

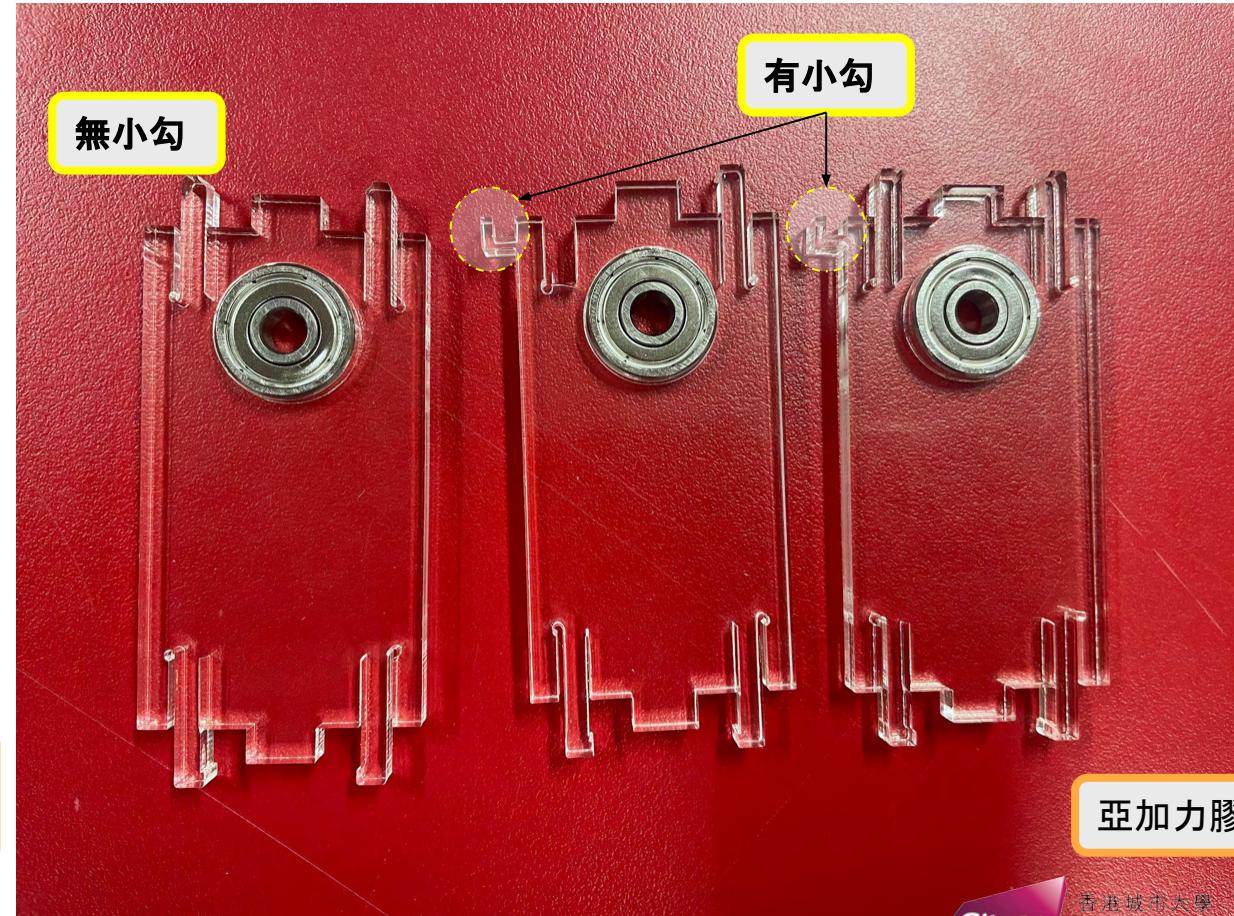
Step 1



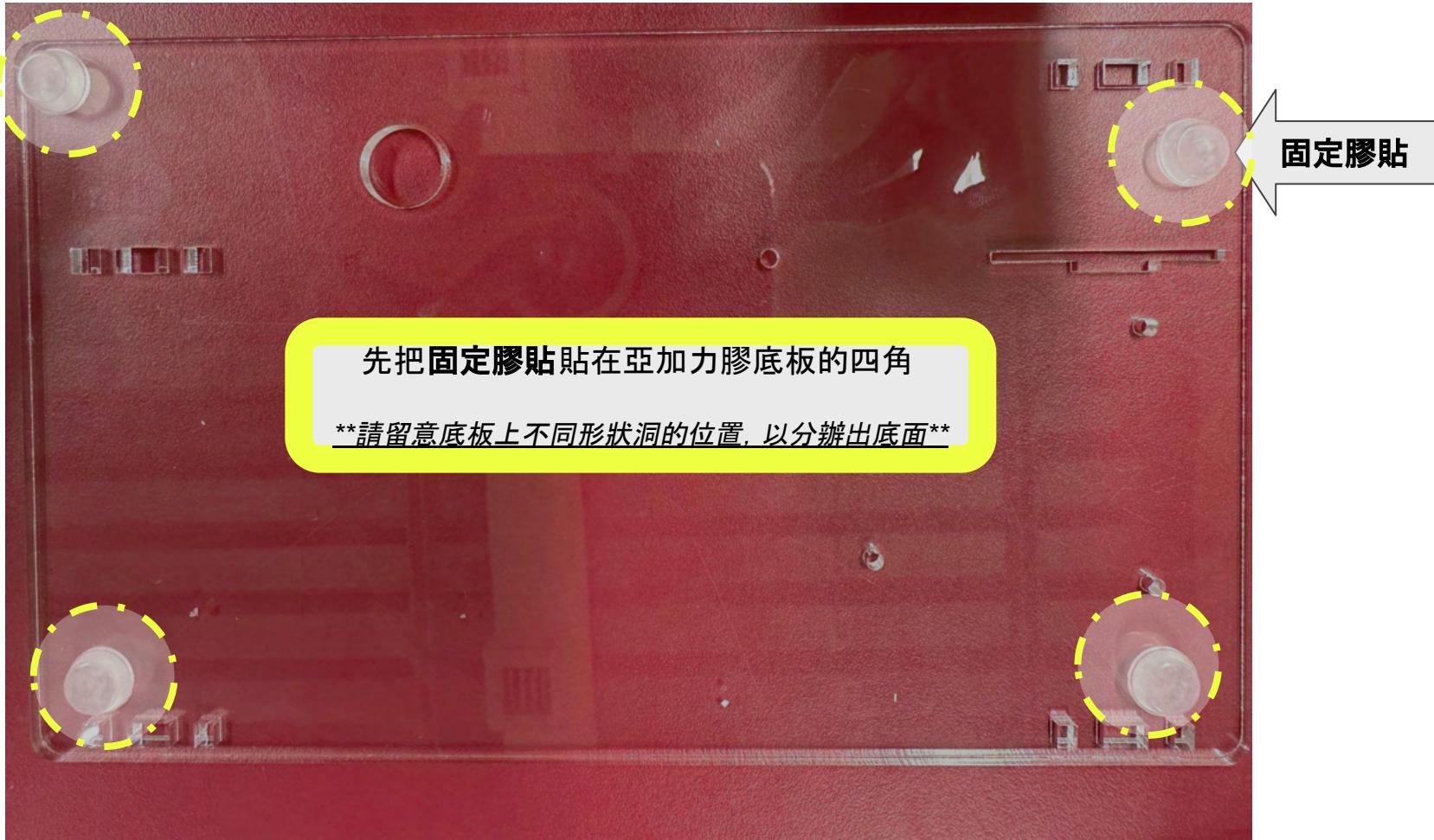
轴承

注意：
兩種不同的
亞加力膠支架

如果轴承與膠片之間有
鬆動，可用膠水黏合

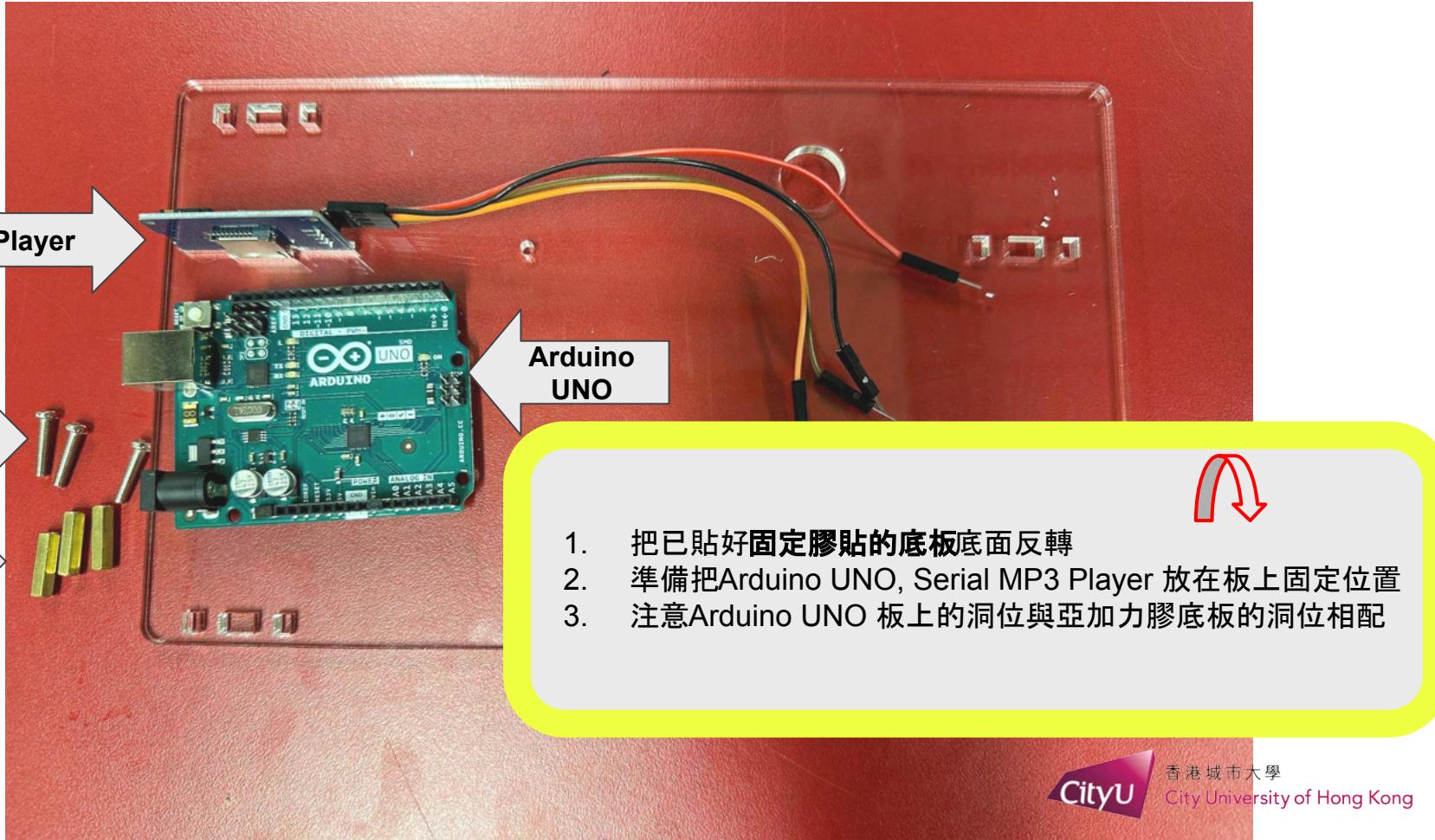


Step 2



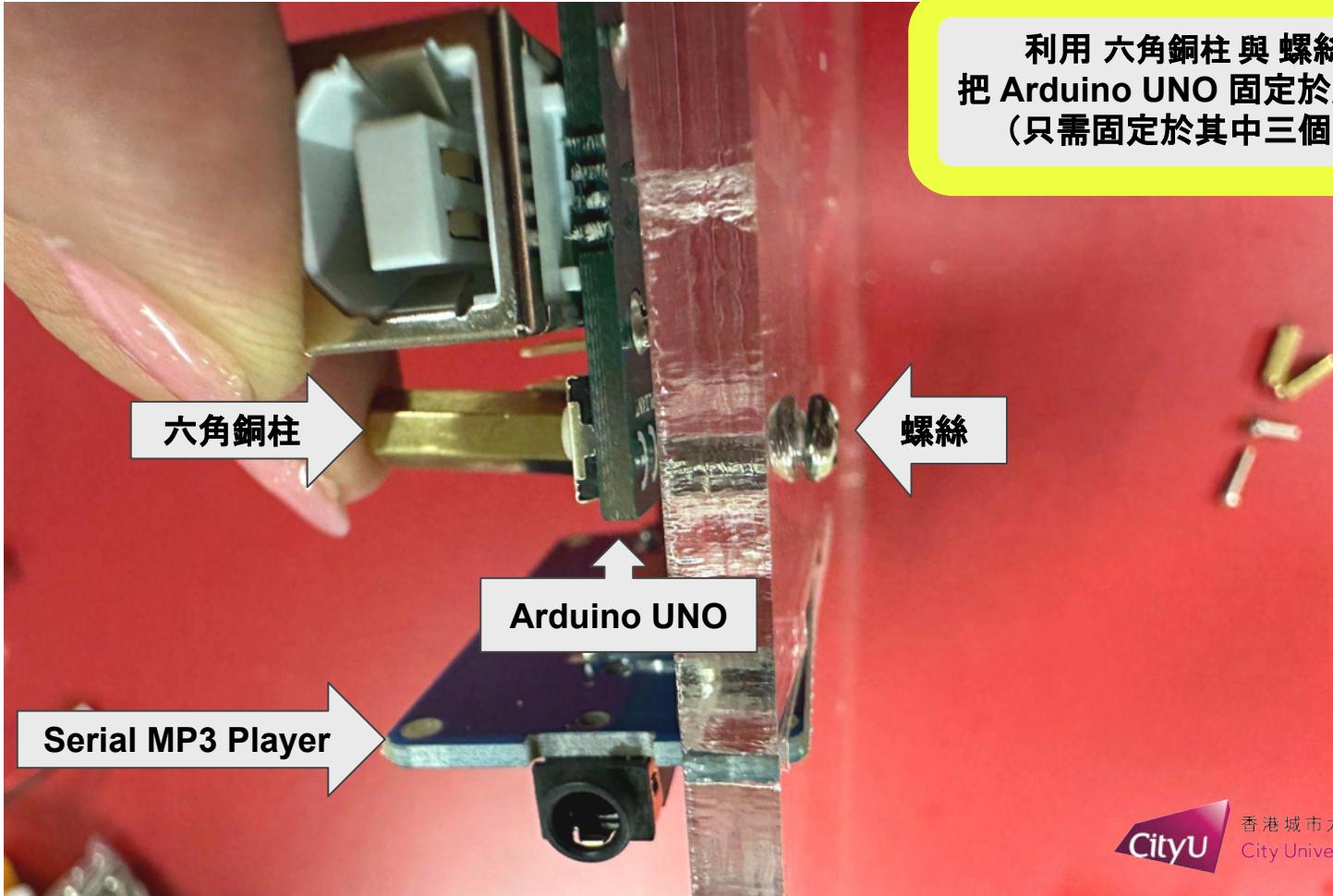
正面圖

Step 3

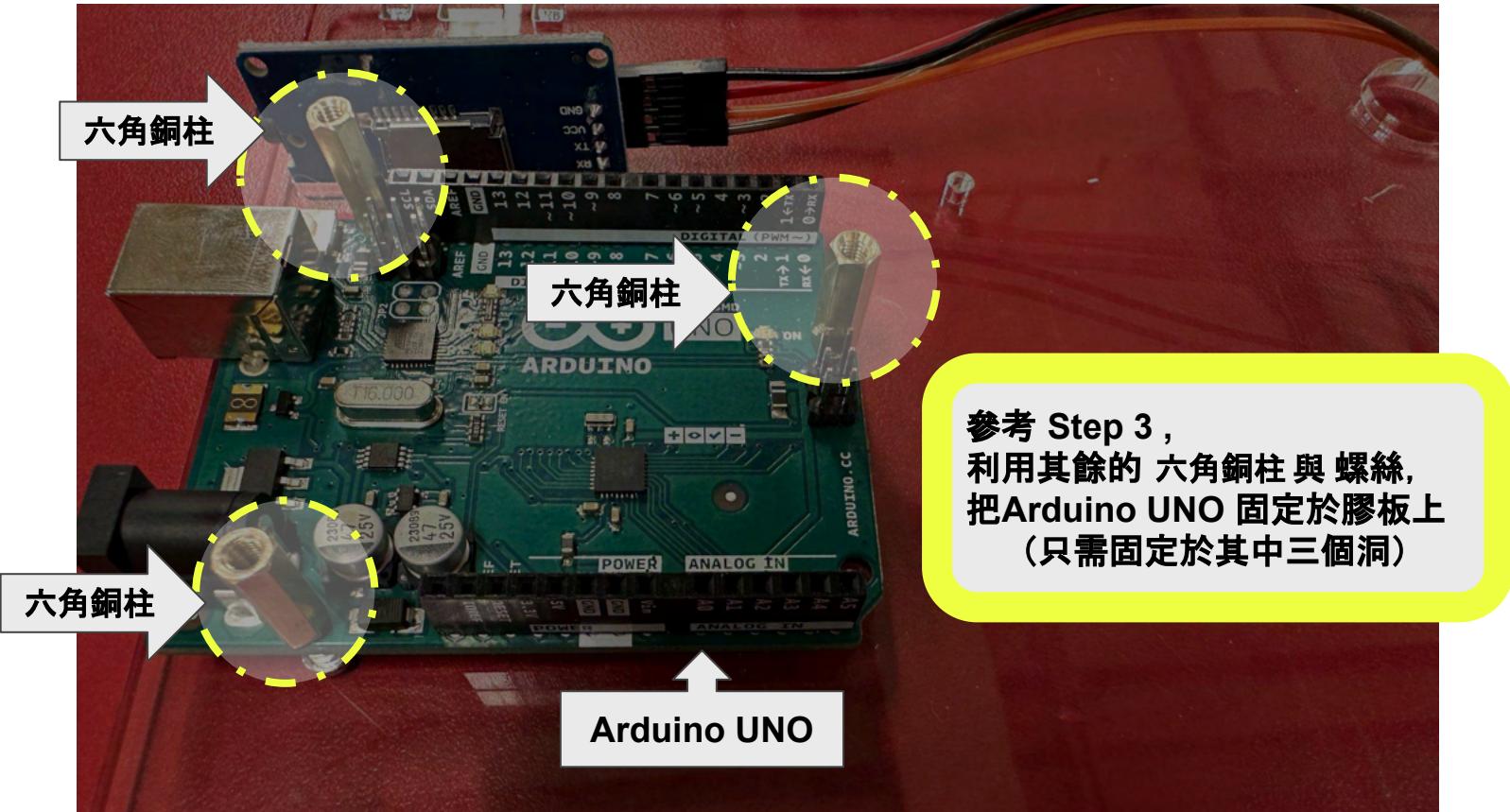


正面圖

Step 4



Step 5



