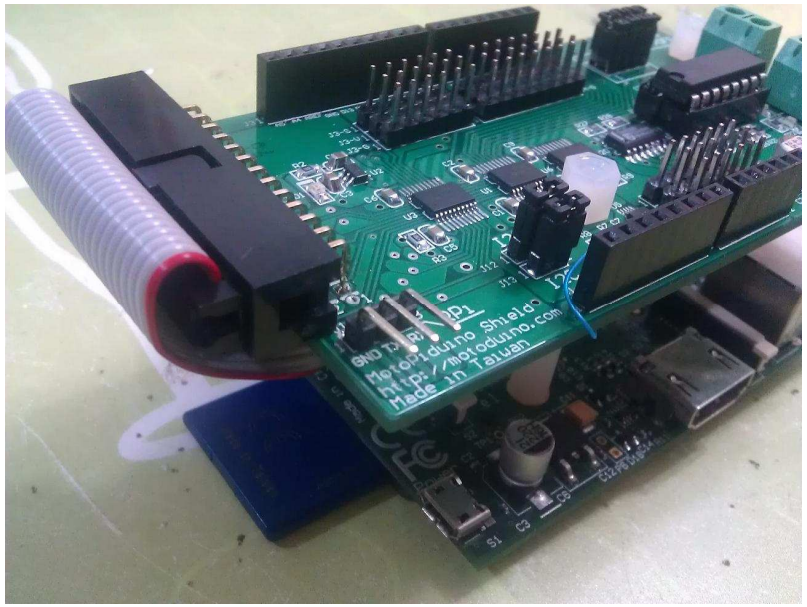




MotoPiduino 與 Raspberry Pi 結合







Motoduino lab
www.motoduino.com
Start your creative engine

ADC Issue

- Raspberry Pi 沒有 Analog-to-Digital (ADC)

