



你意想不到可以穩定未來的車

作品編號:00073

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- 實驗測試
- 問題&解決方案
- 未來展望
- 心得

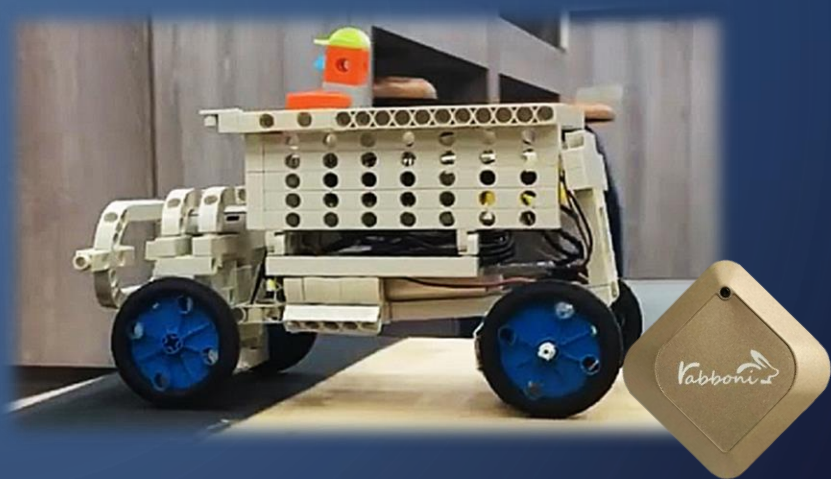
The background is a dark blue gradient. In the four corners, there are white, stylized circuit board traces. These traces consist of straight lines of varying lengths and angles, ending in small white circles, resembling electronic components or connections.

作品構想 & 介紹

背景：電動車安全問題



- 重心不穩
- 容易爆衝
- 下坡易失速
- 碰到障礙物
輪胎持續轉動



- 自組四輪機器車代替電動代步車
- 利用Rabboni感應車身姿態，決定馬達轉速

使用設備

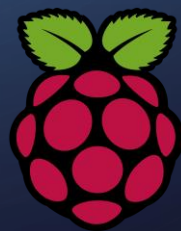
四輪智高機器車：馬達 (std 35s)x 3
+ 行動電源 (自製)

木製坡道(自製)