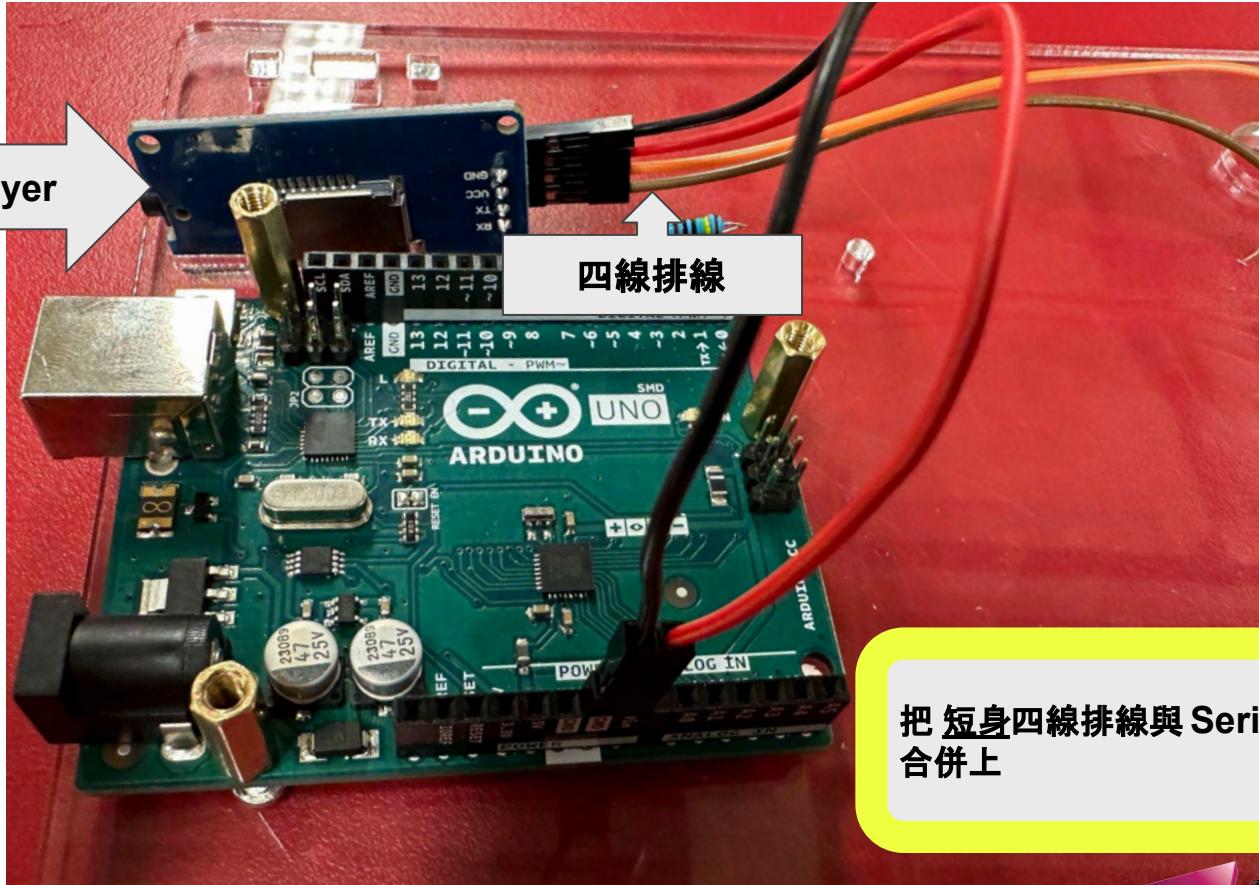
正面圖

Step 6

Serial MP3 Player

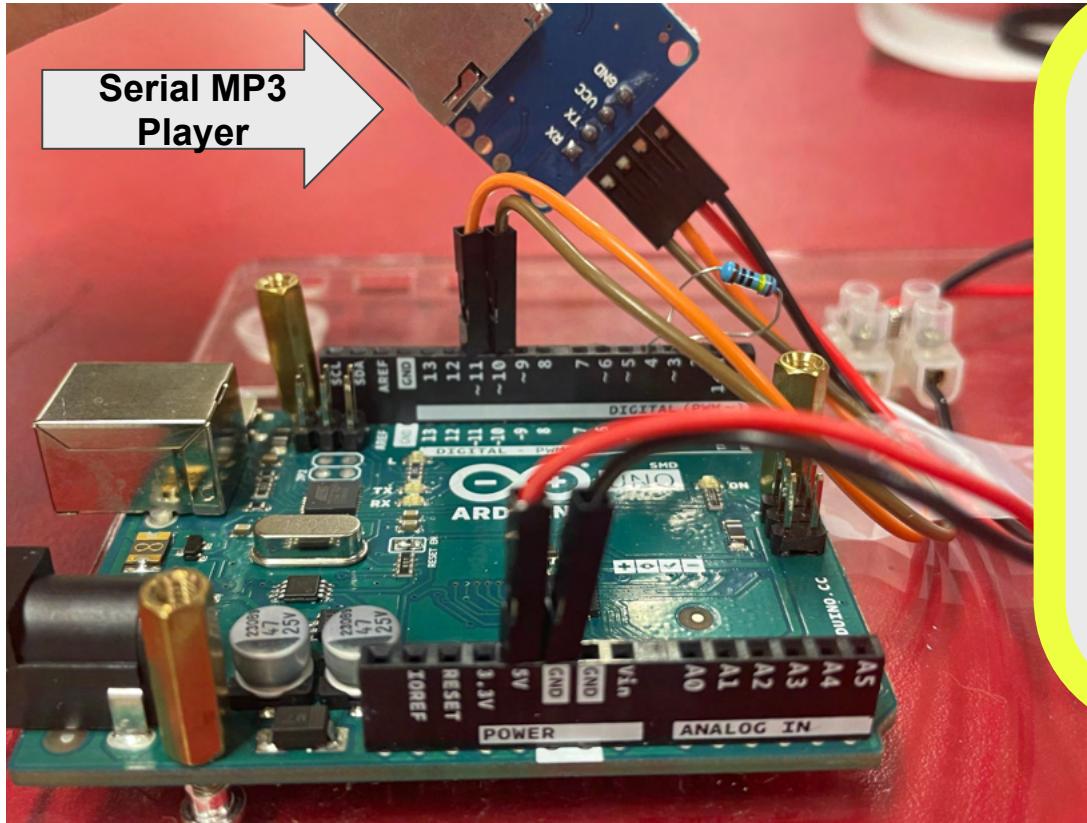
四線排線

把 短身四線排線 與 Serial MP3 Player
合併上



正面圖

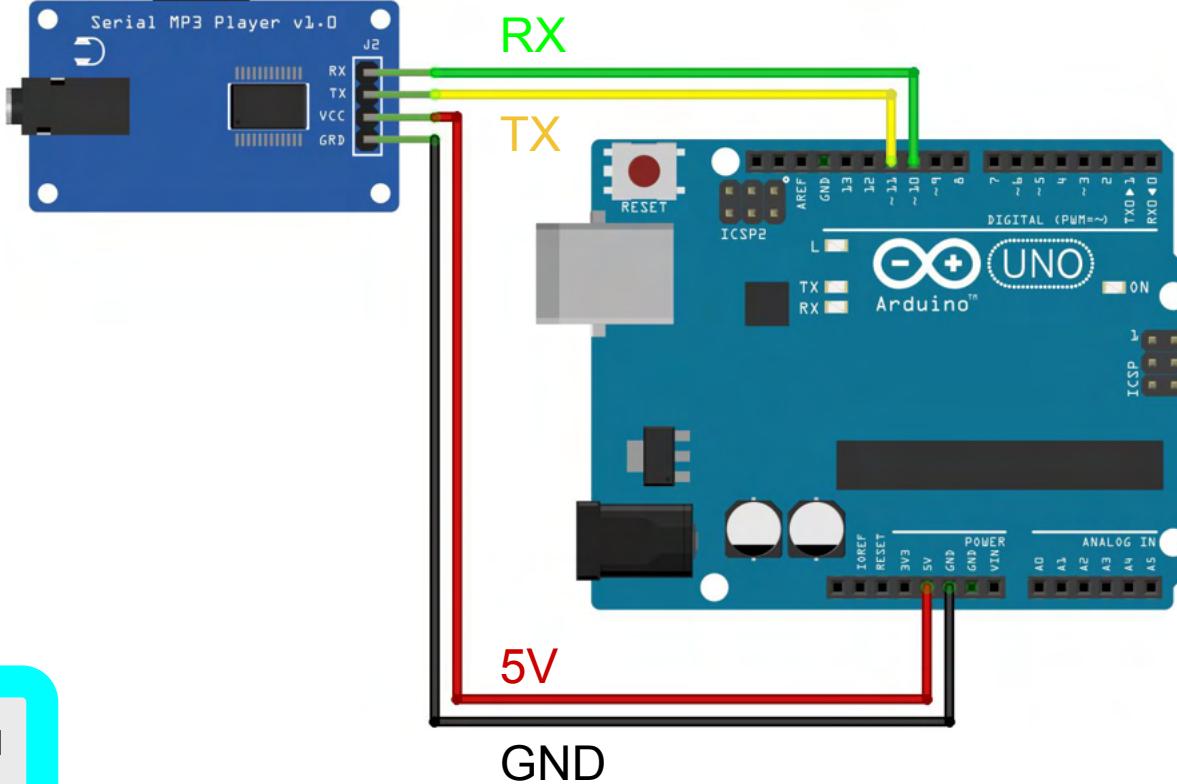
Step 7



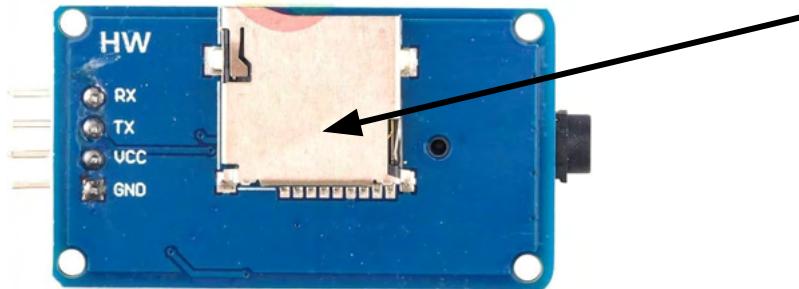
正面圖

1. 把 **Serial MP3 Player** 上的 GND 與 Arduino UNO 上的 GND 連結
