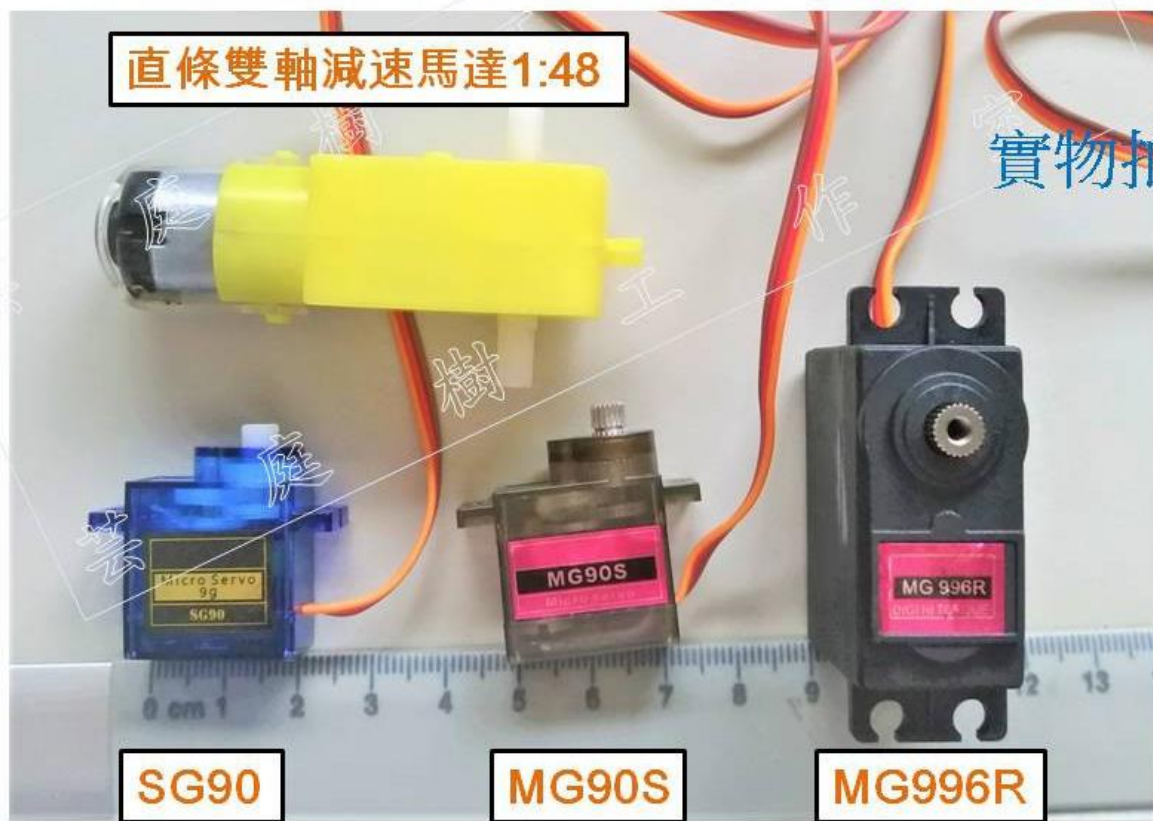


MicroPython Class V15

鄭朝元

各種馬達

SG90/MG90S/MG996R/減速馬達