感測器：Rabboni

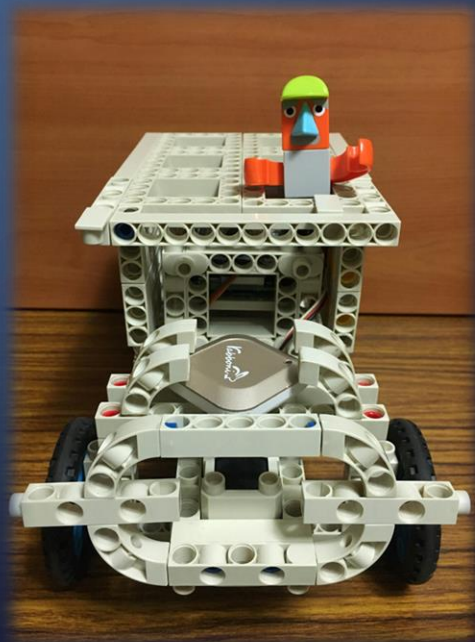
控制板：Raspberry Pi

程式語言：Python



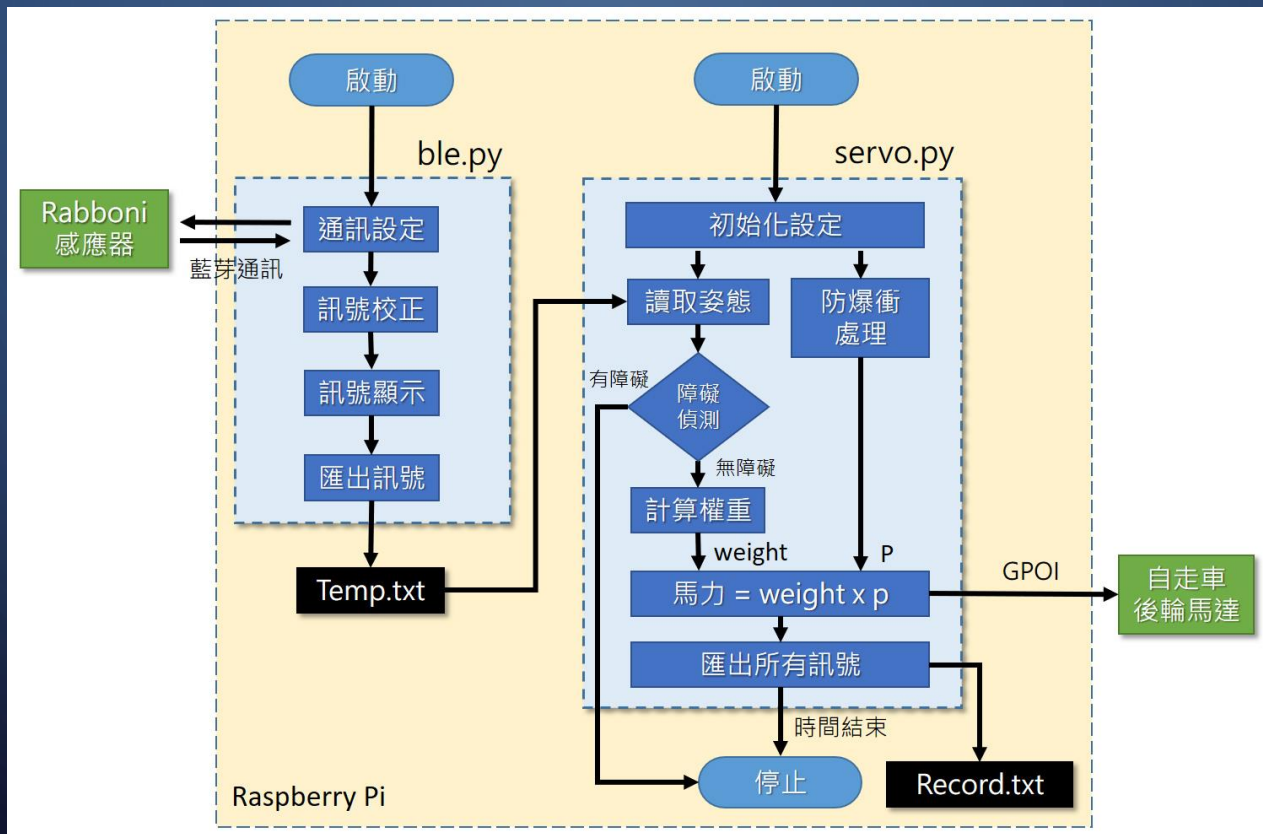
功能

- 起步防暴衝
- 下坡減速
- 歪斜(轉彎)減速
- 碰到障礙立即停止

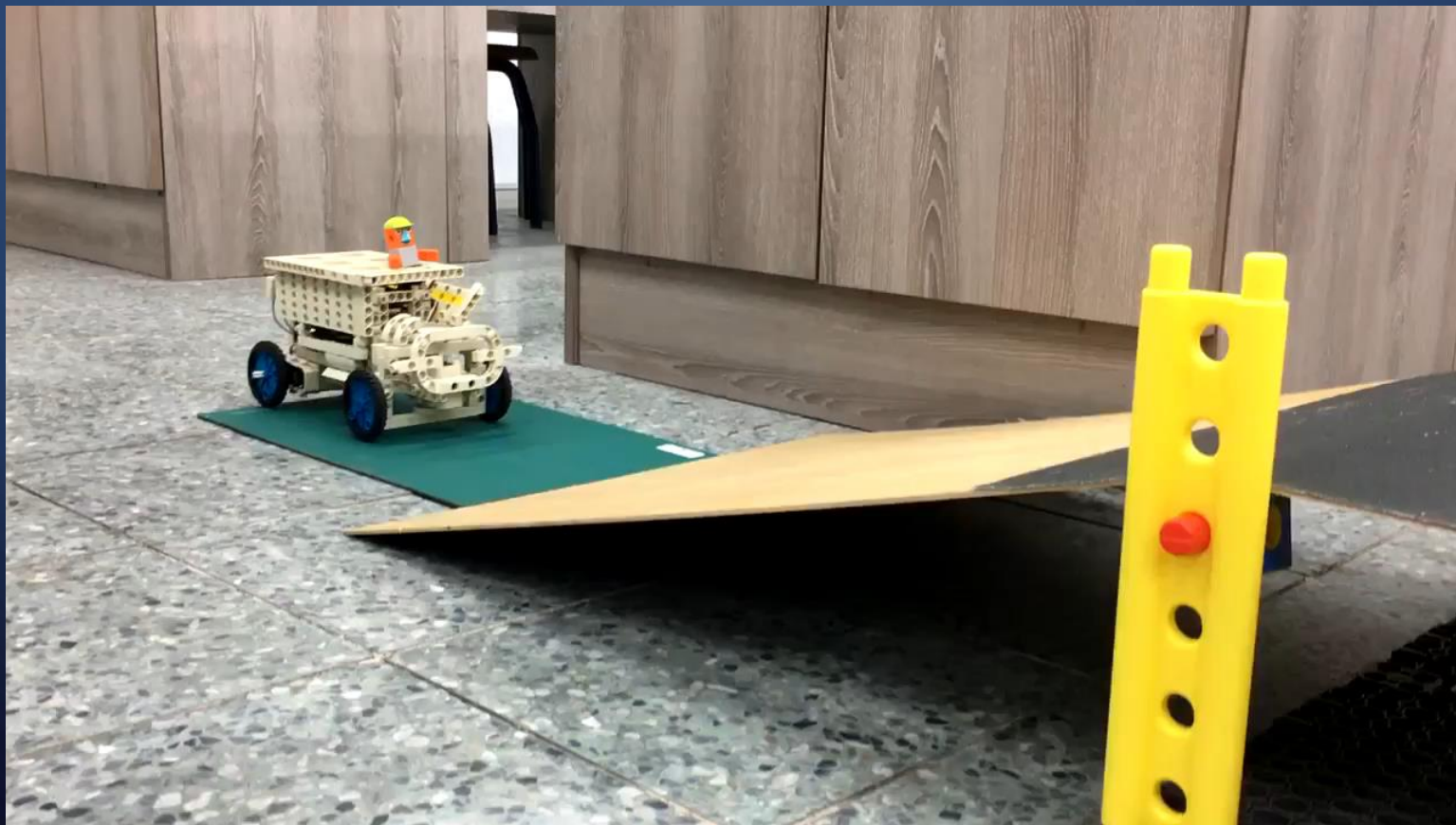