2. 把 **Serial MP3 Player** 上的 VCC 與 Arduino UNO 上的 5V 連結
3. 把 **Serial MP3 Player** 上的 RX 與 Arduino UNO 上的 pin 10 連結
4. 把 **Serial MP3 Player** 上的 TX 與 Arduino UNO 上的 pin 11 連結

可參考下一页的電路圖ho.1



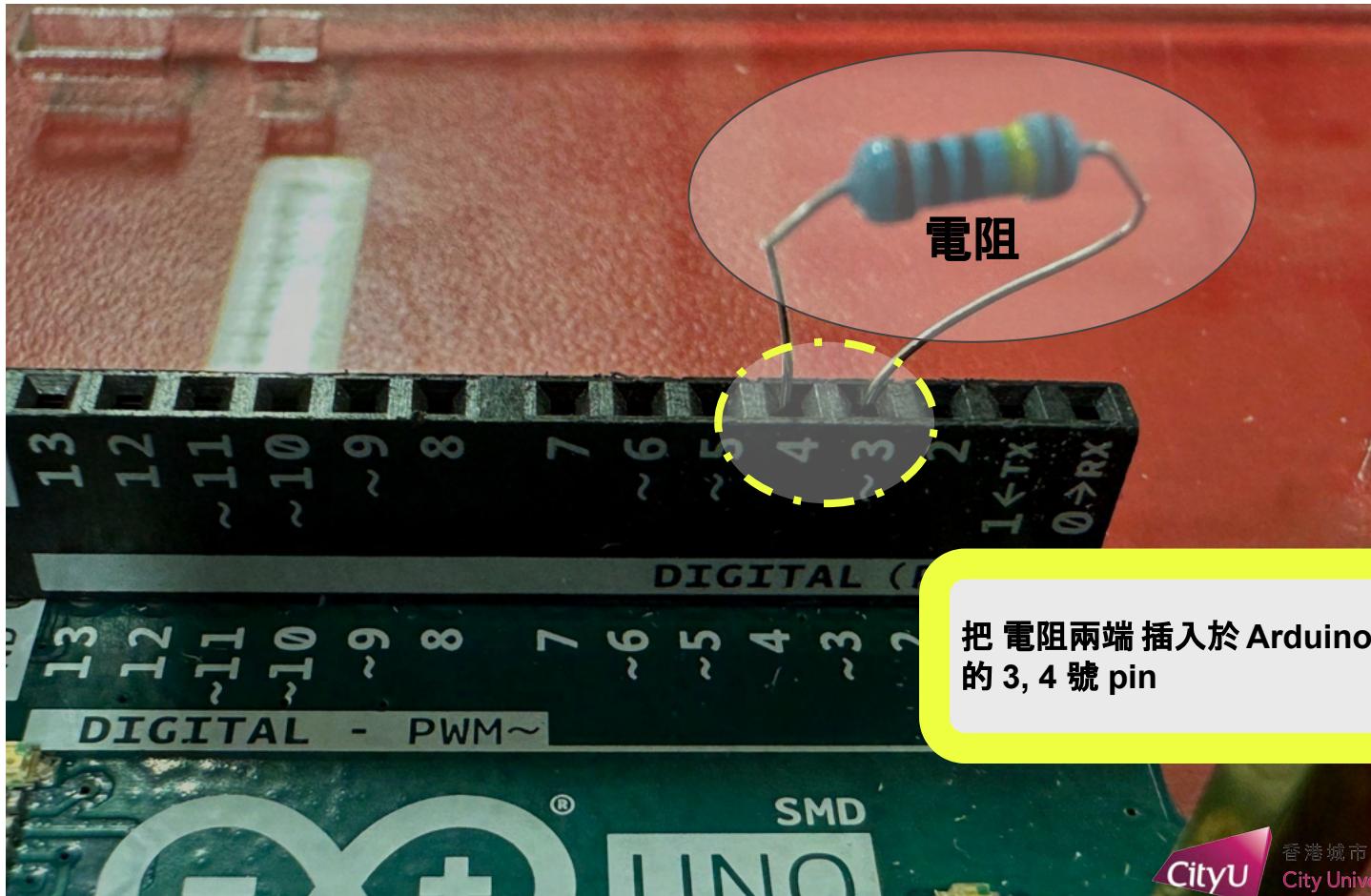
Step 8



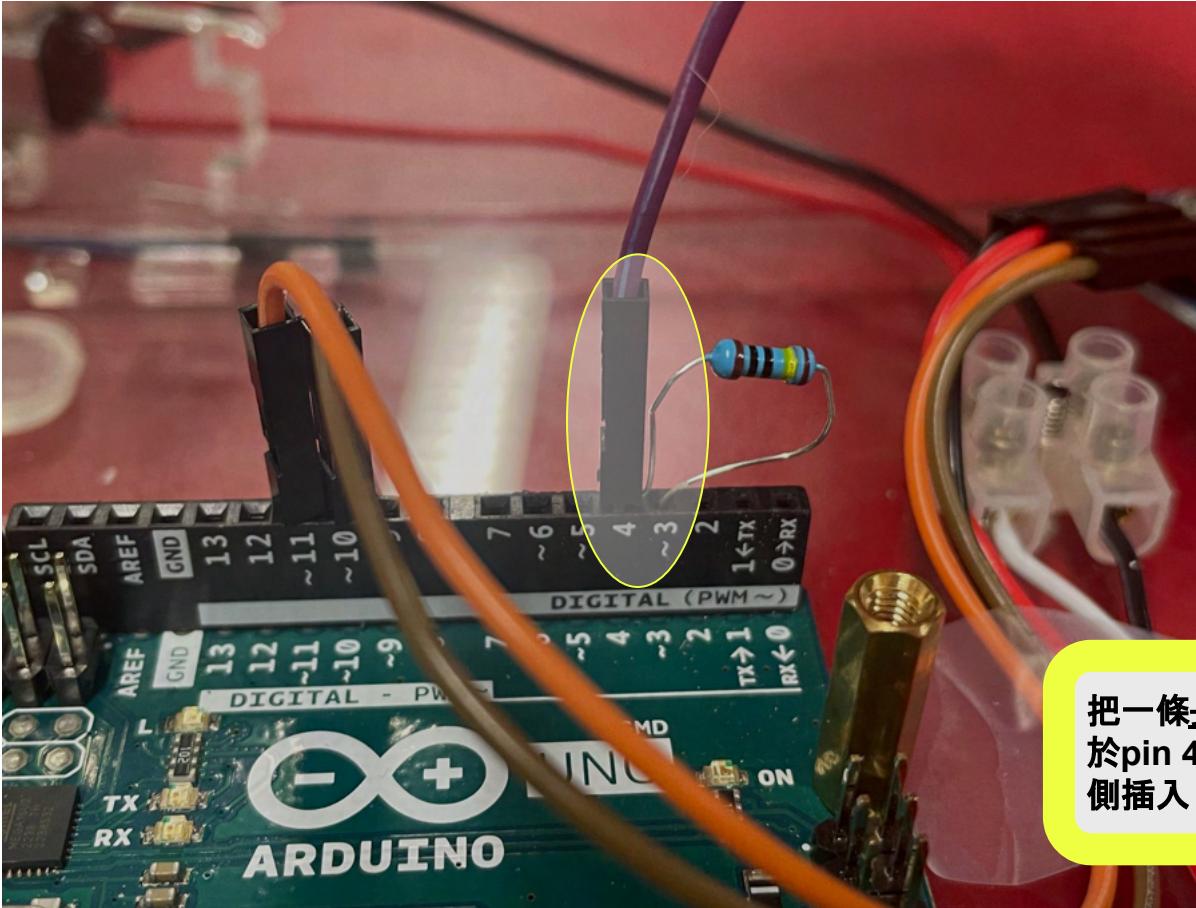
記得把 micro SD card 放入**Serial MP3 Player** 的卡槽內