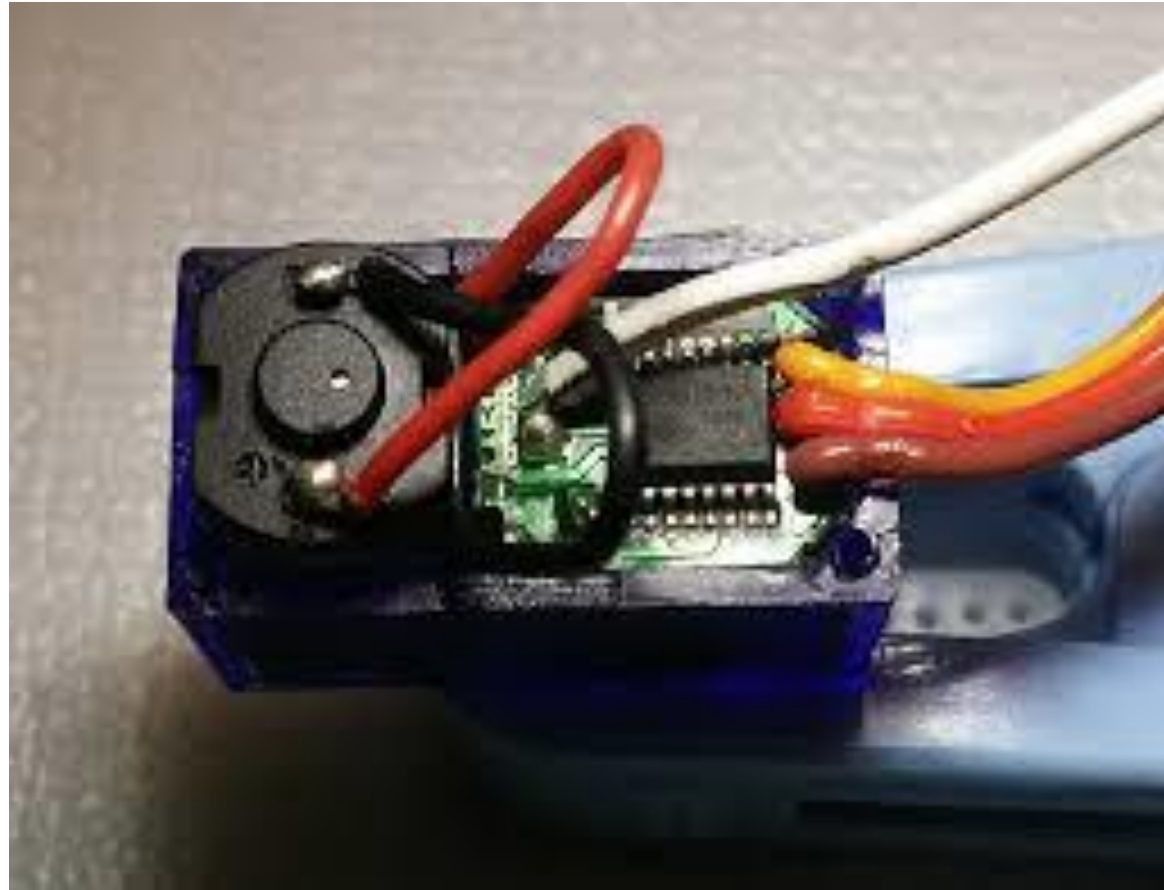


Servo的內部構造



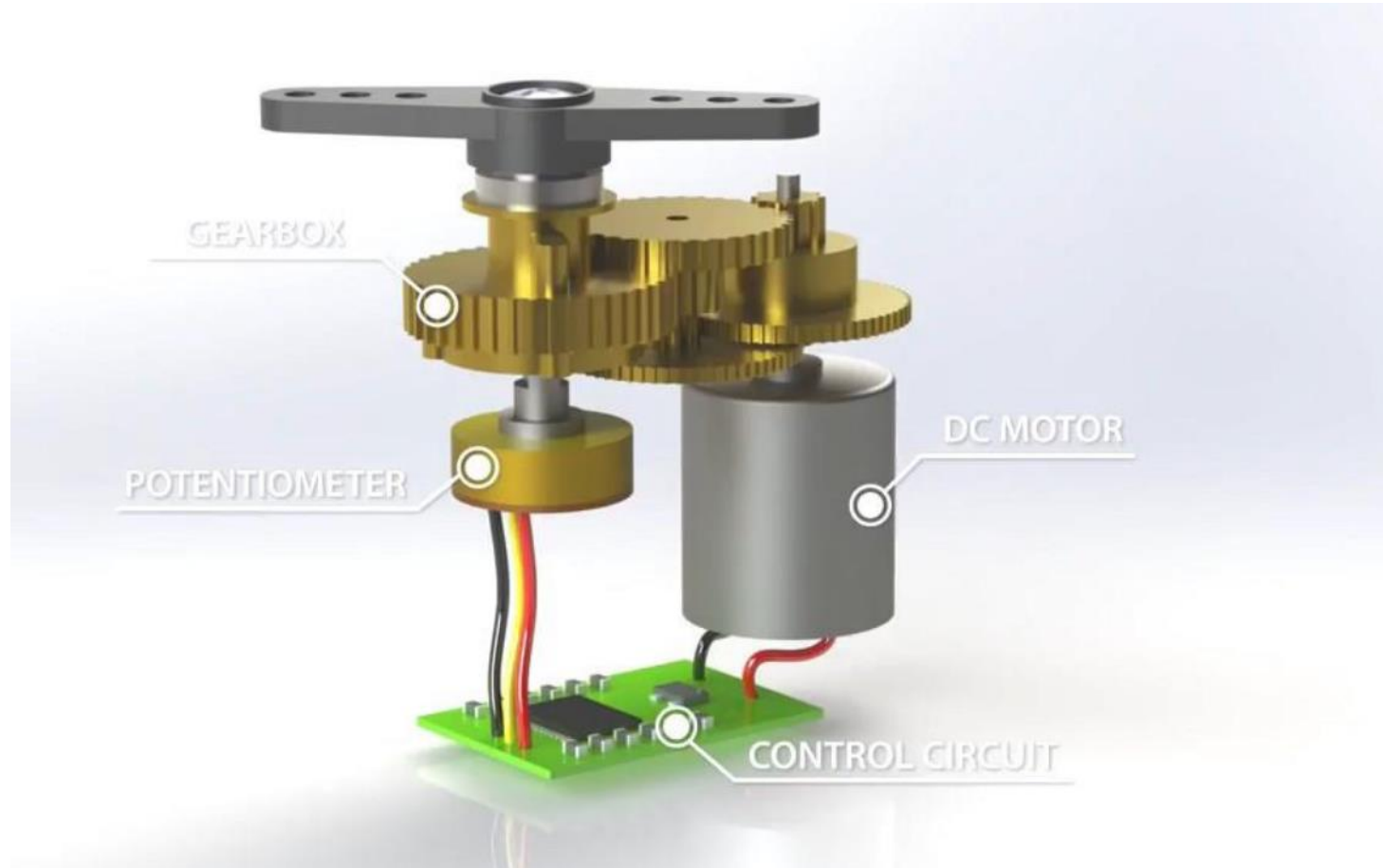
<https://frank1025.pixnet