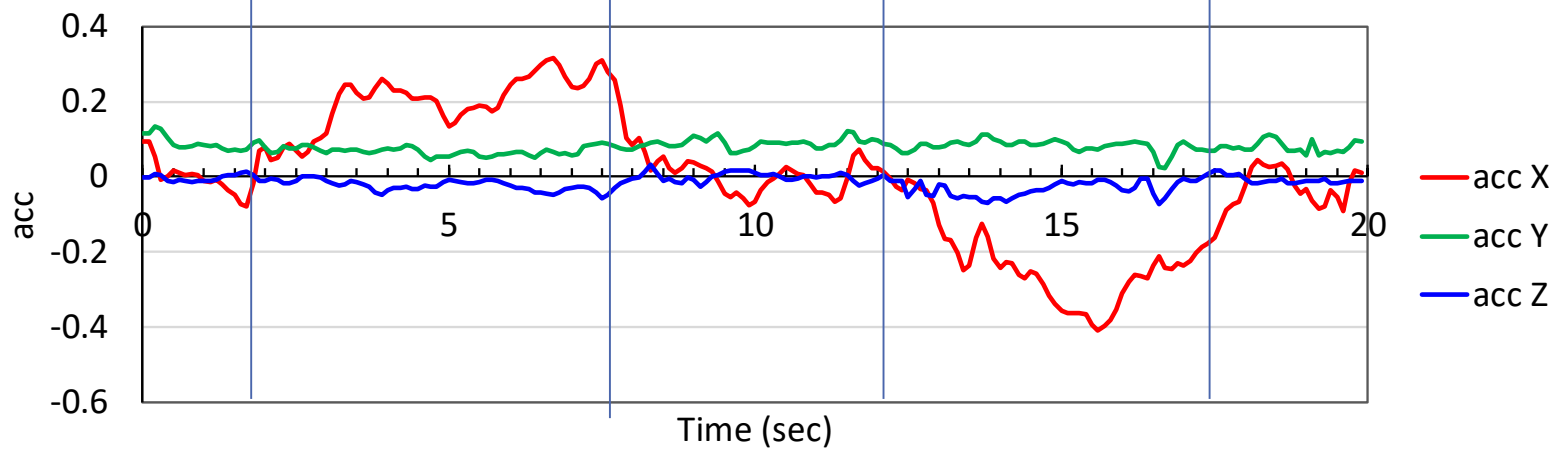
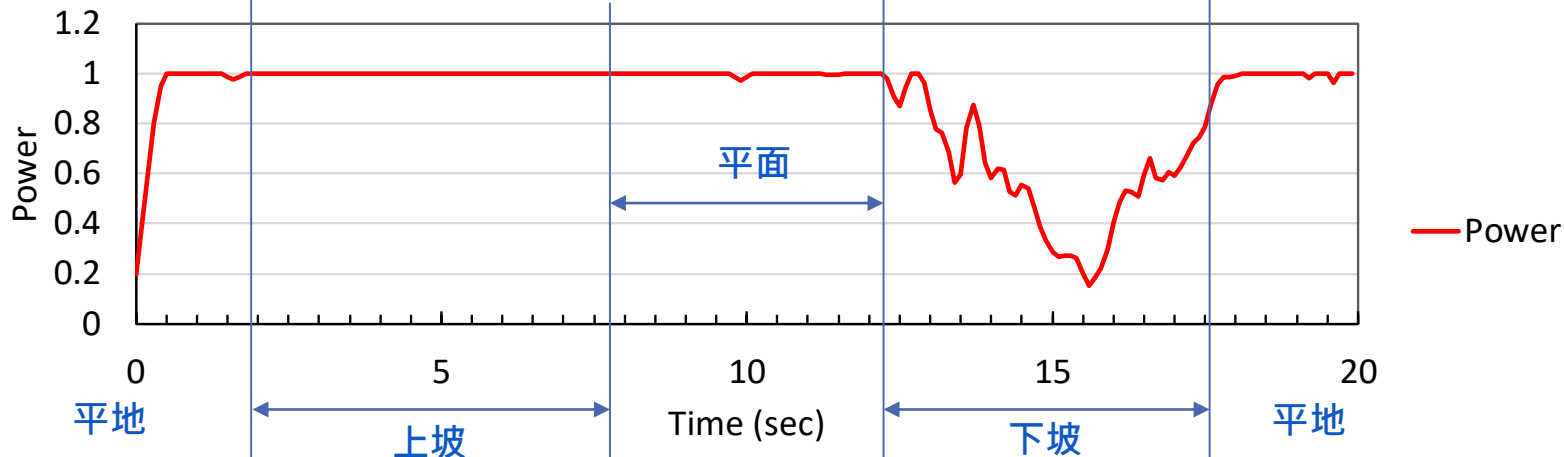
實驗測試