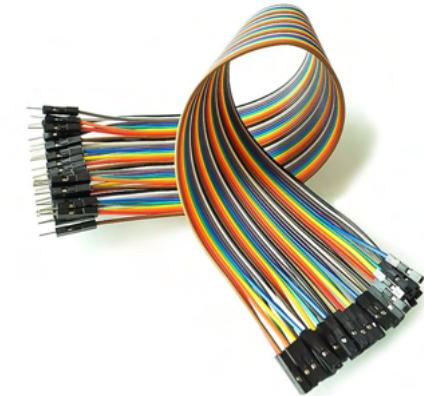
Step 9



Step 10



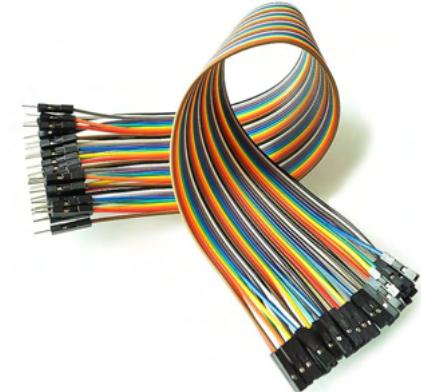
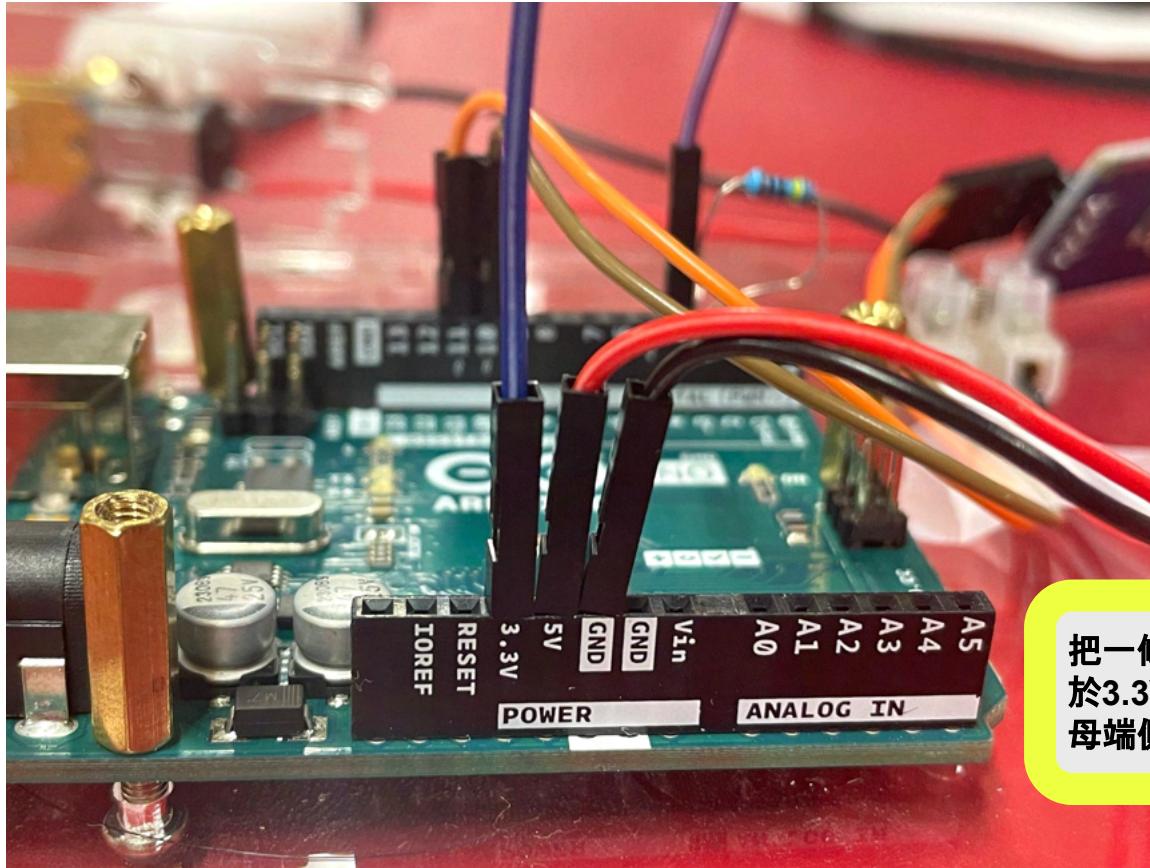
公-->母 杜邦線



把一條長身 公-->母 杜邦線的公端插入
於pin 4(與電阻其中一隻腳共用)，母端
側插入 導電引線 (Step 12)

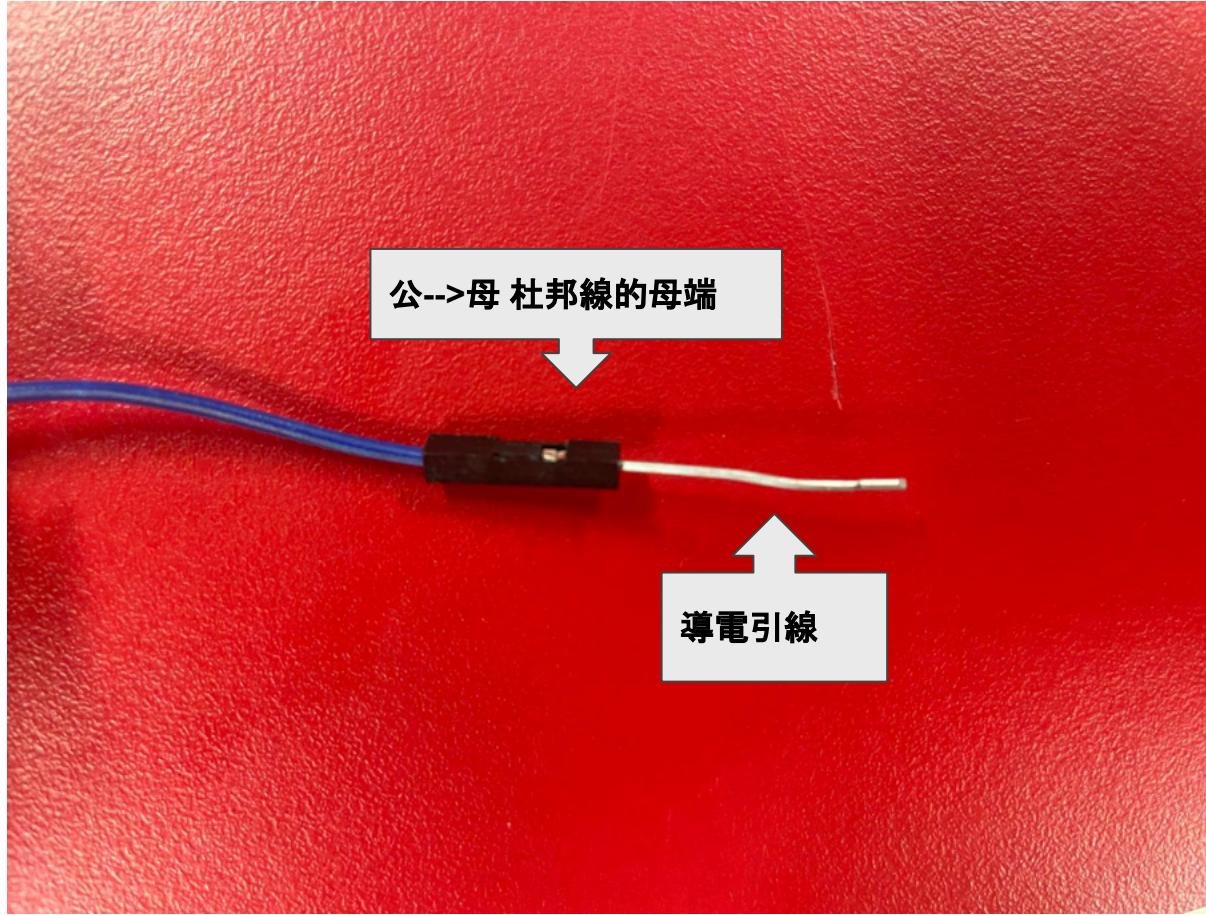
Step 11

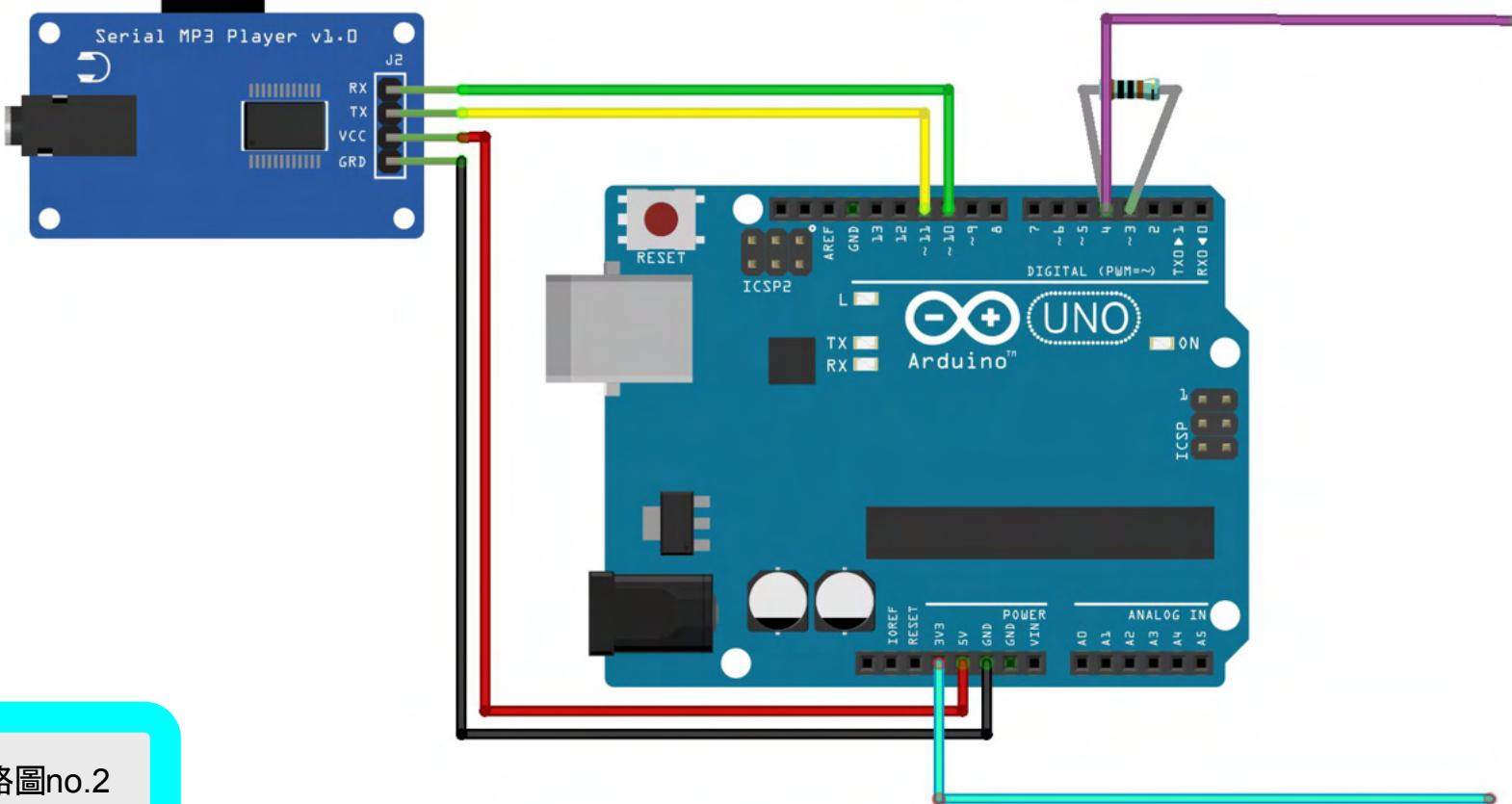
公-->母 杜邦線



把一條長身 公-->母 杜邦線的公端插入
於3.3V,
母端側插入導電引線 (Step 12)