.net/blog/post/339646790-%E6%8B%86%E8%A7%A3%E5%B0%8F%E5%9E%8B%E4%BC%BA%E6%9C%8D%E9%A6%AC%E9%81%94sg90>

Servo的內部構造



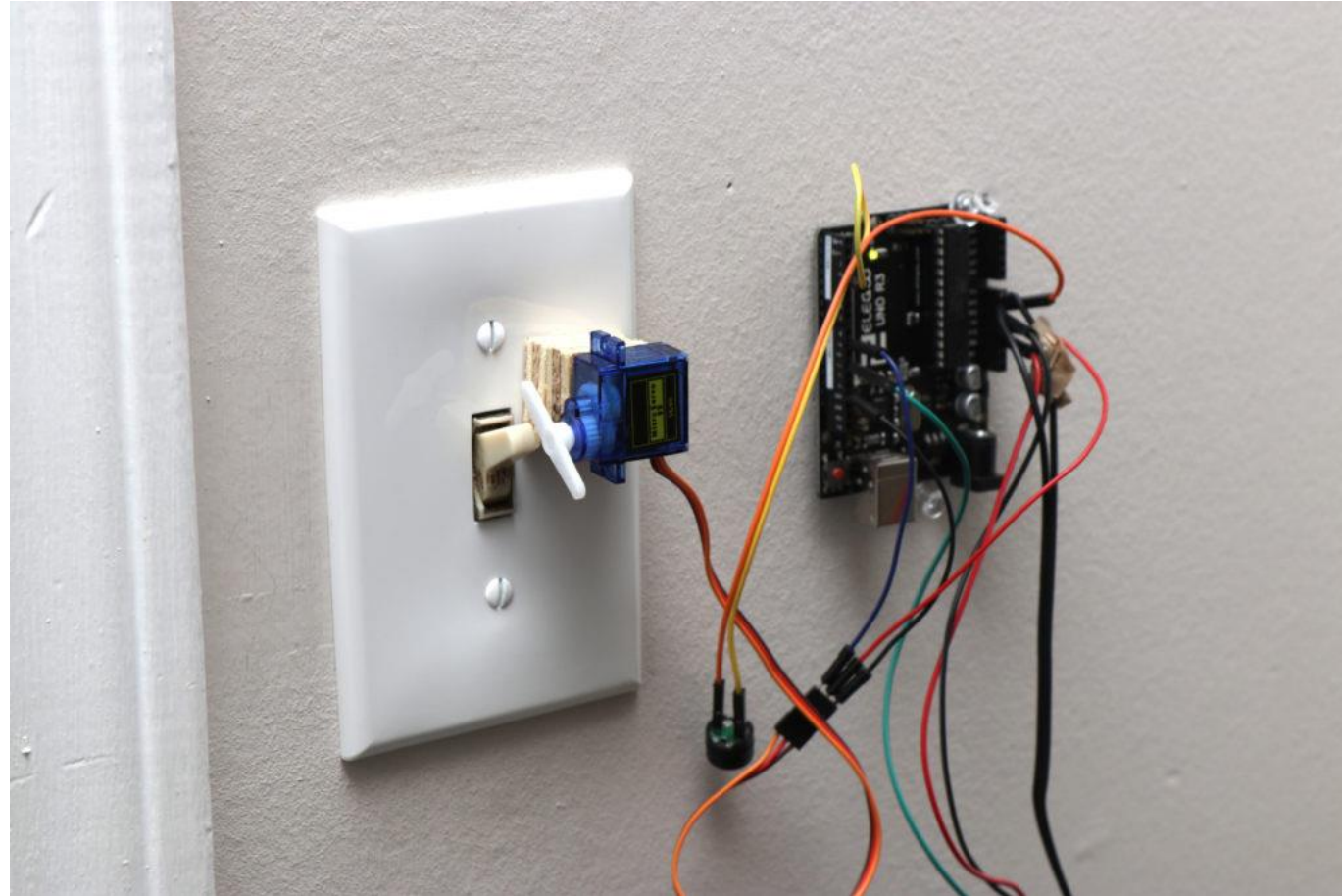
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Servo的內部構造