A0
A1
A2
A3

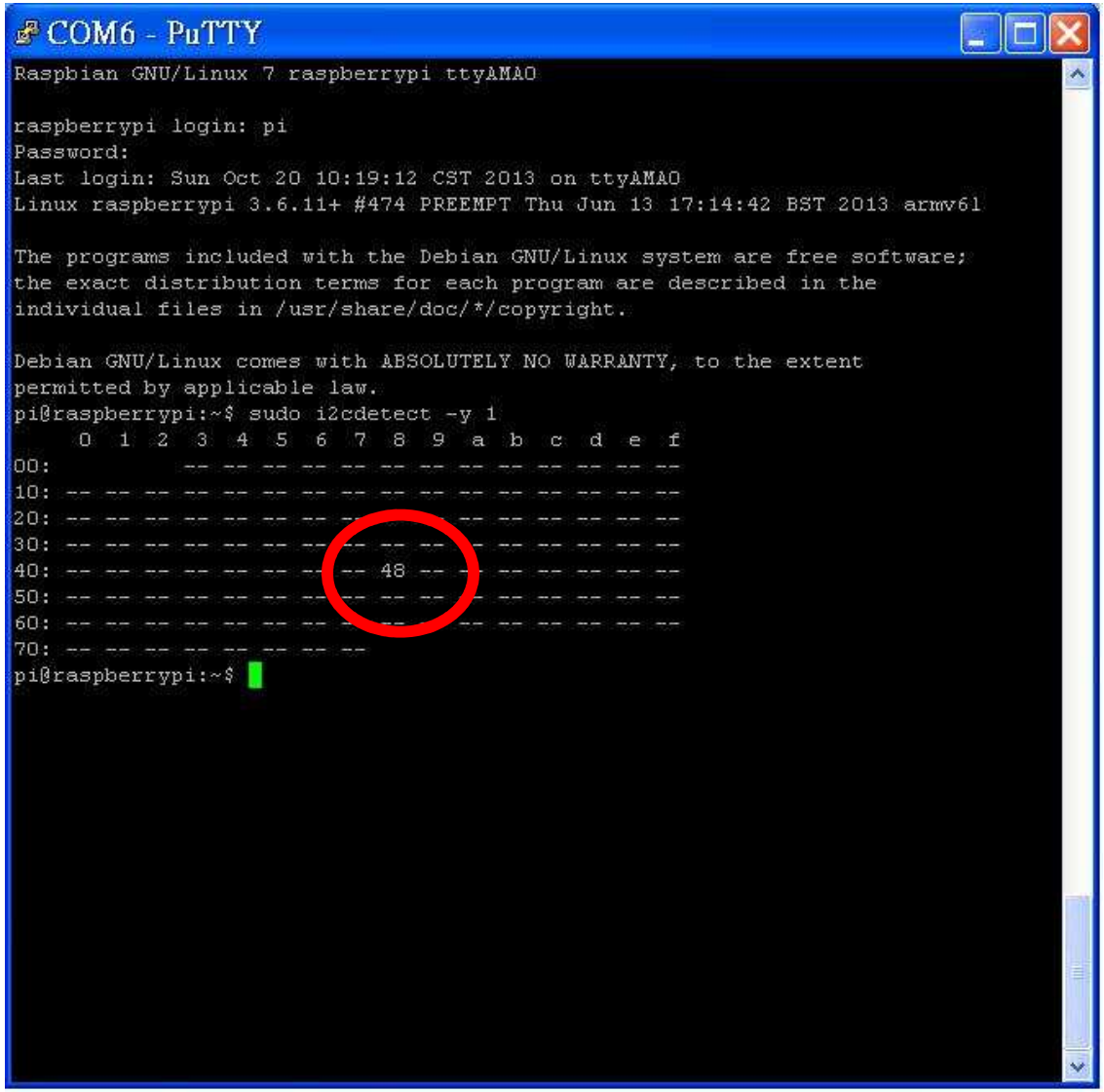
Analog

I2C

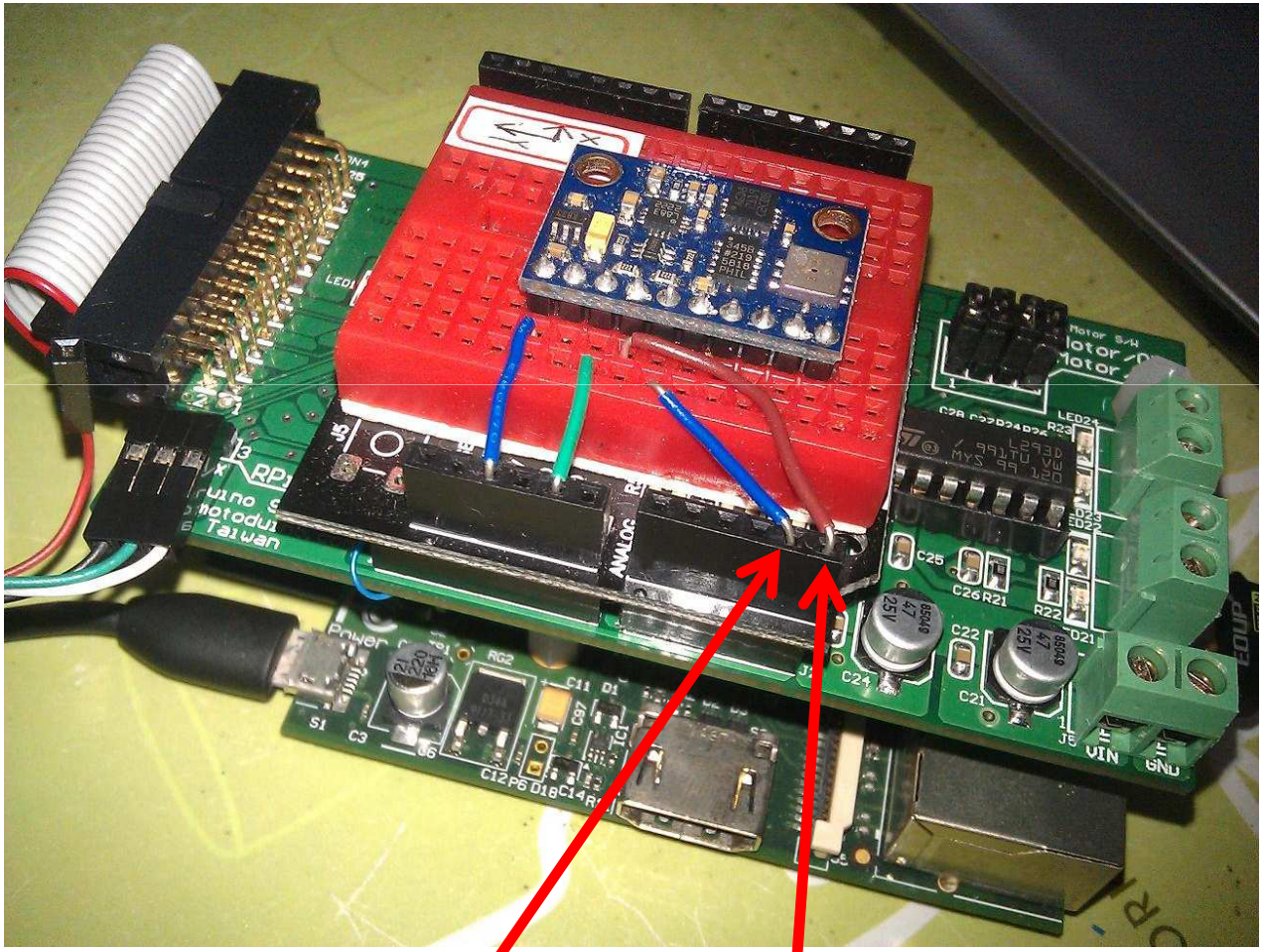
Raspberry Pi – I2C Enable

```
sudo nano /etc/modules
#加入底下兩行
i2c-bcm2708
i2c-dev

#安裝I2C tools
sudo apt-get install python-smbus
sudo apt-get install i2c-tools

#修改raspi-blacklist.conf
sudo nano /etc/modprobe.d/raspi-
blacklist.conf
blacklist spi-bcm2708   ← 前面加個 #
blacklist i2c-bcm2708   ← 前面加個 #

#Check連接的裝置
sudo i2cdetect -y 1
```