Step 12

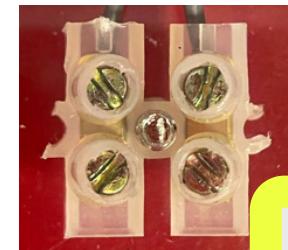




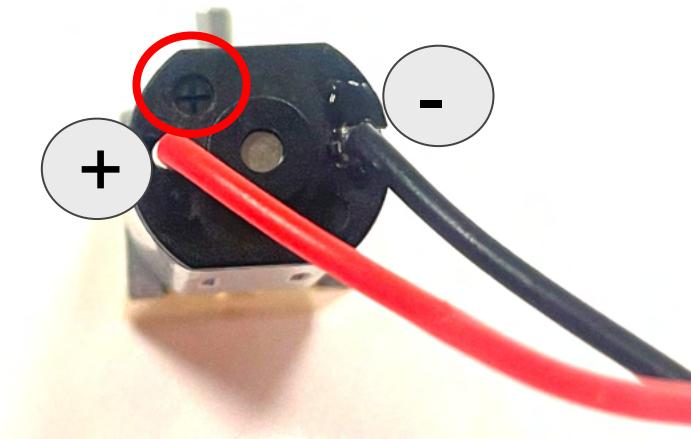
電路圖no.2



摩打正面圖



燈座正面圖

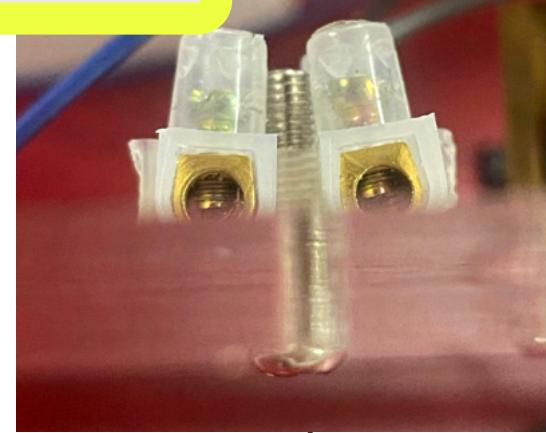


注意
摩打紅色電線為電路正極(+)
黑色電線 為電路負極(-)

Step 13



簪玉 正面圖



簪玉 側面圖

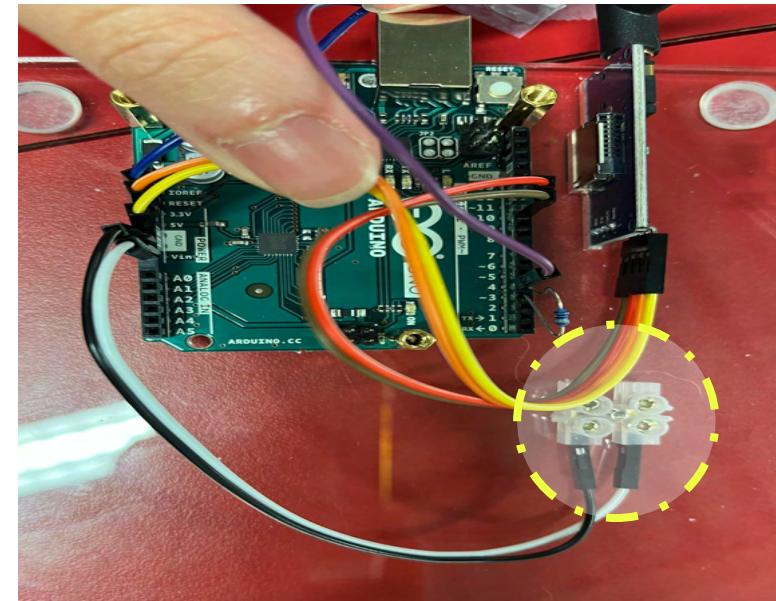
亞加力
膠底板

簪玉 正面圖

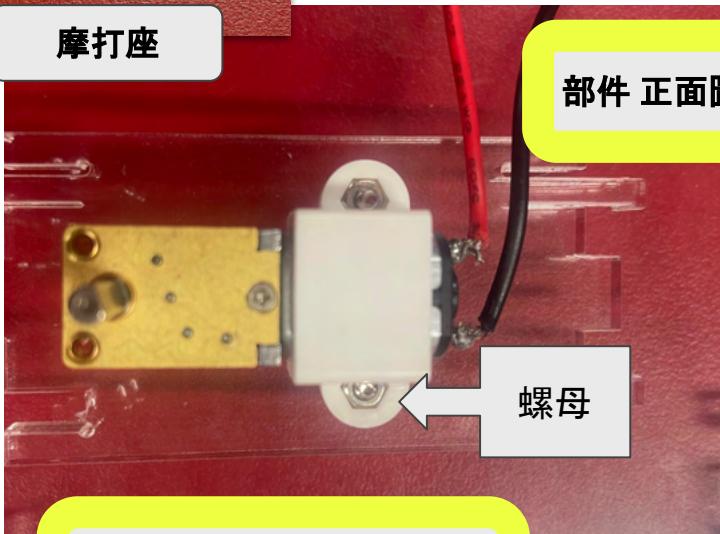
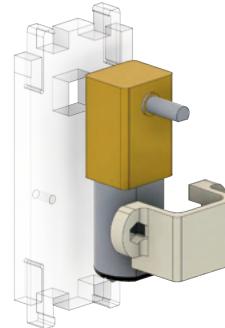
利用螺絲固定簪玉在
亞加力膠底板上

Step 14

把兩條 公-->公杜邦線的公端分別插入
於GND和Vin, 另一面接到簪玉



Step 15



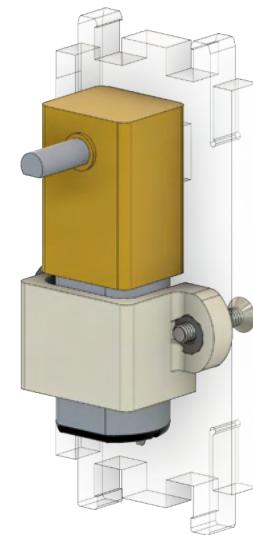
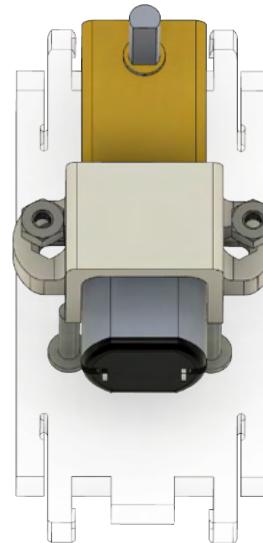
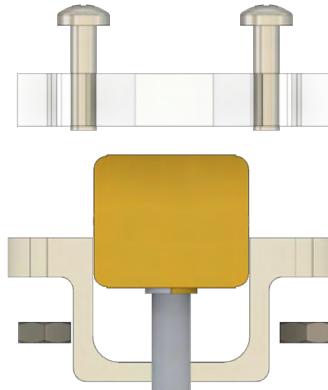
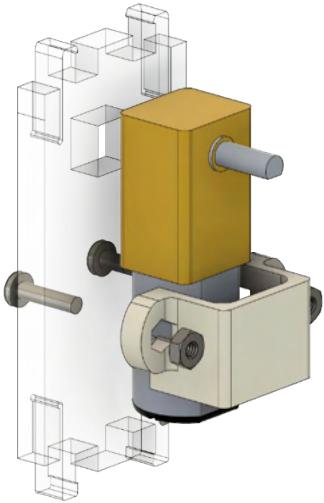
把 摩打安裝到**有方形**的亞加力膠板上

