

MUSICMAKER

電子音樂製作器



chyijiunn

科技

滿足對藝術的渴望



G

R

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P

目標

學習腳位定義、PWM控制、
for 迴圈使用、list dict 使
用、套件使用、函式引用

權威

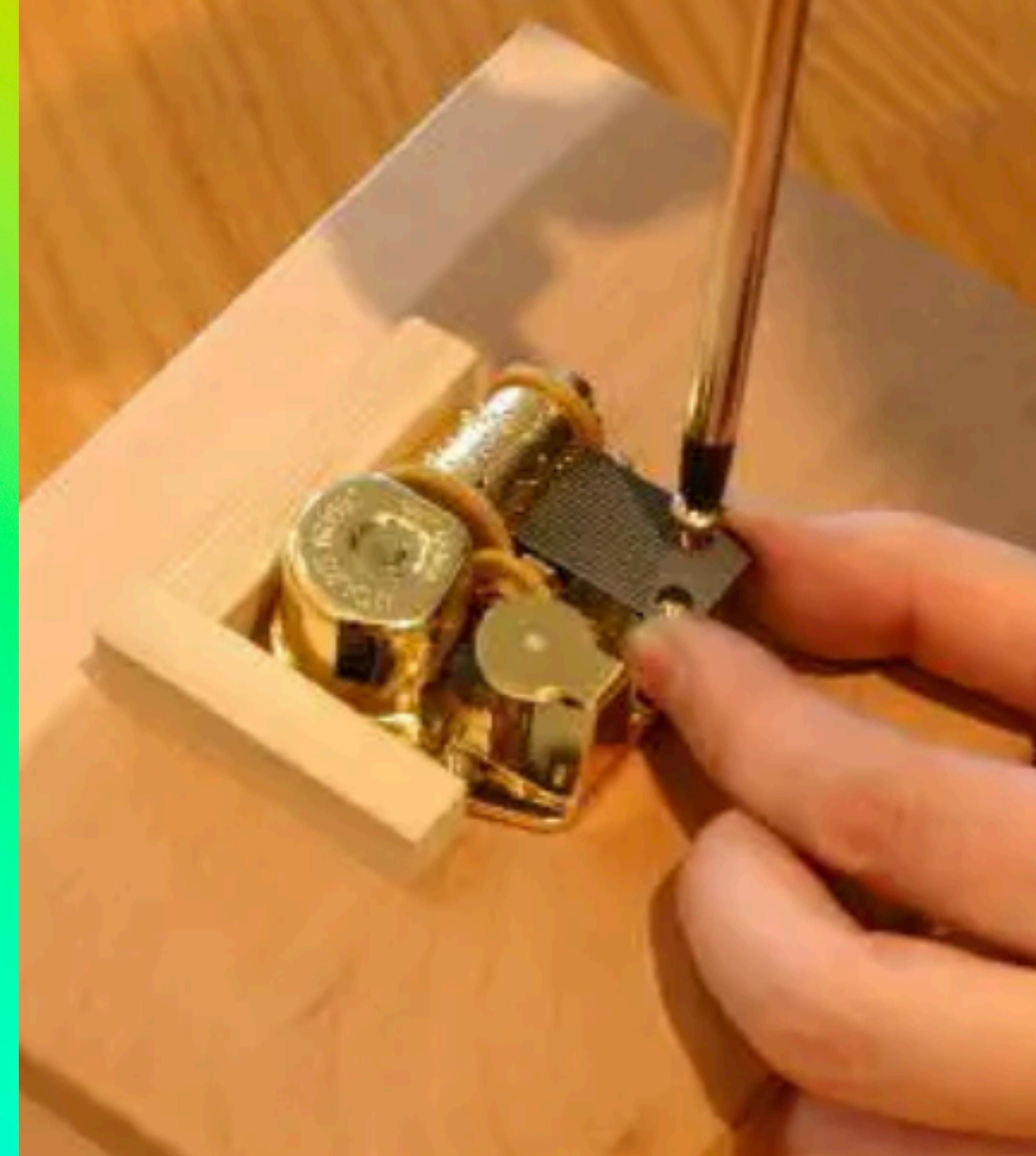
比較其他 STEAM 作品，比
較時間成本與技術門檻，學
習他人長處、揣摩做法以及
程式內涵