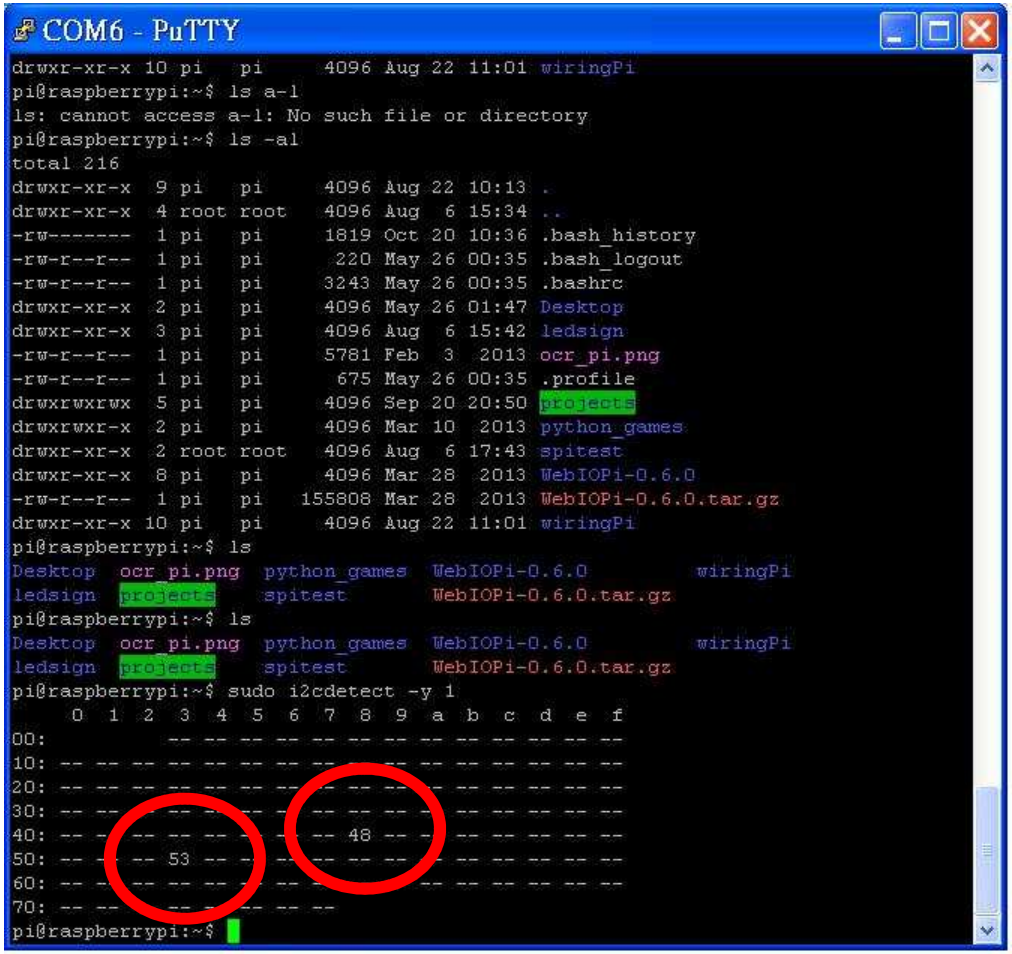
Motoduino – I2C



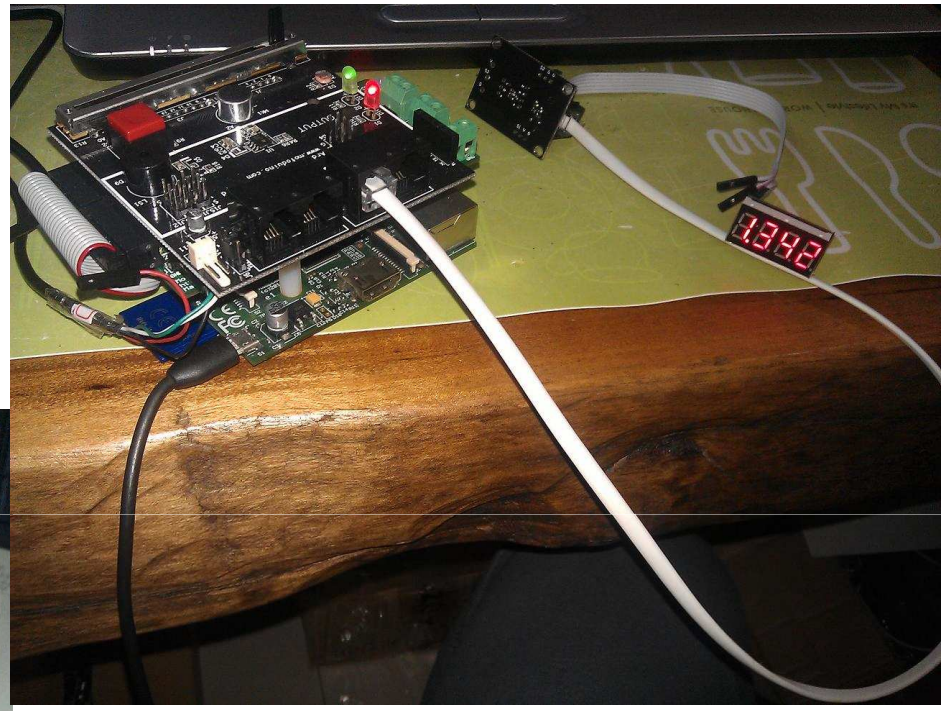
Motoduino – I2C (9DOF)