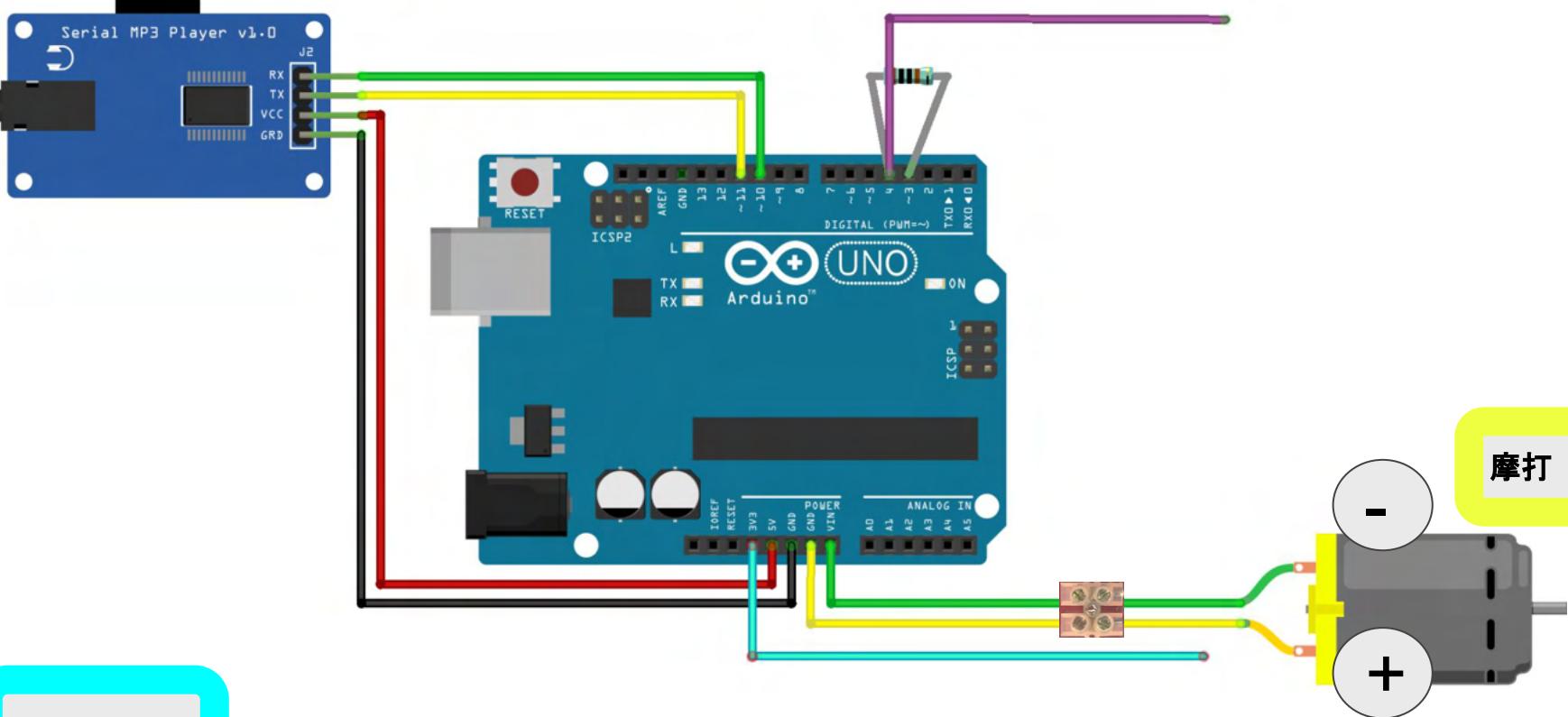
可參考下一頁

在背面以螺絲固定



18





電路圖no.3

Step 16



聯軸器



把 聯軸器放到摩打軸芯，有
洞的位置對準軸芯平面的部
分

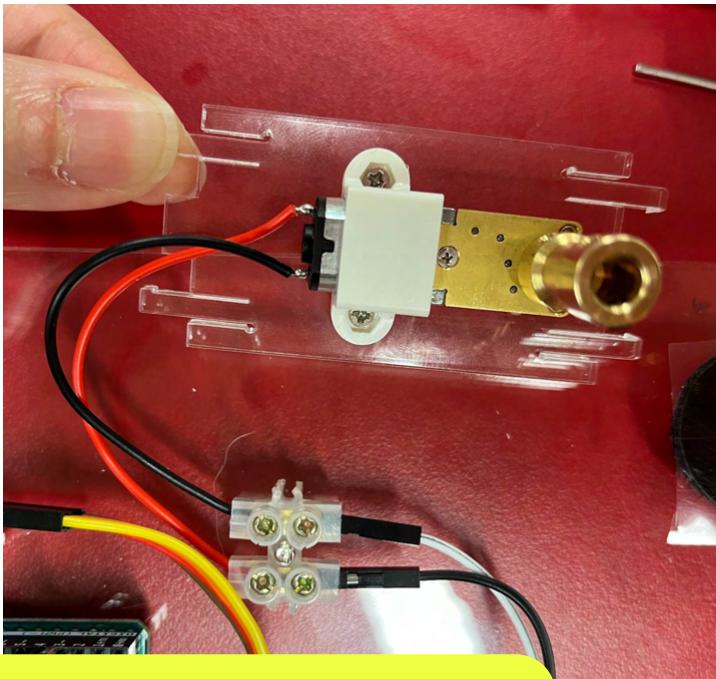


用六角匙把 機米放到聯軸器小洞上並
鎖緊，把聯軸器摩打連接一起

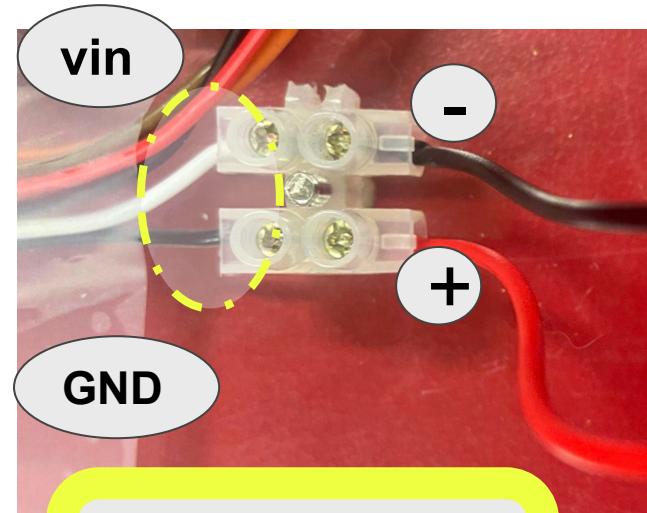


機米

Step 17



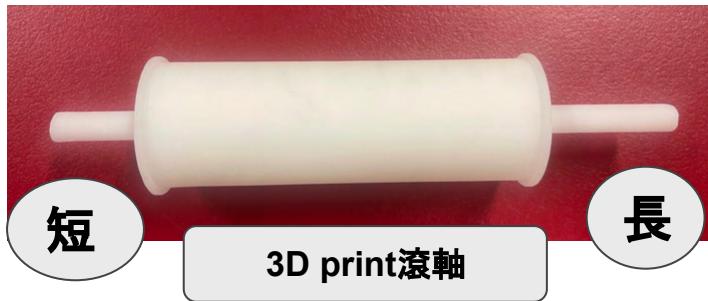
簪玉的另一端接到摩打的(+)和(-)



留意
要把vin接到摩打負極(-),
GND接到摩打正極(+)