研究

比較以下差異：
高低電位和PWM差異
for , while 使用時機差異
list 與 dict
套件與自己寫

推廣

從 pico 開始，低成本，能屈
能伸

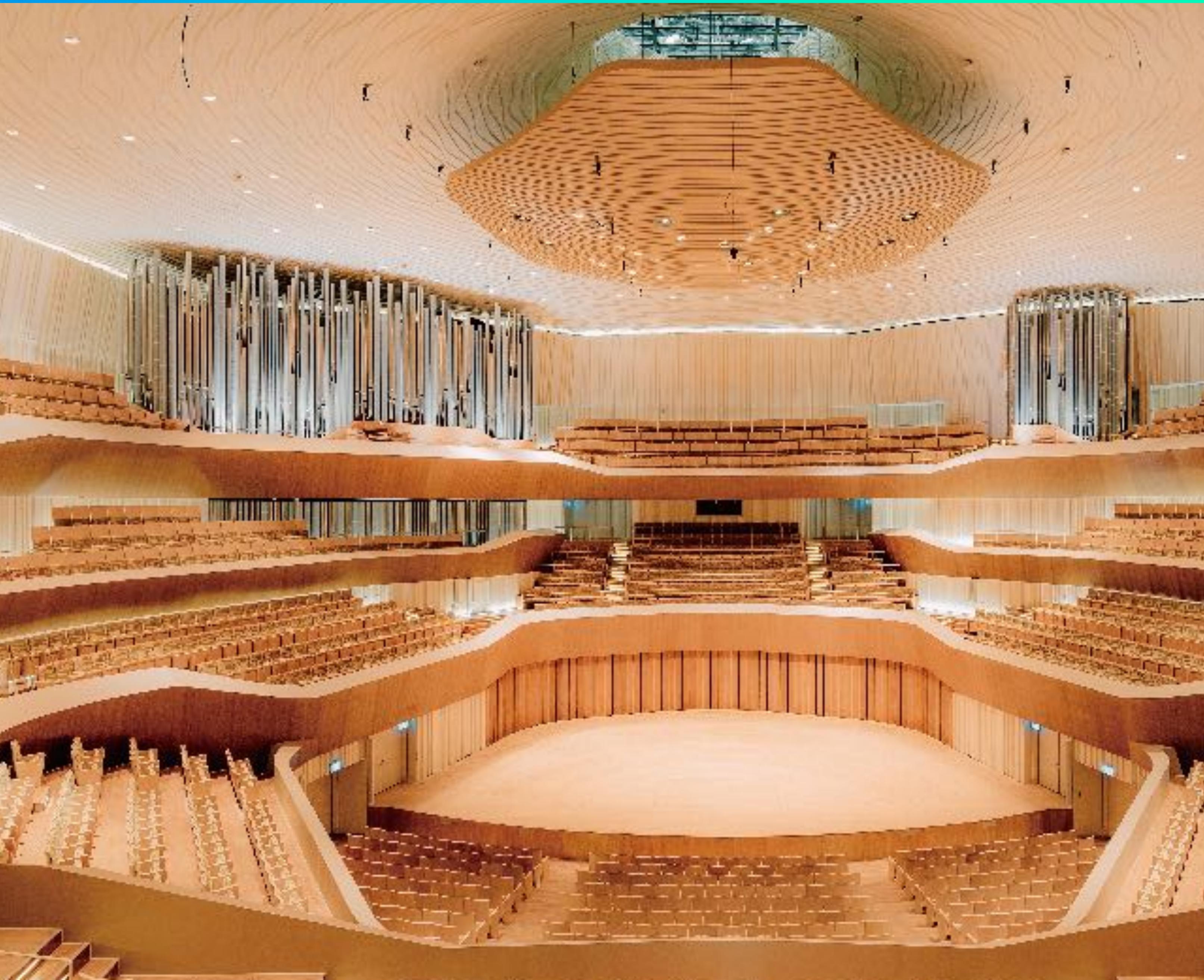




衛武營管風琴

台灣驕傲

- 亞洲最大
- 1.2億
- 9085 音管、127 音栓