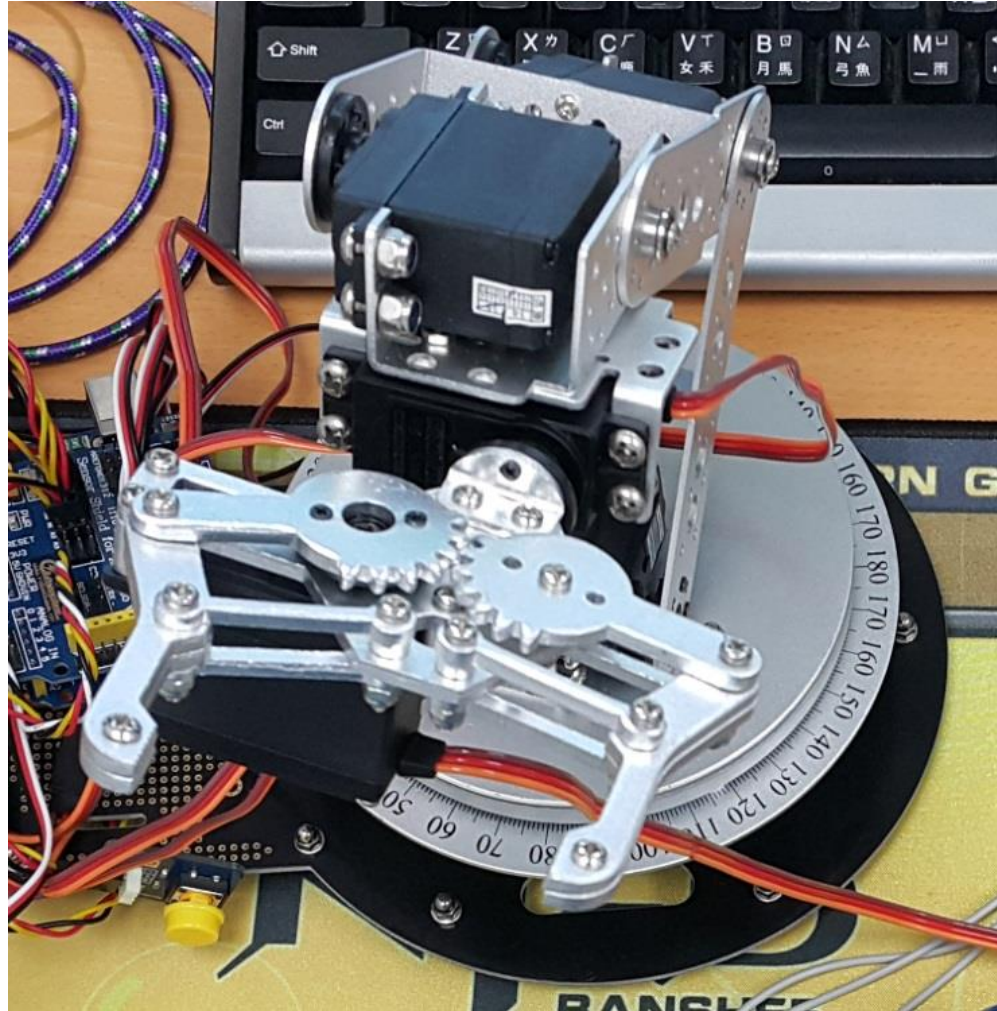


<https://www.cyut.edu.tw/~ypliu/1128-ypl-motor.pdf>

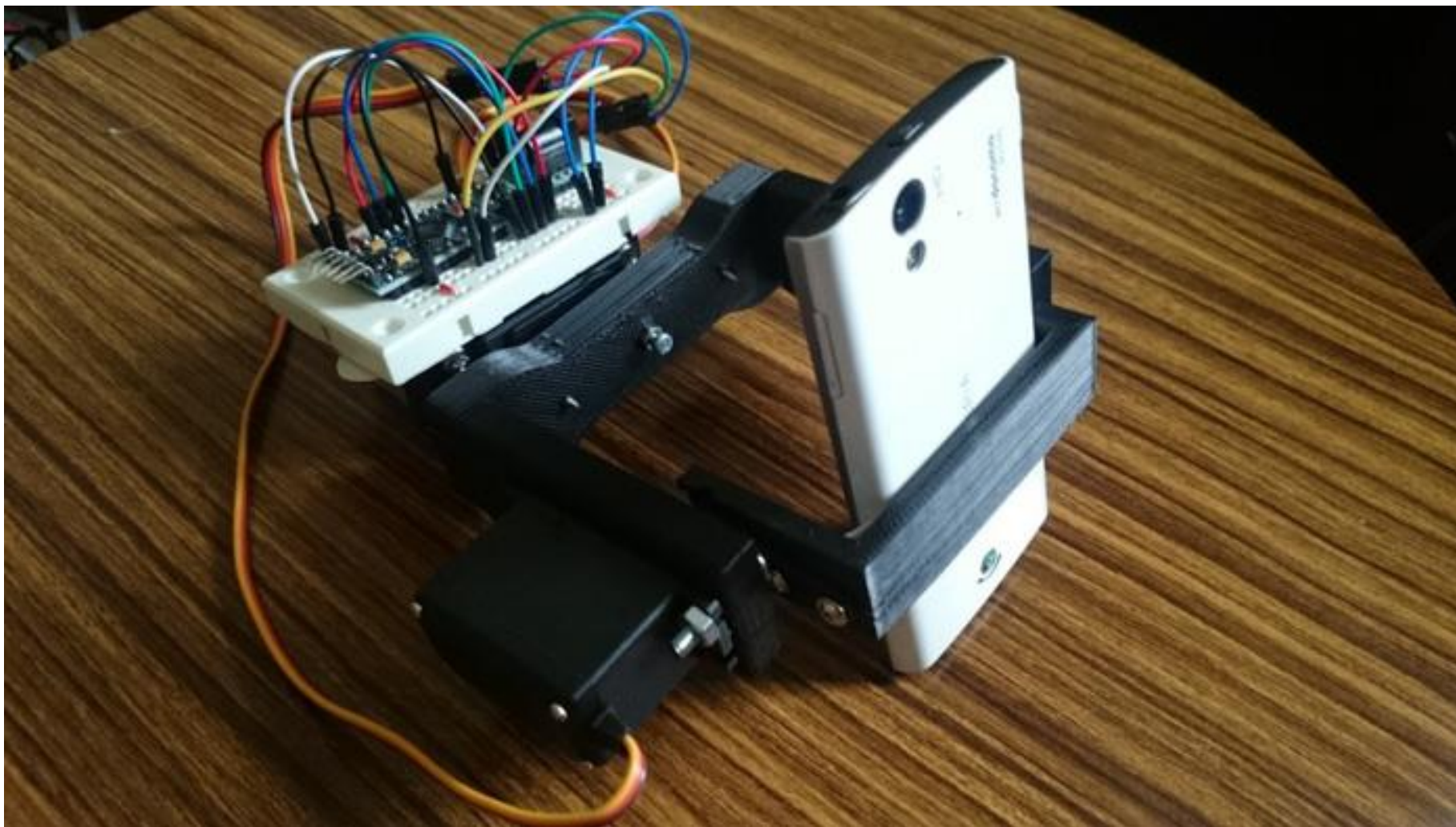
Servo馬達的創意使用