使摩打逆時針轉

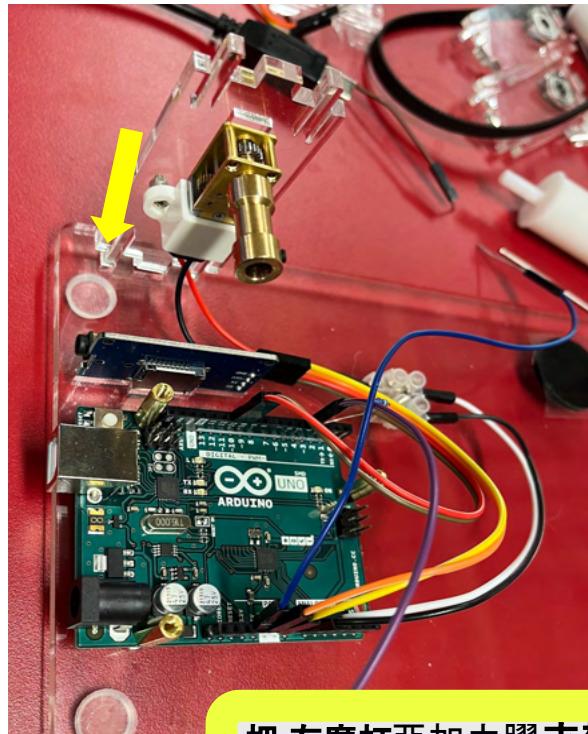
Step 18



把 同步輪 連接到 3D print滾軸 長邊,
用六角匙鎖緊，連接一起



Step 19

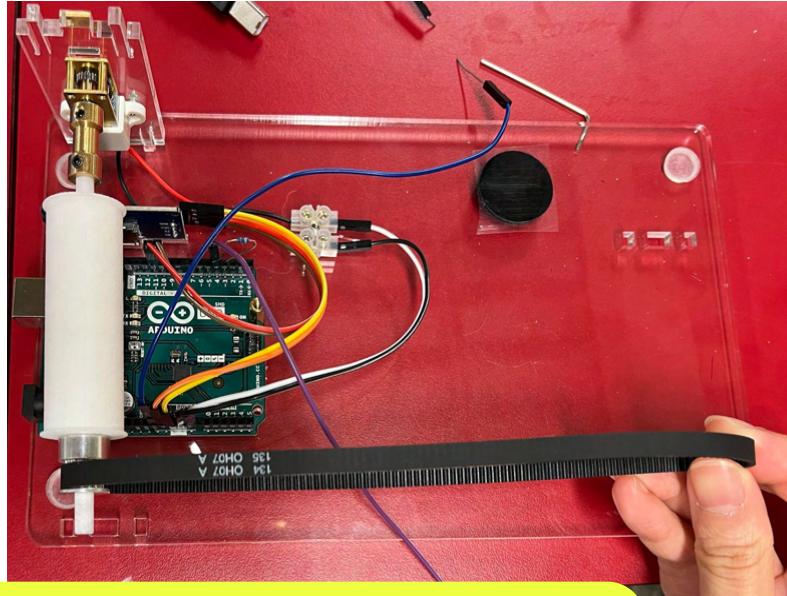


把有摩打亞加力膠支架插到底座上



然後把3D print滾軸短邊放到聯軸器中，先不用鎖緊

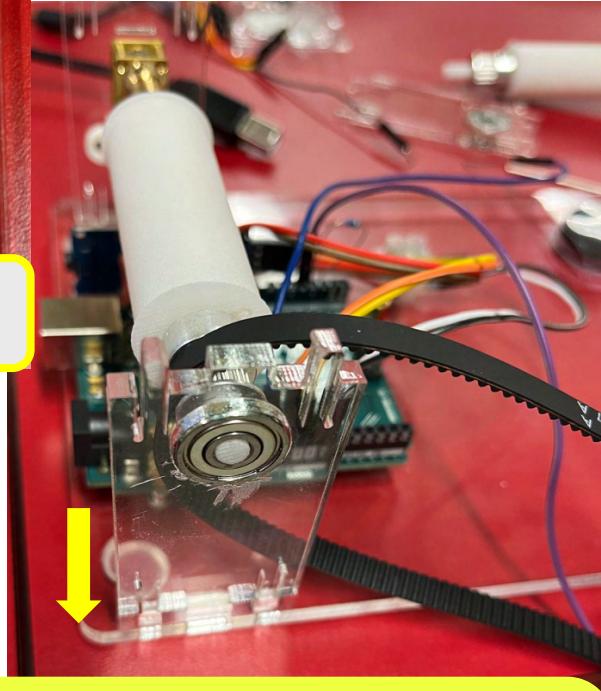
Step 20



把同步帶穿入3D print滾軸，與聯軸器的齒

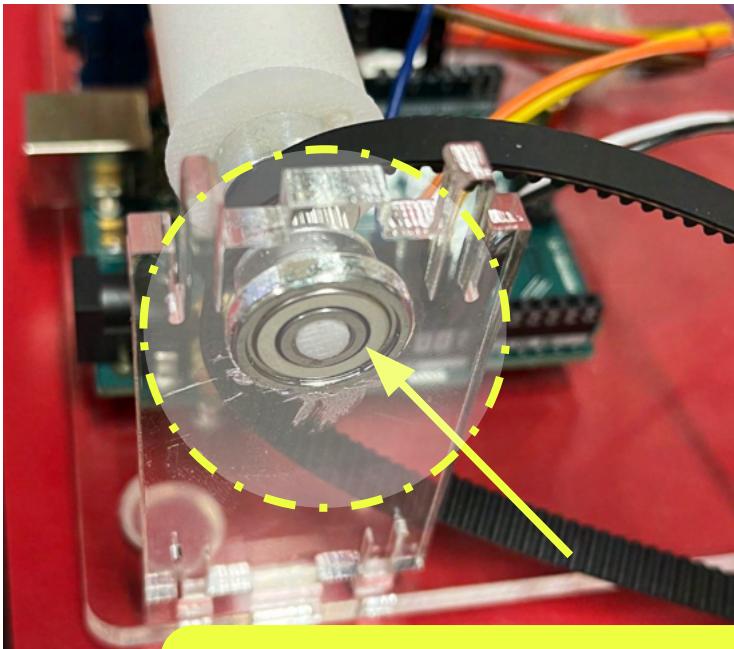


無小勾
亞加力膠支架



把無小勾亞加力膠支架 插到底座上，記得將3D print滾軸穿過軸承

Step 21

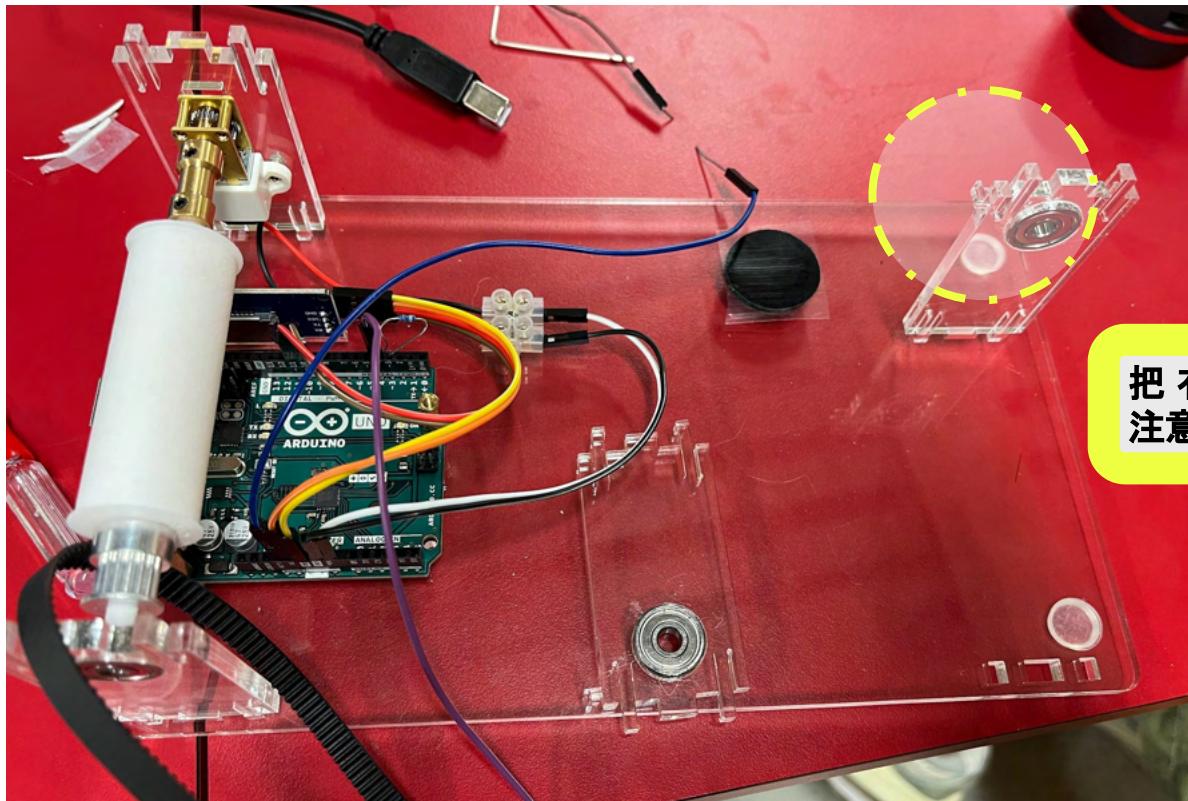


將3D print滾軸的位置調節, 與軸承並排



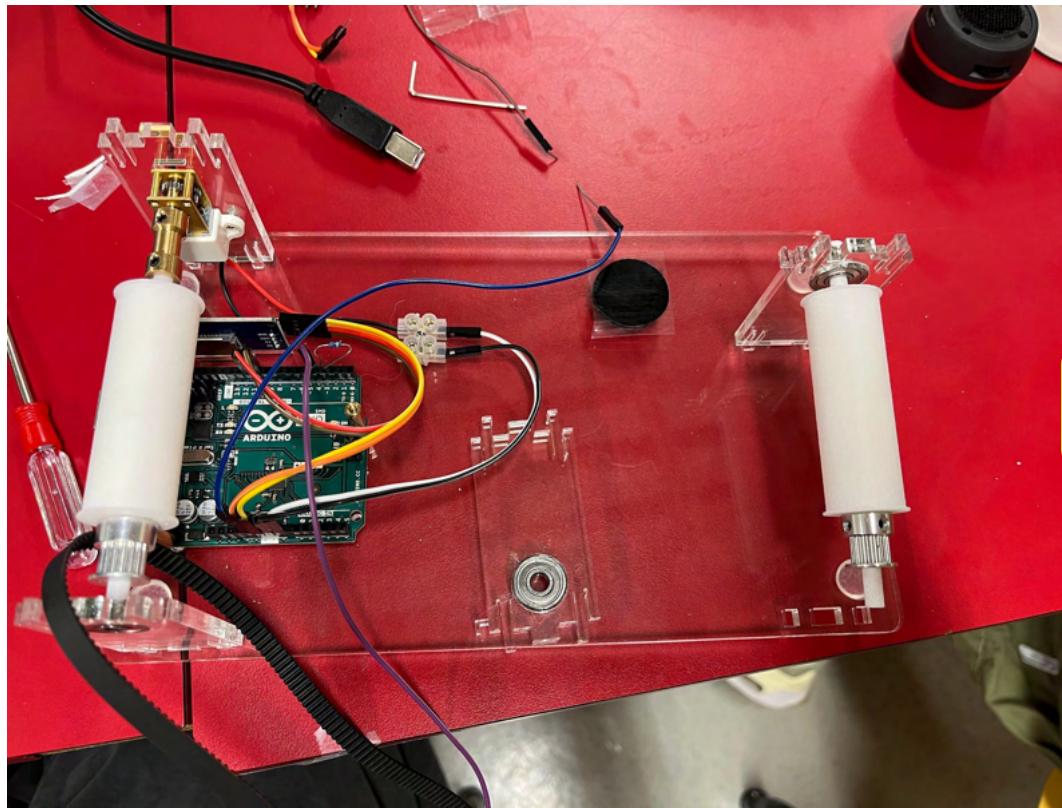
用六角匙把連接3D print滾軸短邊到聯軸器的位置鎖緊, 連接一起

Step 22



把有勾的亞加力膠支架 插到底座上,
注意勾要向內

Step 23

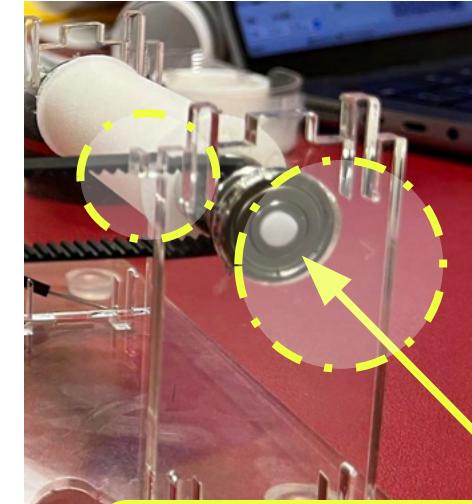


把 3D print滾軸短邊放到軸承

Step 24



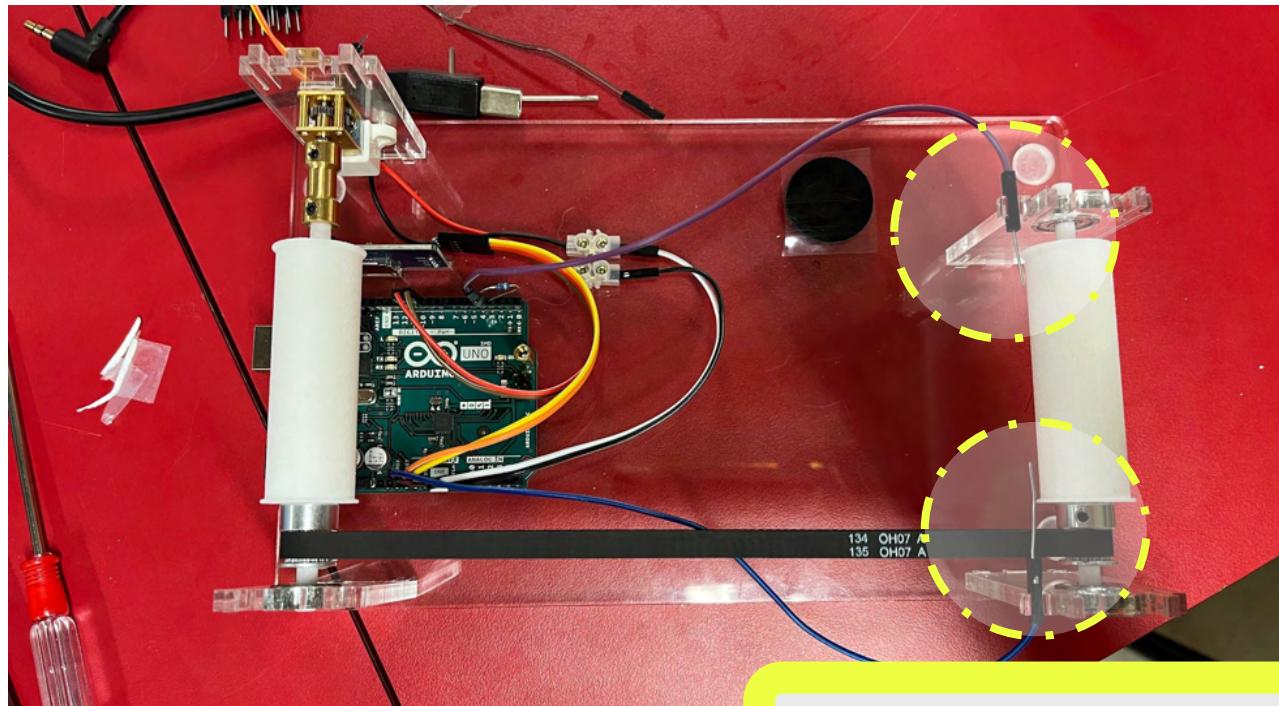
記得把同步帶放到同步輪的位置



將3D print的位置調節, 與軸承並排

把最後一塊亞加力膠支架安裝, 並把
3D print滾軸穿入軸承

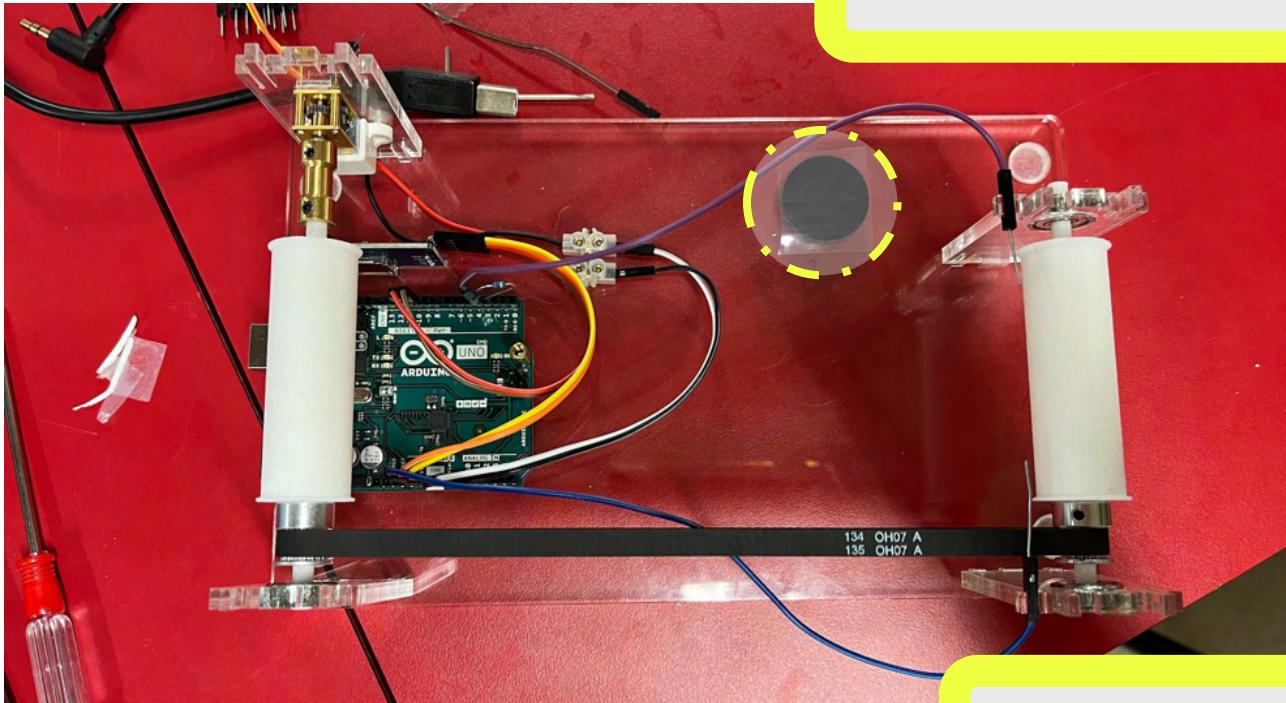
Step 25



將arduino上帶有導電引線的杜邦線卡在小勾上

Step 26

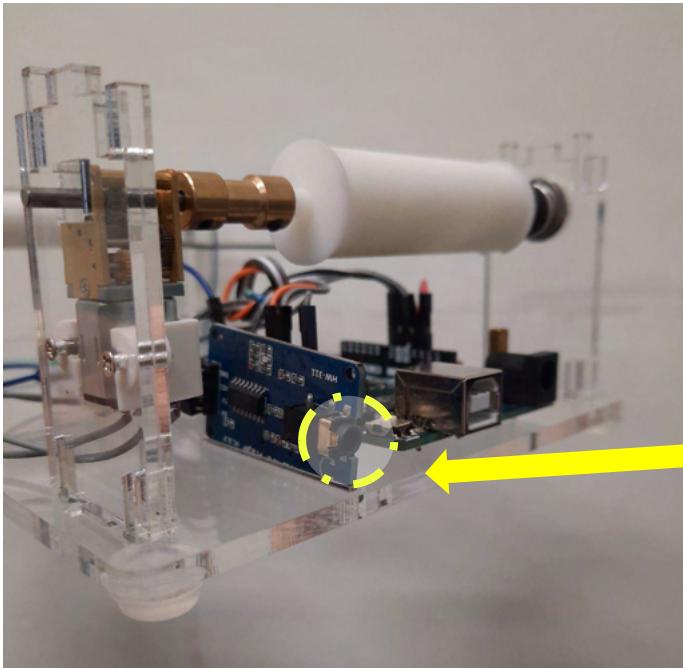
將魔術貼的勾面貼在亞加力膠底板的洞上



將魔術貼的毛面貼在喇叭的底部

Step 27

將3.5mm線連接喇叭與Serial MP3 Player



試通電，試喇叭

<https://tinyurl.com/JCIDEA>

```
#include "SerialMP3Player.h">// 使用MP3板的編碼庫library
#include <CapacitiveSensor.h>// 使用可感應導電物料的CAP SENSE編碼庫library

#define TX 10 //to MP3 board RX //定義ARDUINO TX到MP3 RX引腳連接
#define RX 11 //to MP3 board TX //定義ARDUINO RX到MP3 TX引腳連接

SerialMP3Player mp3(RX, TX);// 定義起動MP3相關的TX, RX

CapacitiveSensor sensor = CapacitiveSensor(3, 4);
//定義CAP SENSE導電感應引腳連接，兩者使用ARDUINO的DIGITAL引腳，並配合電阻達到感應運作
//前者為SEND PIN,後者為RECIEVE PIN要連接到紙上

//設定：有電源起動時執行一次的程序
void setup() {
    Serial.begin(9600);      // 起動serial介面
    mp3.begin(9600);         // 開始MP3板的連接
    delay(500);              // 等待起動
    mp3.sendCommand(CMD_SEL_DEV, 0, 2); //選取 sd-card
    delay(500);              // 等待起動
    mp3.setVol(50); // 設定音量