MURO BOX

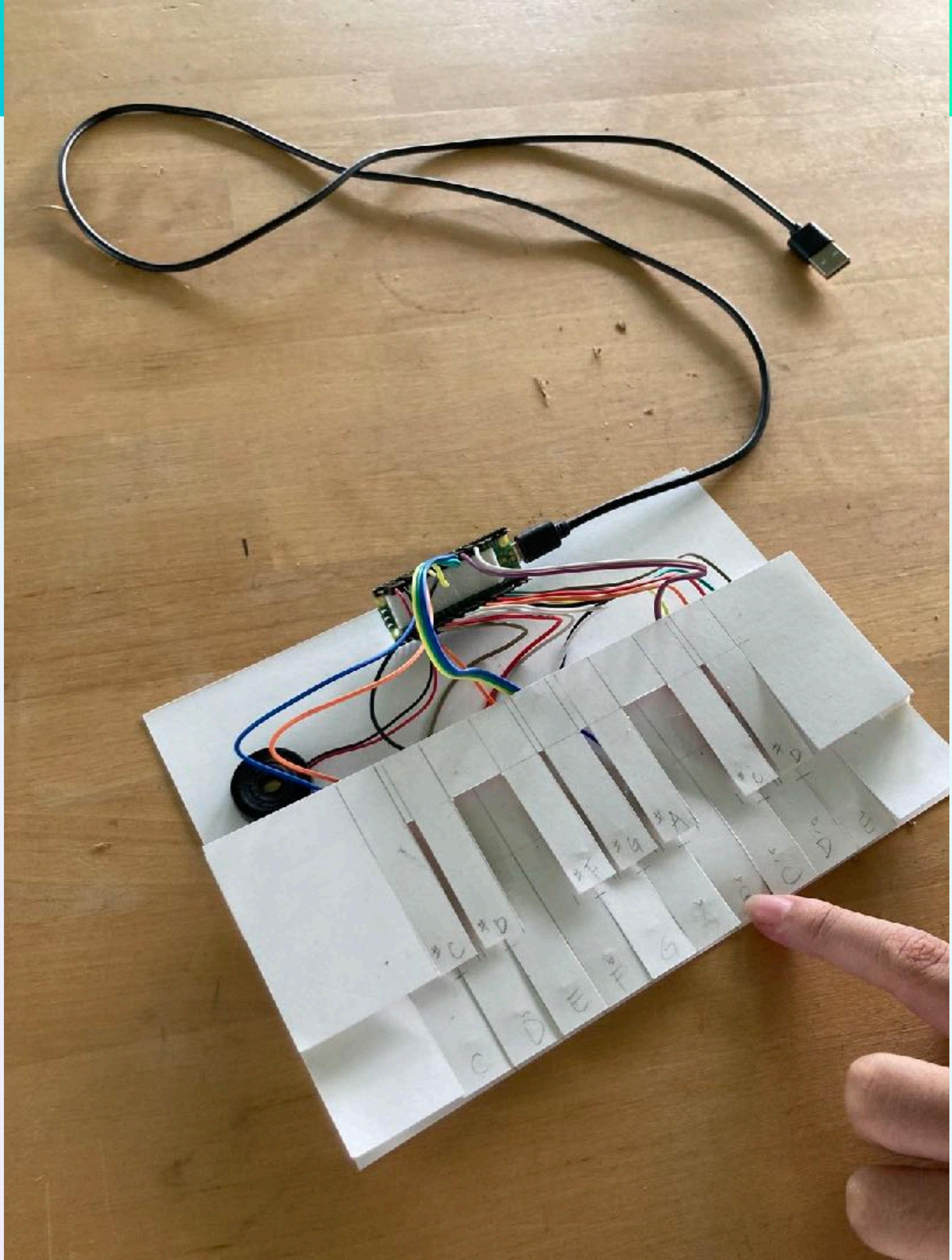
台灣驕傲

- 可編曲
- Midi 支援
- 持續進化中

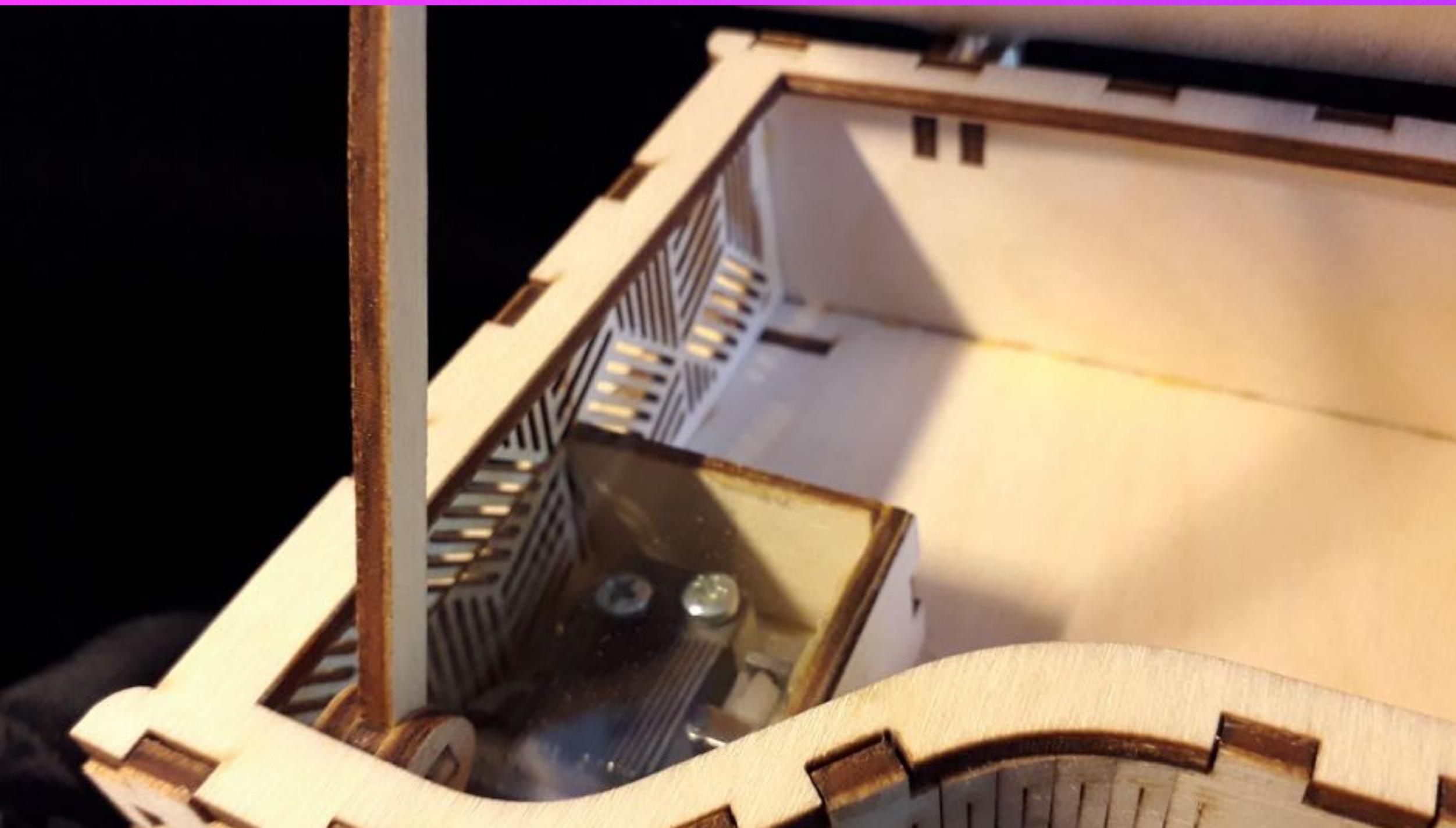
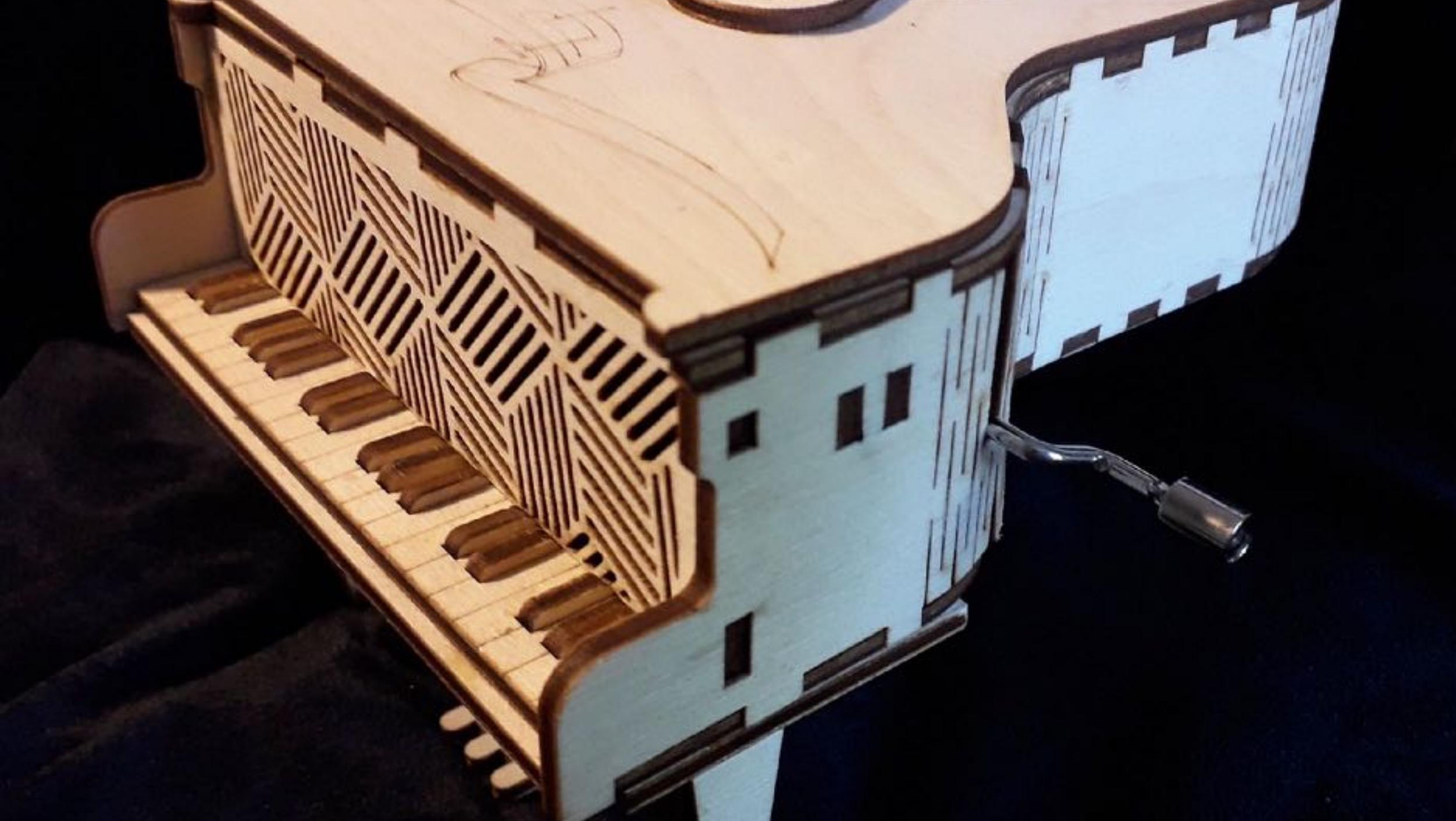