Servo馬達的創意使用



Servo馬達的創意使用



Servo馬達的創意使用



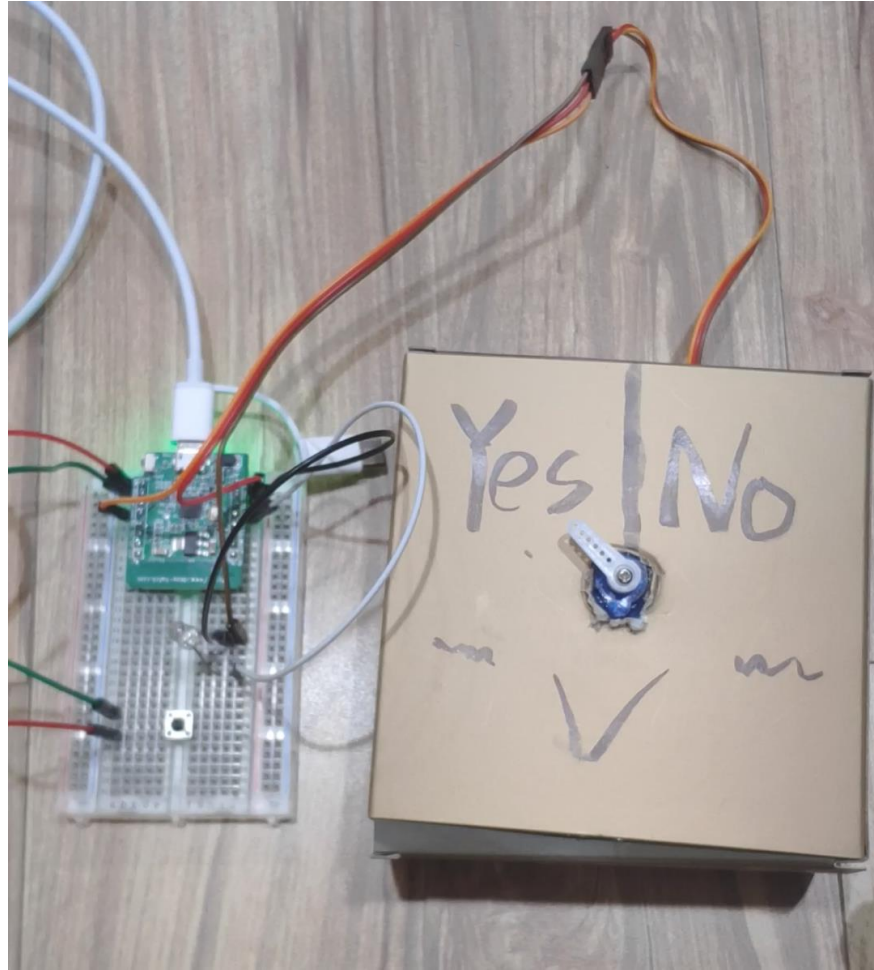
<https://chtseng.wordpress.com/2015/11/28/automatic-trash-can-docx/>