}

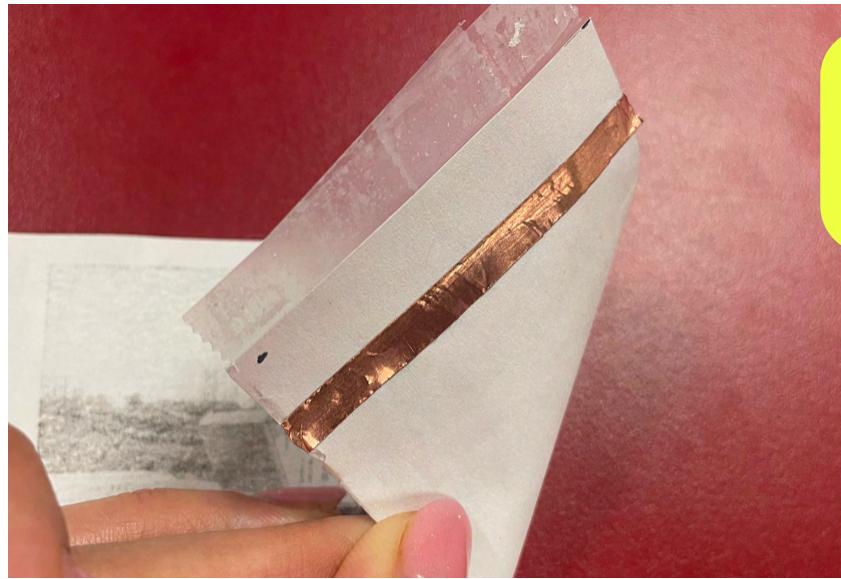
//迴圈：處理器不停執行的程序
void loop() {

    long measurement = sensor.capacitiveSensor(10); //讀取SENSOR的數值

    Serial.print(measurement); //SERIAL PRINT SENSOR的數值以方便MAPPING
    Serial.println("\t");

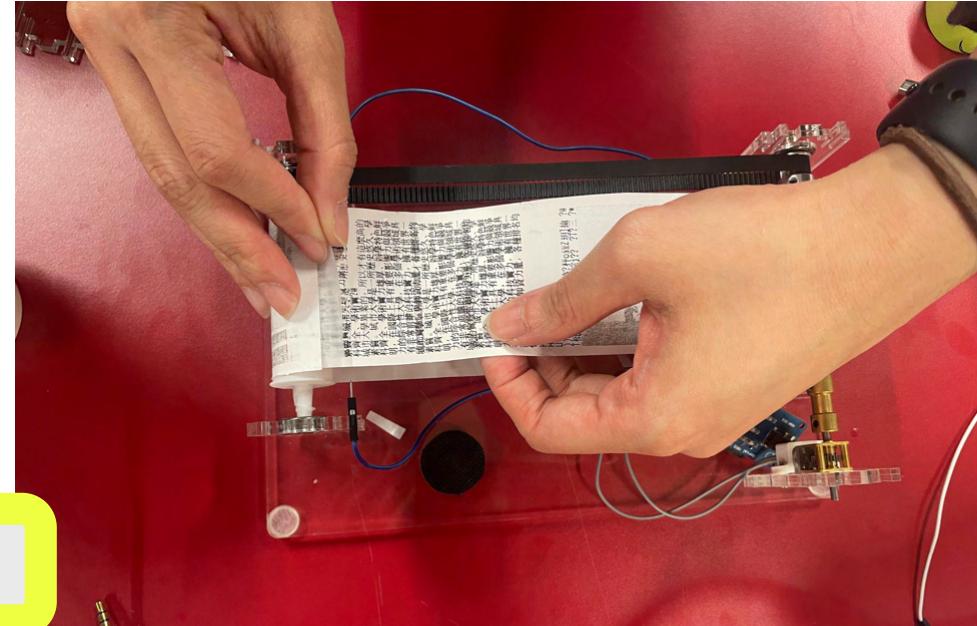
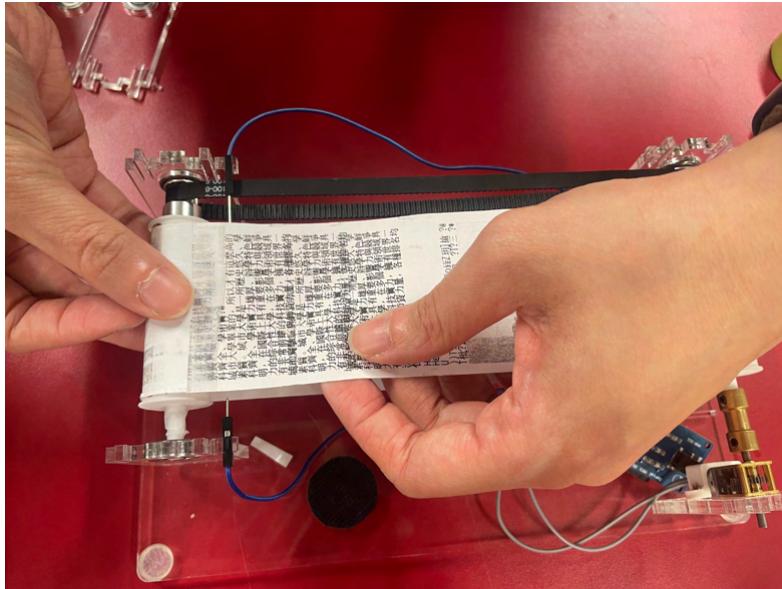
    if (measurement >= 100){ //決定觸發起動歌曲的條件(值)
        mp3.play(1); //歌曲於SD CARD內的次序
    }
    delay(50); //迴圈再執行的中間位
}
```

Step 28



在0秒界線之前的位置
把導電銅箔膠帶貼到紙的背面

Step 29



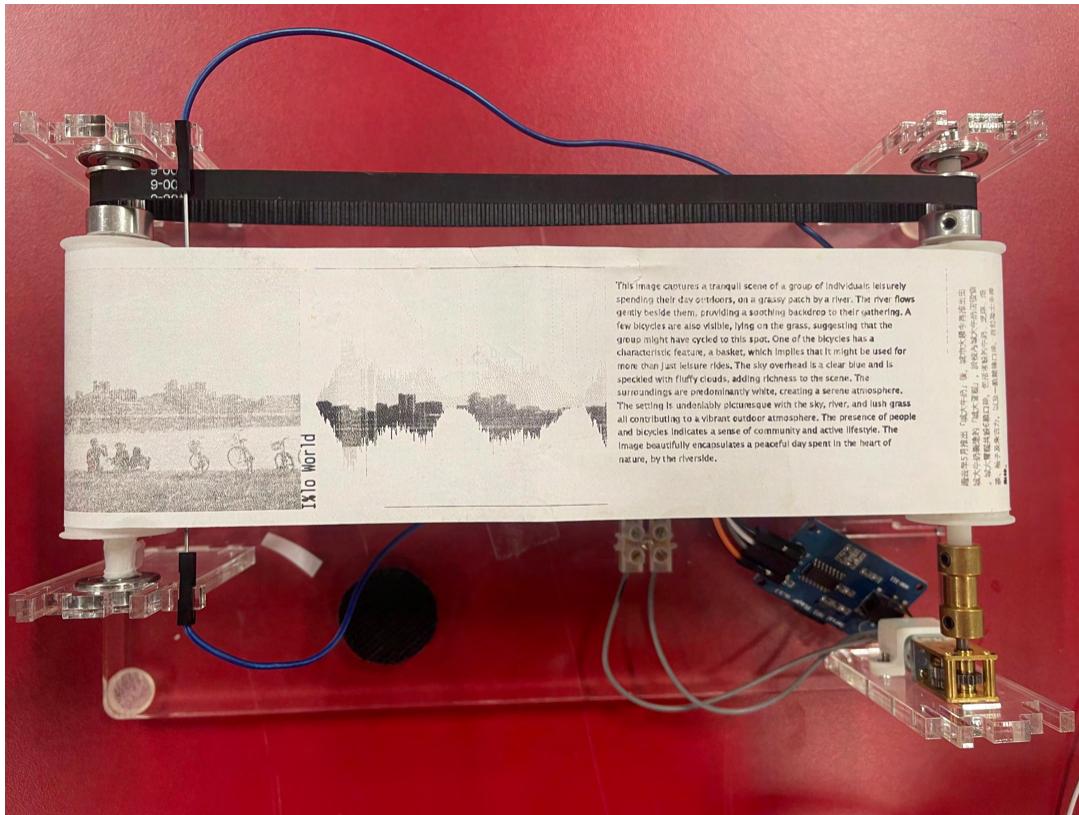
小心黏貼，如果膠紙過長，請用剪刀剪走

Step 30



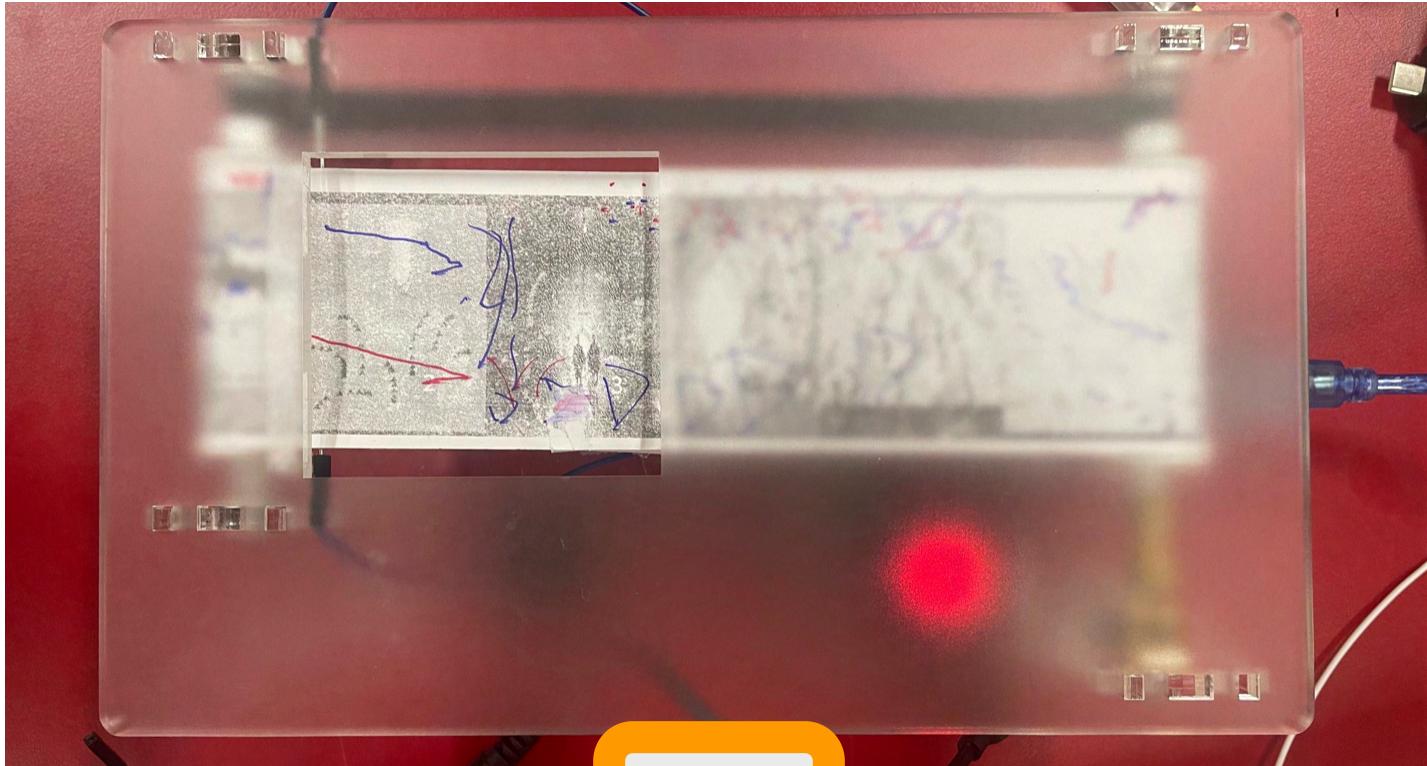
確保兩個導電部分在
紙的底下

檢查



This image captures a tranquil scene of a group of individuals leisurely spending their day outdoors, on a grassy patch by a river. The river flows gently beside them, providing a soothing backdrop to their gathering. A few bicycles are also visible, lying on the grass, suggesting that the group might have cycled to this spot. One of the bicycles has a characteristic feature, a basket, which implies that it might be used for more than just leisure rides. The sky overhead is a clear blue and is speckled with fluffy clouds, adding richness to the scene. The surroundings are predominantly white, creating a serene atmosphere. The setting is undeniably picturesque with the sky, river, and lush grass all contributing to a vibrant outdoor atmosphere. The presence of people and bicycles indicates a sense of community and active lifestyle. The image beautifully encapsulates a peaceful day spent in the heart of nature, by the riverside.

這幅畫作展示了在一個晴朗的日子，一群人在河邊的草地上休閒。他們可能剛剛騎自行車到這裡來。背景中有一條緩緩流動的河流，天空藍得像藍寶石一樣，布滿了蓬鬆的雲朵。整幅畫面充滿了平靜和活力。



完成



香港城市大學
City University of Hong Kong