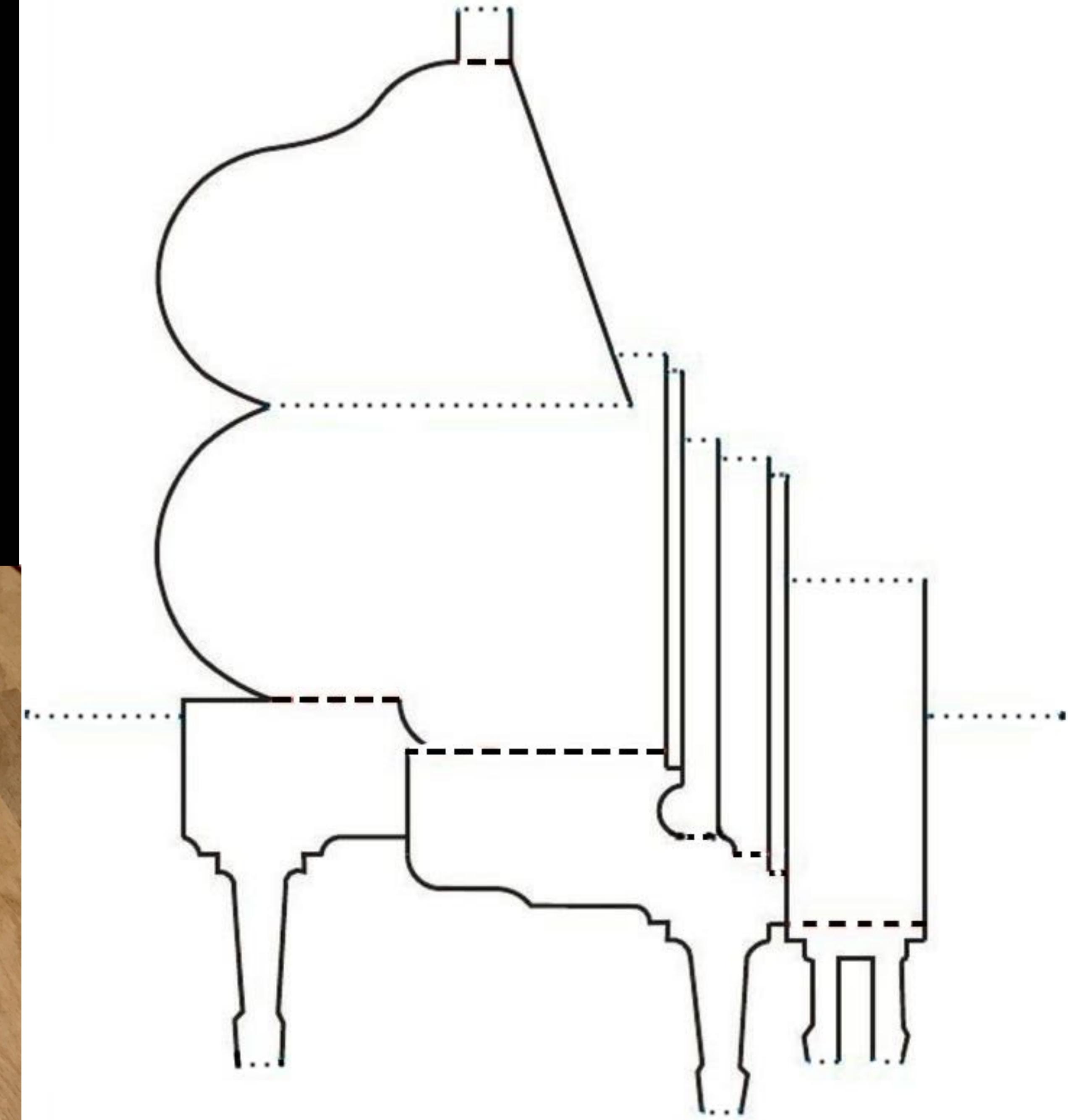
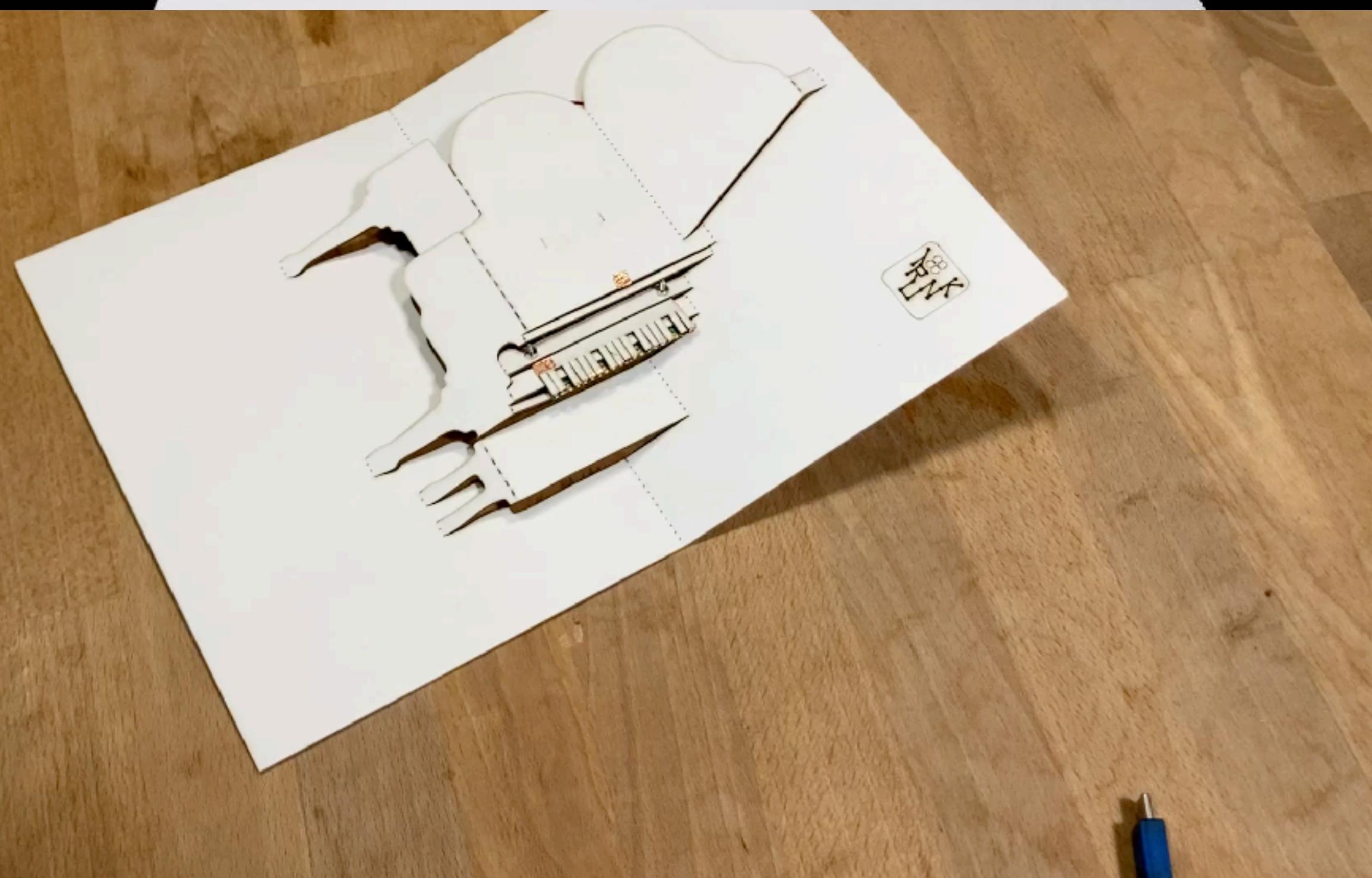