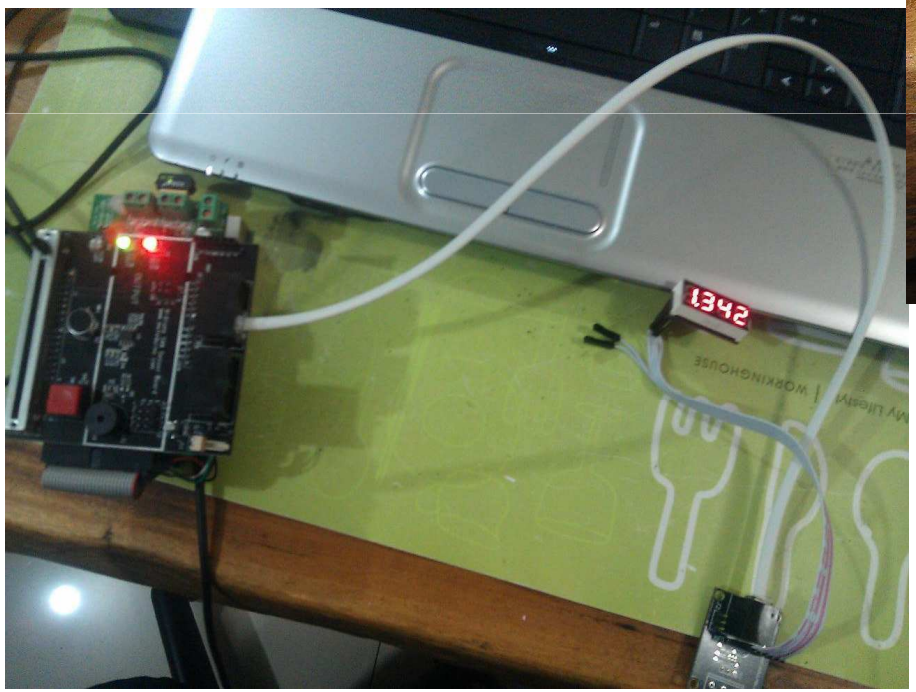


I2C Devices Detection

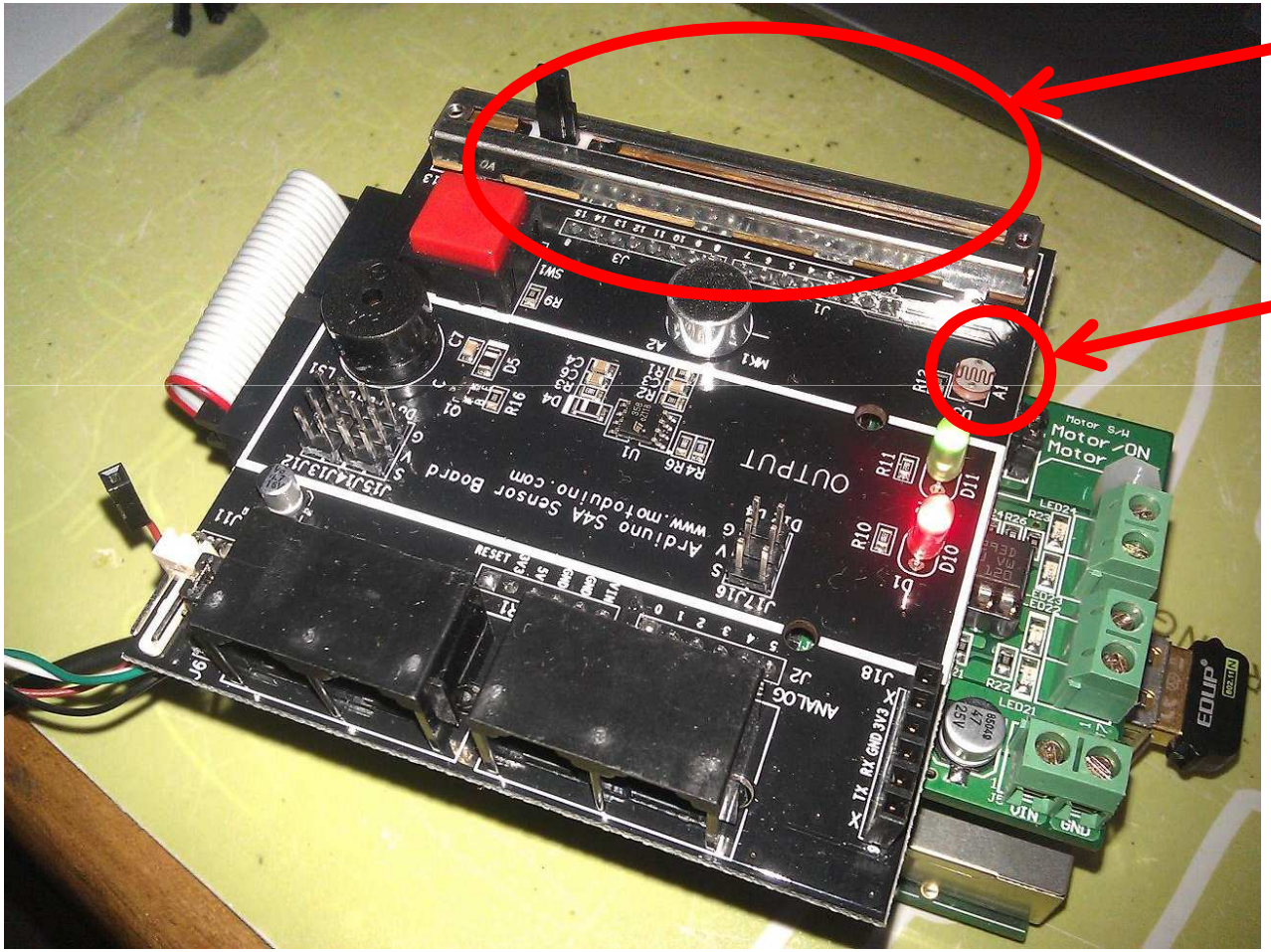


I2C-LED Example



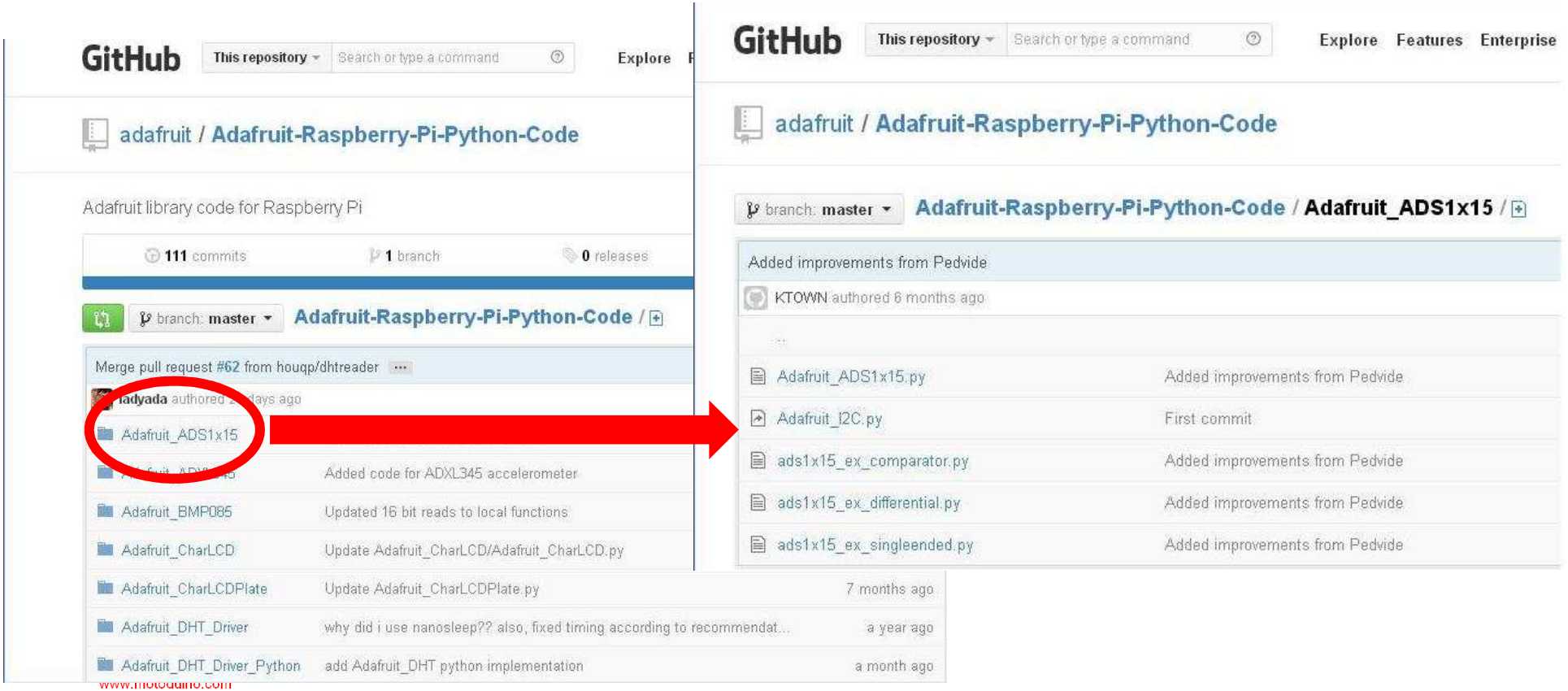


Analog to I2C



I2C – ADS1015

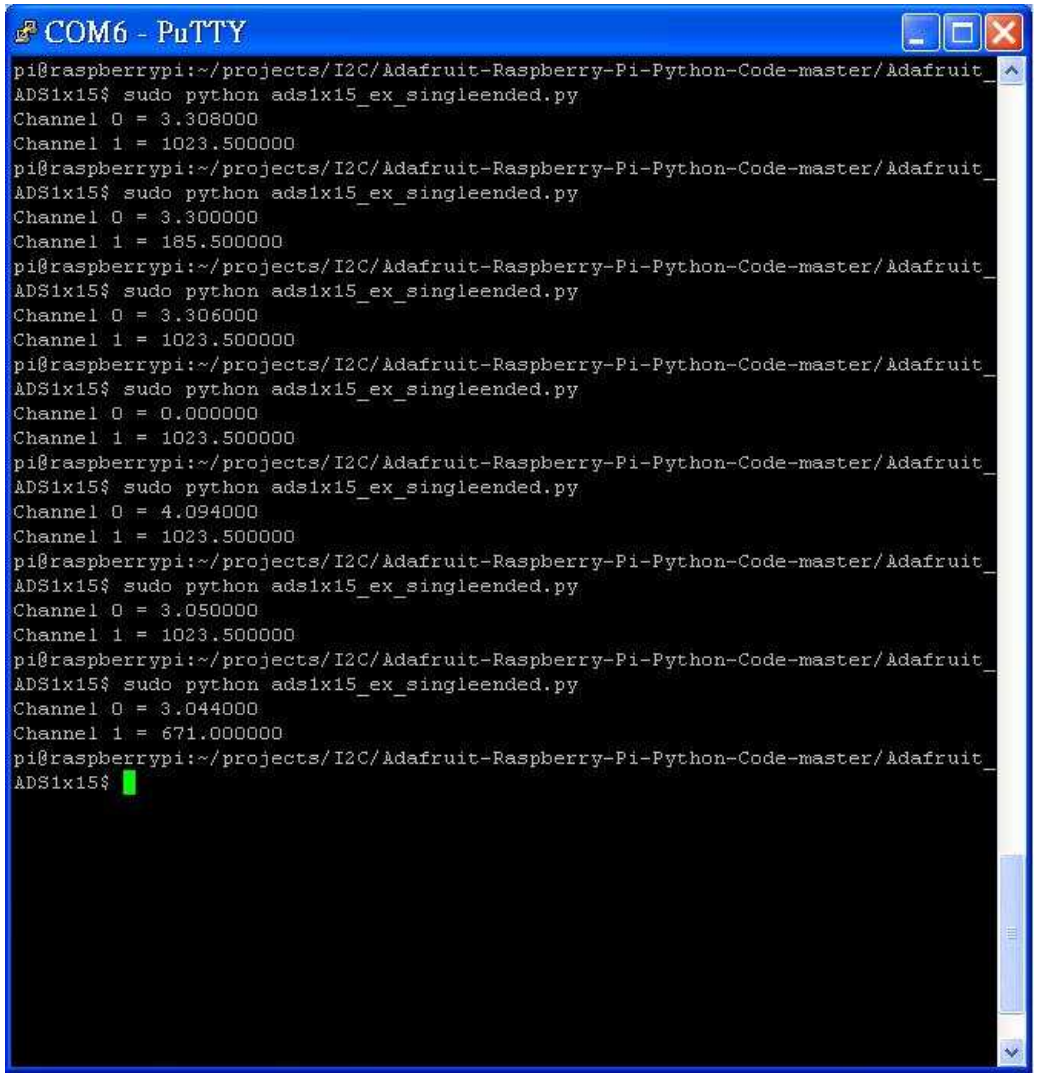
- https://github.com/adafruit/Adafruit-Raspberry-Pi-Python-Code



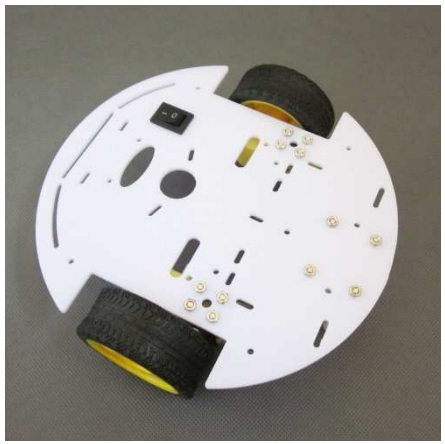
Ads1x15_ex_singleended.py

```
#!/usr/bin/python
import time, signal, sys
from Adafruit_ADS1x15 import ADS1x15
def signal_handler(signal, frame):
        print 'You pressed Ctrl+C!'
         sys.exit(0)
signal.signal(signal.SIGINT, signal_handler)
#print 'Press Ctrl+C to exit‘
ADS1015 = 0x00      # 12-bit ADC
#ADS1115 = 0x01         # 16-bit ADC
# Initialise the ADC using the default mode (use default I2C address)
# Set this to ADS1015 or ADS1115 depending on the ADC you are using!
adc = ADS1x15(ic=ADS1015)
# Read channel 0 in single-ended mode, +/-4.096V, 250sps
volts = adc.readADCSingleEnded(0, 4096, 250) / 1000
Print “Channel 0 = %.6f” % (volts)
# To read channel 1 in single-ended mode, +/- 1.024V, 860 sps use:
volts1 = adc.readADCSingleEnded(1, 1024, 860)
print “Channel 1 = %.6f" % (volts1)
```