Servo馬達的創意使用



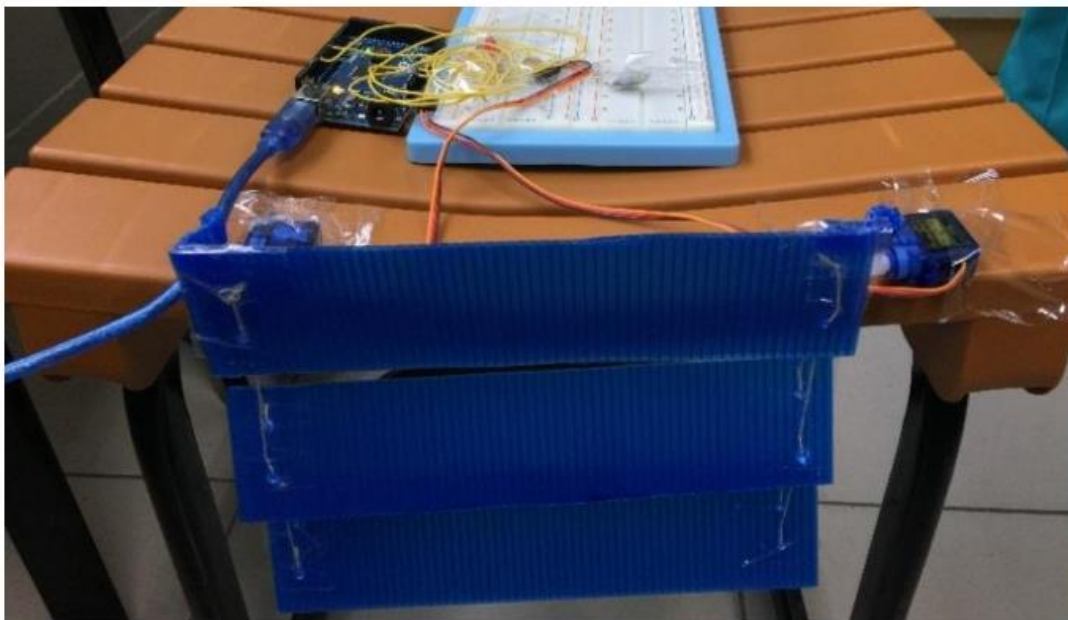
<http://blog.s2u4o.com/education/self-study/diy/iotmaze/>

Servo馬達的創意使用

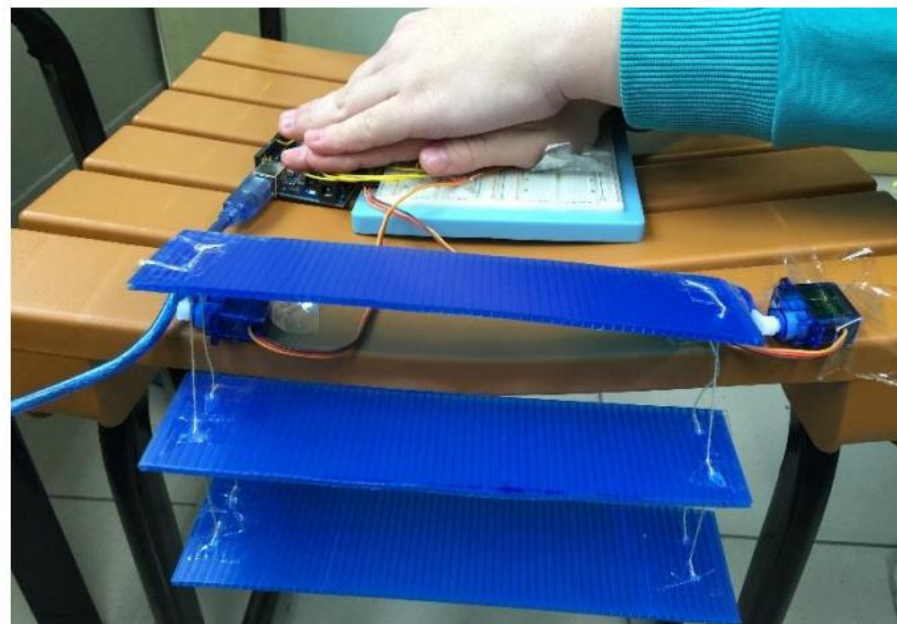


<https://medium.com/@guanting1016/dsi-5168-%E4%BC%BA%E6%9C%8D%E5%99%A8%E9%A6%AC%E9%81%94-84b61a71814>

Servo馬達的創意使用



[圖九] 百葉窗完全閉合(光線強度：強)