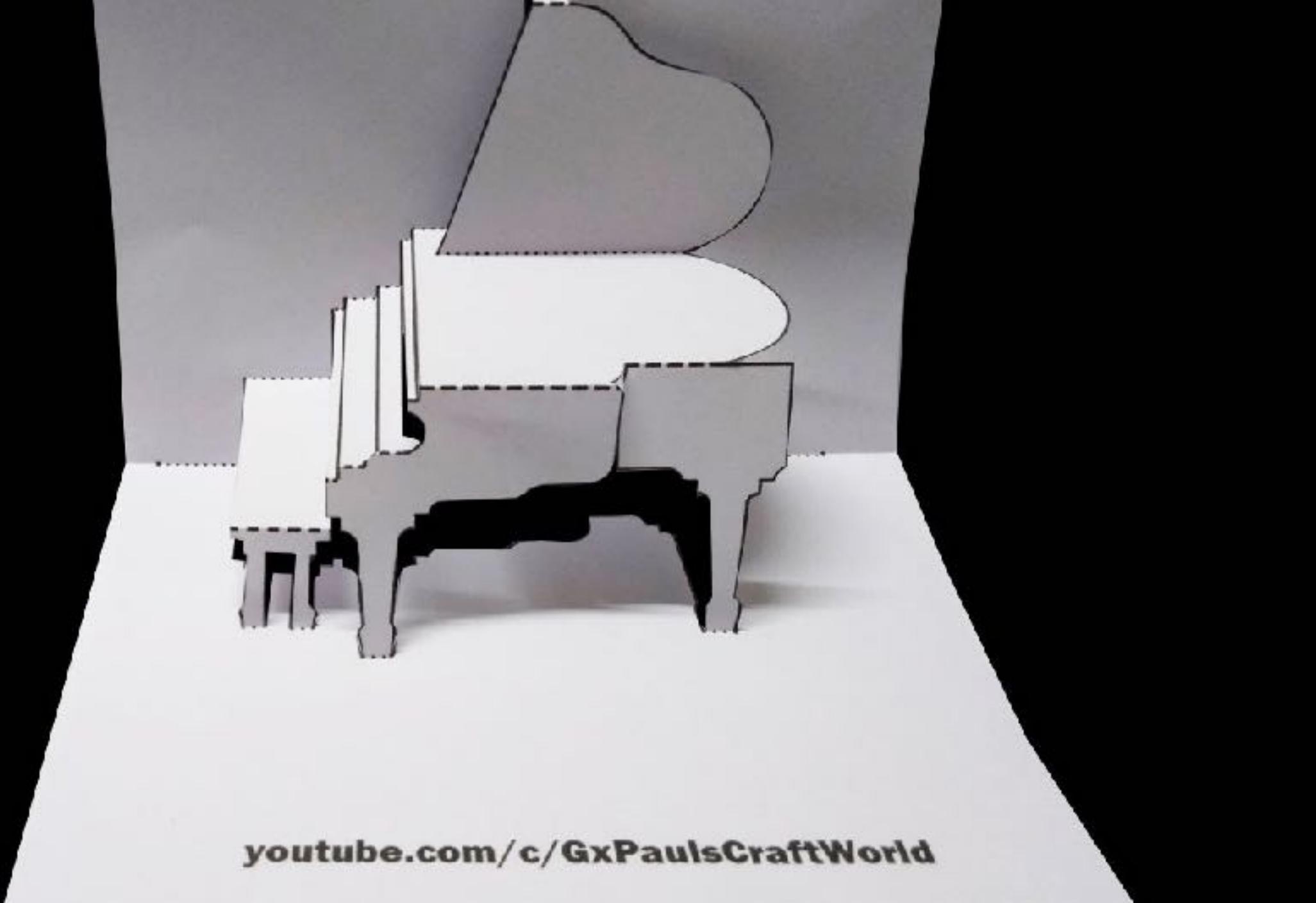
最簡單的形式