Ads1x15_ex_singleended.py - Result

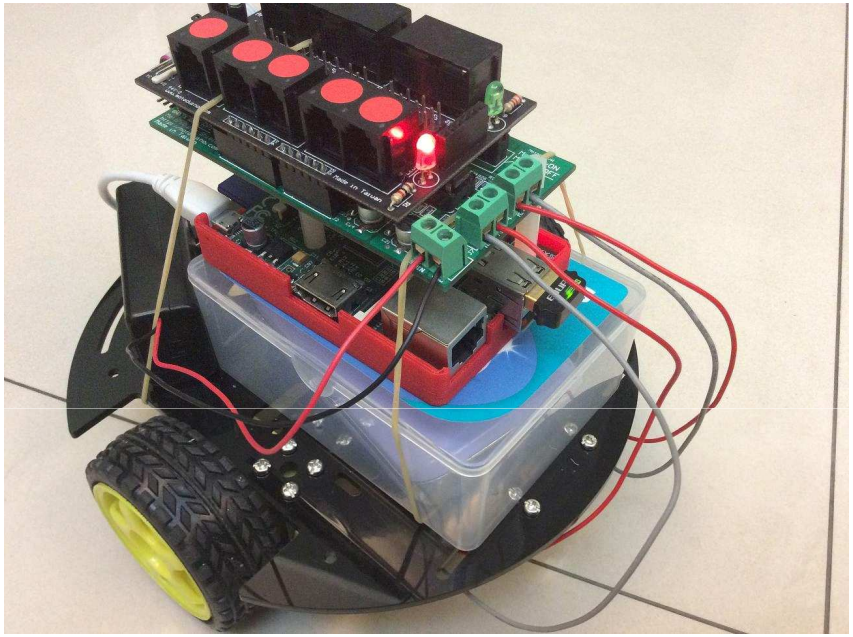


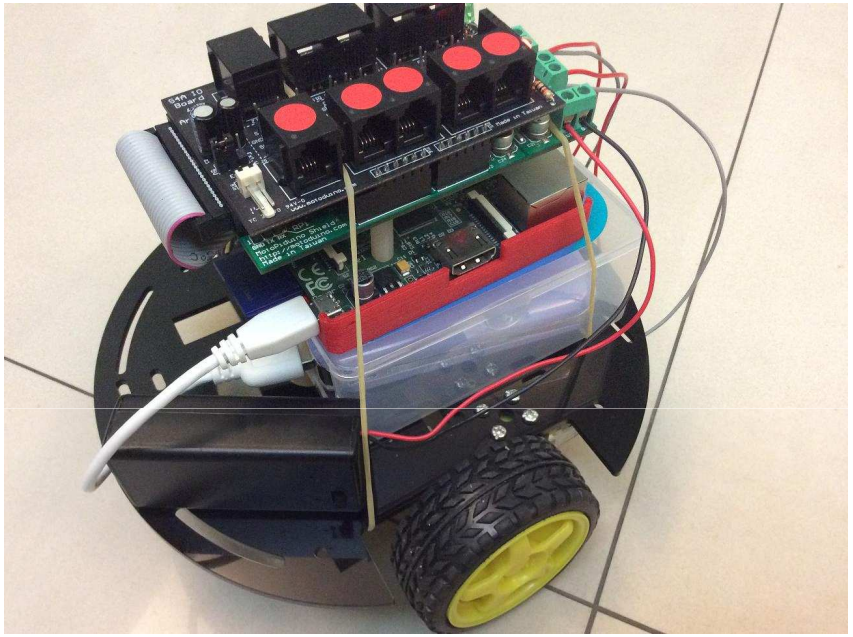
遙控車配件 (MotoPiduino)



Motoduino lab
www.motoduino.com
Start your creative engine

遙控車外觀 (MotoPiduino)





http://sinocgtchen.blogspot.tw

Motoduino Lab 介紹

- 長期與學校老師合作推動科普教育，利用啟發及娛樂方式激發孩子的科學創意潛能，並配合設計實驗用週邊感測元件
- 著重在創意學習，利用實做把自己的創意實現出來。
- 使用開源方式持續分享給自造者/創客
- 提供基礎開發平台及套件，並提供多種創意應用實例，與有興趣開發者互動討論。