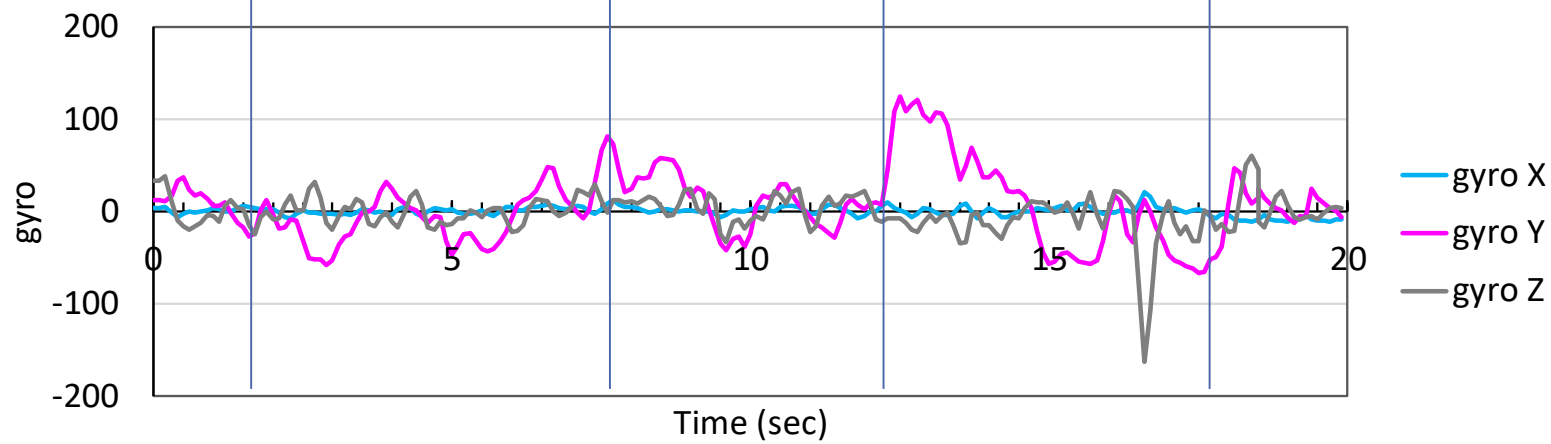
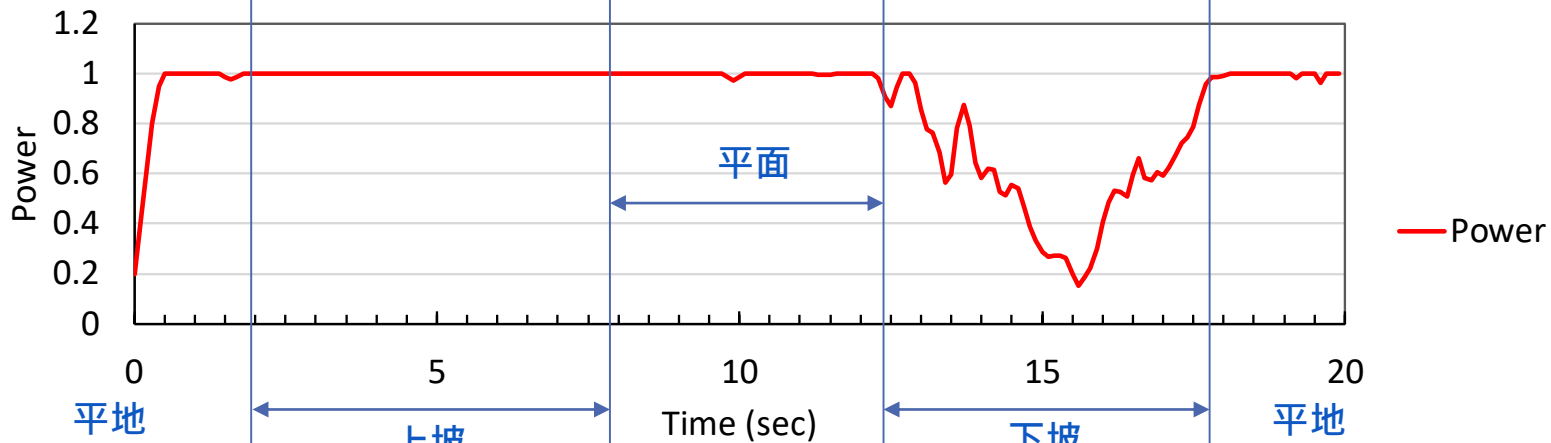
程式流程圖