- 能理解接線
- 能寫簡單的程式

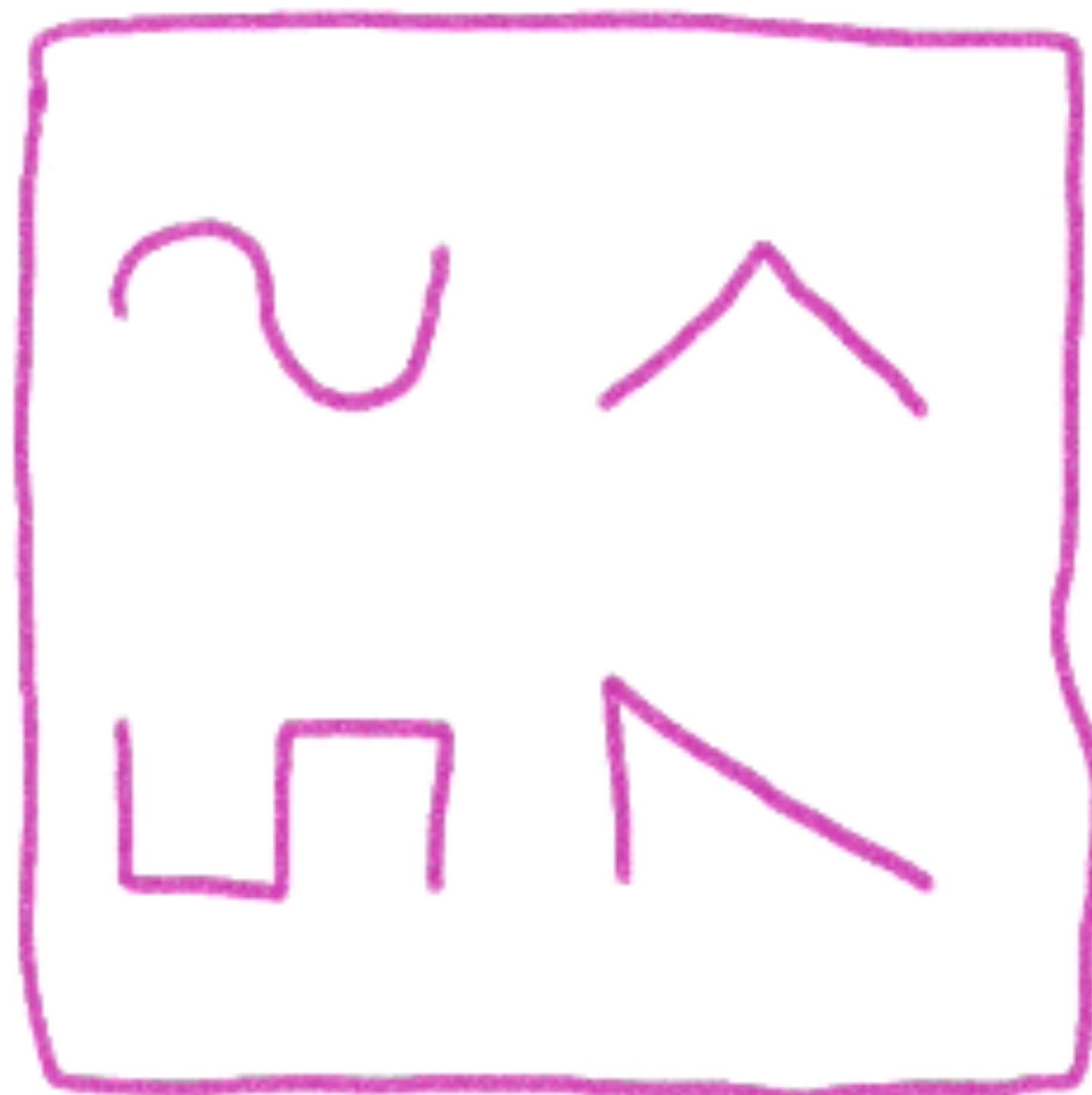


PIANO DXF

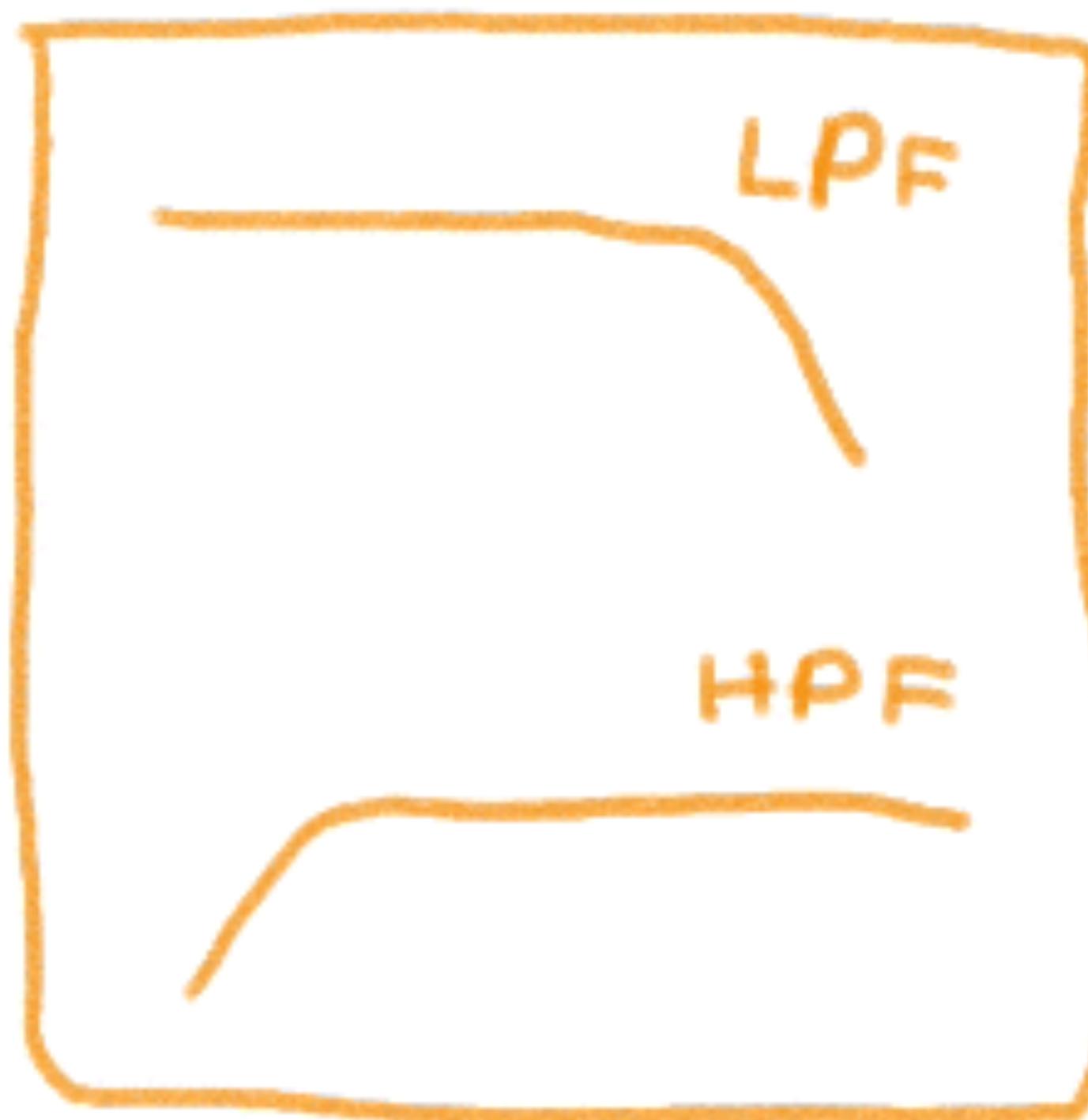