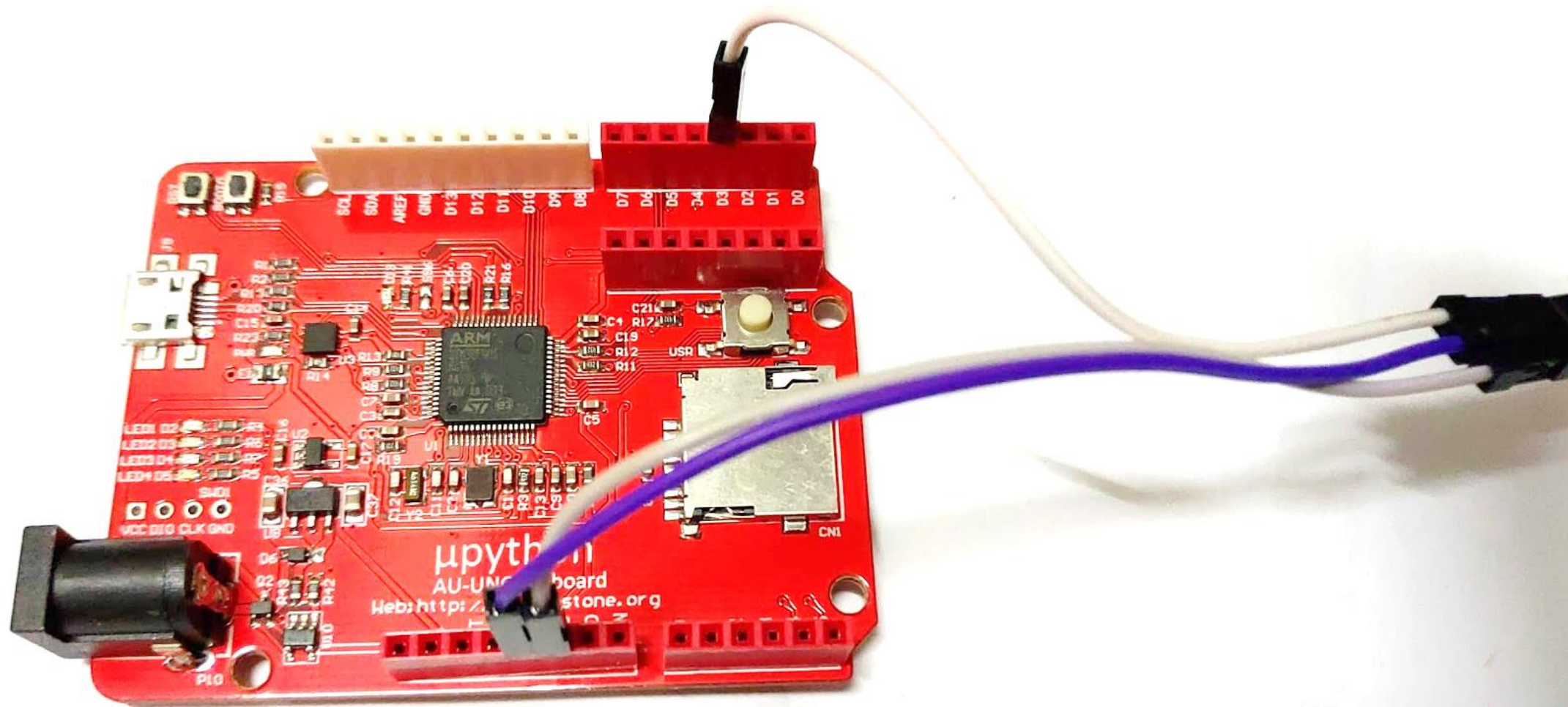
[圖十一] 百葉窗完全開啟(光線強度：弱)

- 今日程式實驗

Servo



Pyboard



Servo Pin

Servo 對象使用 Timer(5) 來產生 PWM 輸出。

A0->X1 --->對應板子D3

A1->X2 --->對應板子D2

A2->X3 --->對應板子D5

A3->X4 --->對應板子D4

servo.py ×

```
1 import pyb
2 from pyb import Servo
3
4 s1 = pyb.Servo(1) # servo on position 1 (X1, VIN, GND),X1->D3
5
6 while True:
7     s1.angle(180,500) # move to 180 degrees in 500ms
8     pyb.delay(3000)
9     s1.angle(-180, 1500) # move to -180 degrees in 1500ms
10    pyb.delay(3000)
```

今日作業

- 請找到馬達最大角度(max)與最小角度(min)分別是多少？
- 請完成由max度轉到min度，每10度一個間距旋轉。
- 每個間距為停留1秒鐘。
- 完成程式請截圖上傳Classroom，若可以拍攝運轉影片，
期末總成績加五分！