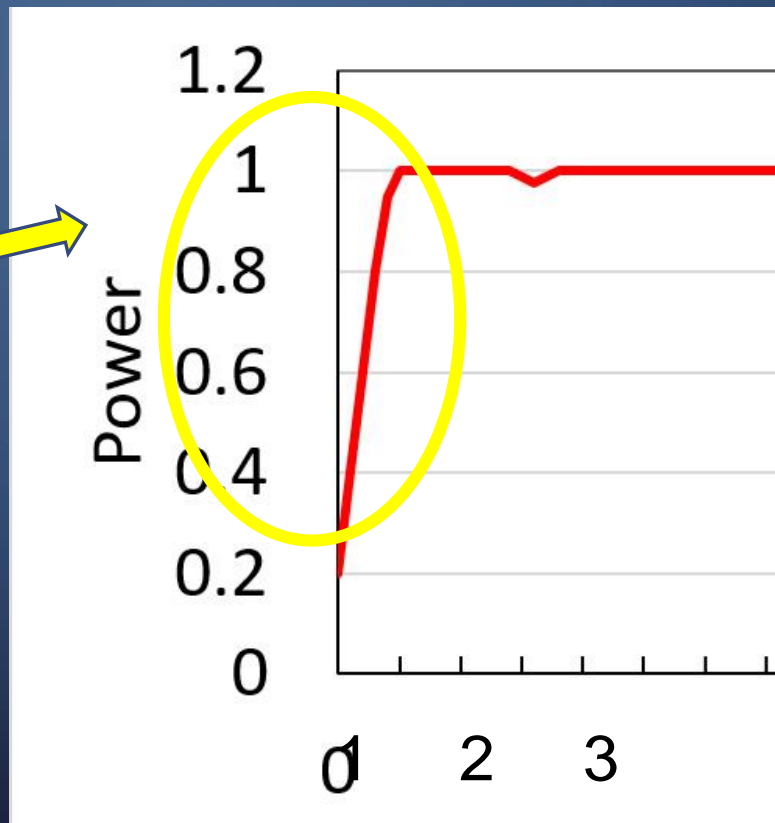
實驗：上坡 → 平面 → 下坡







起步防暴衝



- 下坡/搖晃降速

```
if (accX < 0) | (accZ < 0): #下坡或左右搖晃
    weight = 1.2 + 2.557*min(accX, accZ) #速度權重
    if weight < 0: weight = 0
    elif weight > 1: weight = 1
else: weight = 1
```

- 碰撞停止

```
if max(abs(gyroX), abs(gyroY)) > 500: #角速度急遽變化
    print('stop!')
    break #離開迴圈
```

The background is a dark blue gradient. In the four corners, there are white line-art illustrations of circuit traces and nodes, resembling a printed circuit board (PCB) layout. These lines are thin and connect to small white circles representing nodes.

問題 & 解決方案

不熟悉 Python

- 上網查詢
- 活用程式範例

學校沒有適合
此實驗的載具

- 自行組裝

馬達匹配性不合

- 有系統地測試所有馬達

資料讀取問題

- 跳過空白資料，使用舊資料

心得

未來展望

- 利用紅外線感測器防碰撞
- LED燈號警示
- 翻車自動呼救系統



The background is a dark blue gradient. In the four corners, there are white, stylized circuit board traces. These traces consist of straight lines that turn at right angles and terminate in small white circles, resembling electronic components or connection points. The traces are more densely packed in the corners and become sparser towards the center.

報告完畢

謝謝大家