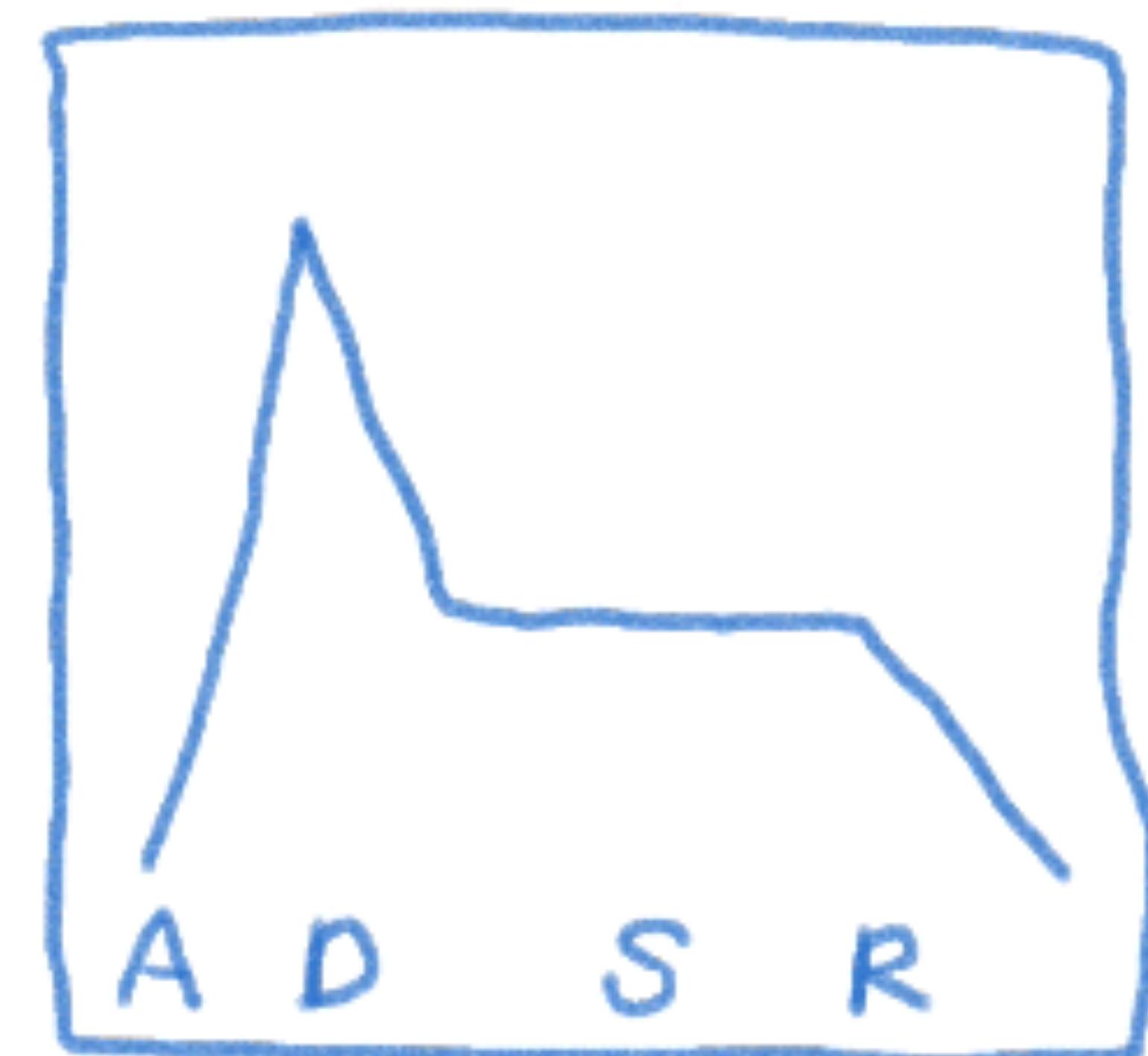
電子合成器



振盪器
Oscillator



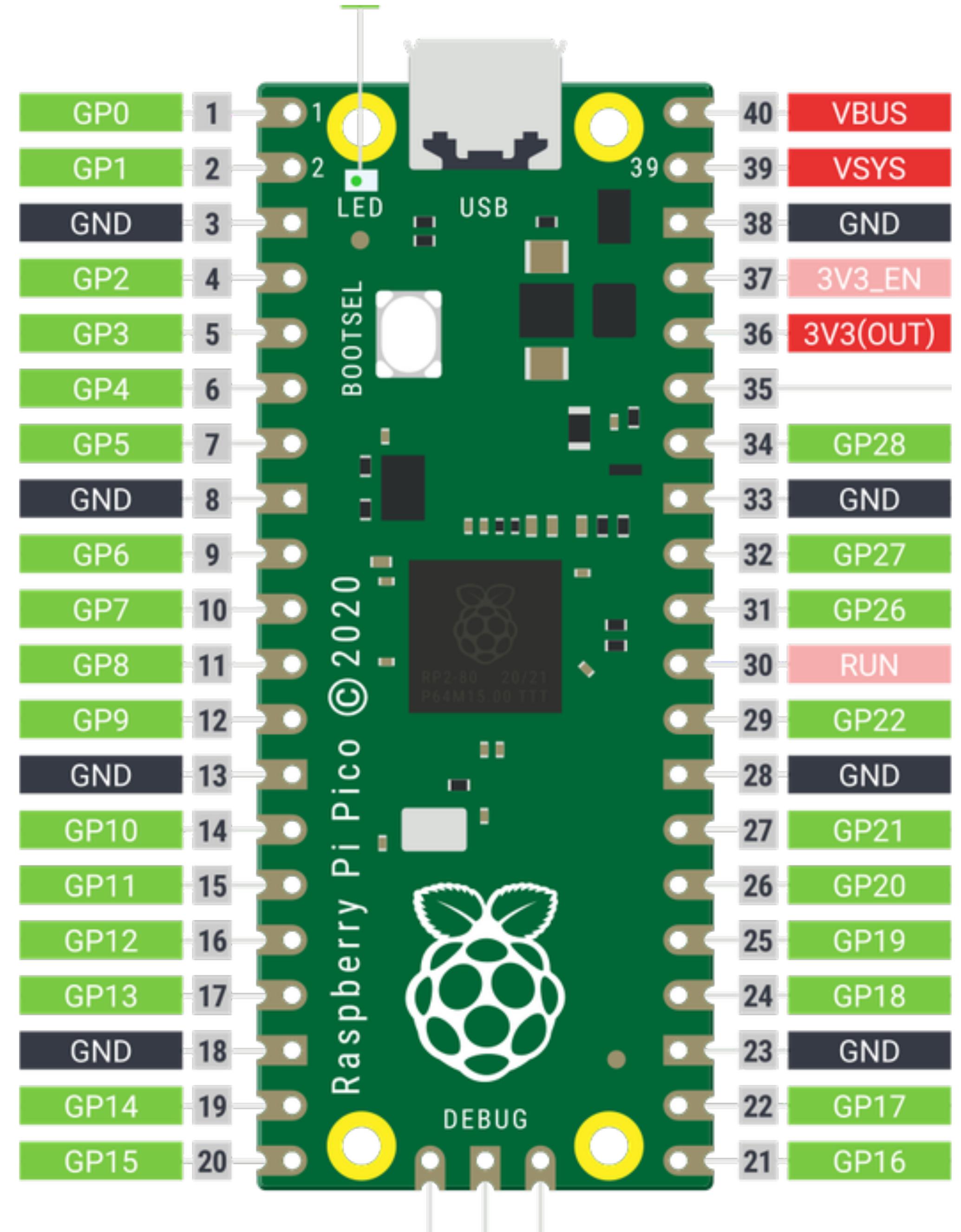
濾波器
Filter



擴大器
Amplifier

$$f = 440 \times 2^{(p-69)/12}$$

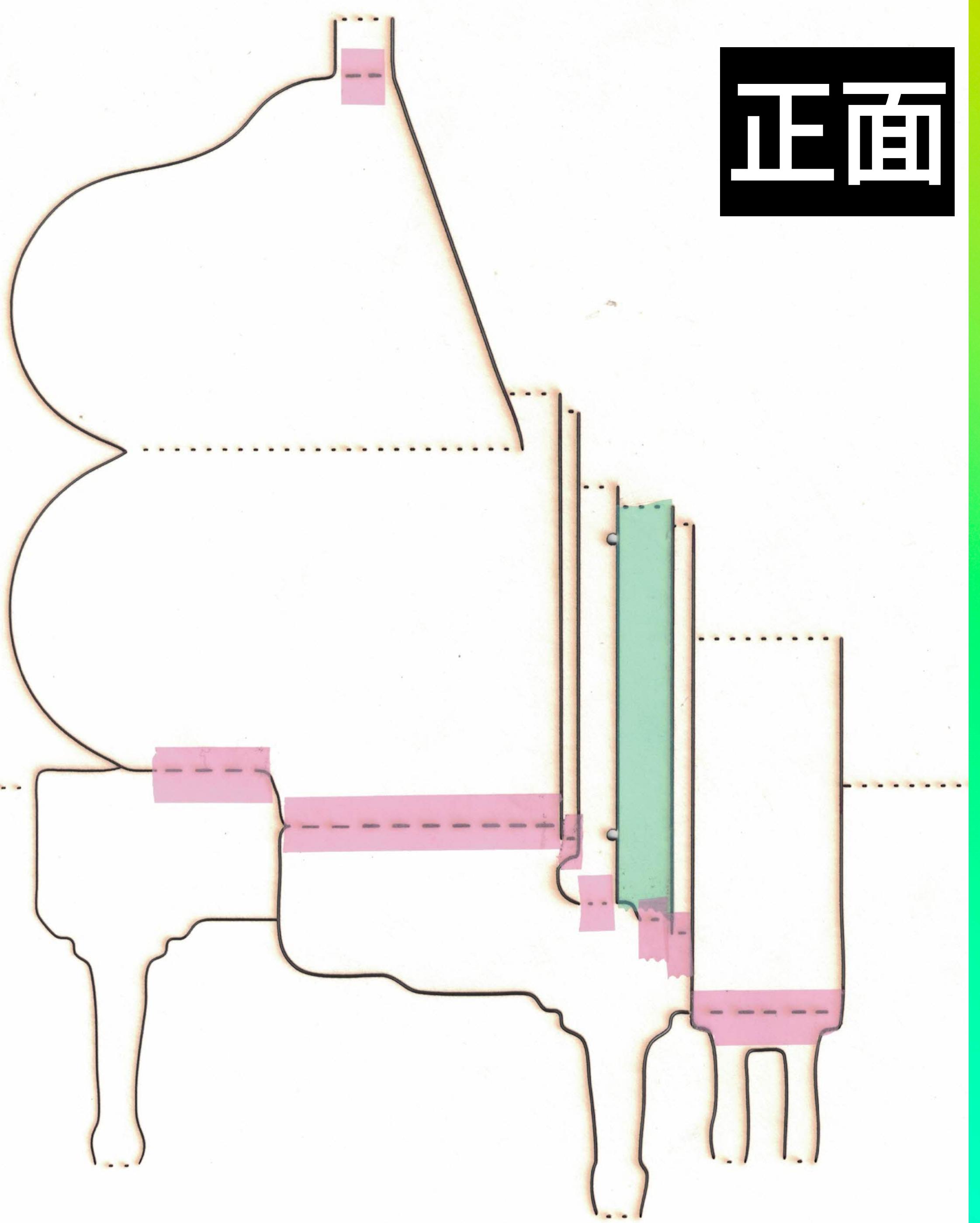
math.pow(x,y) = x^y
math.pow(2,(p-69/12))



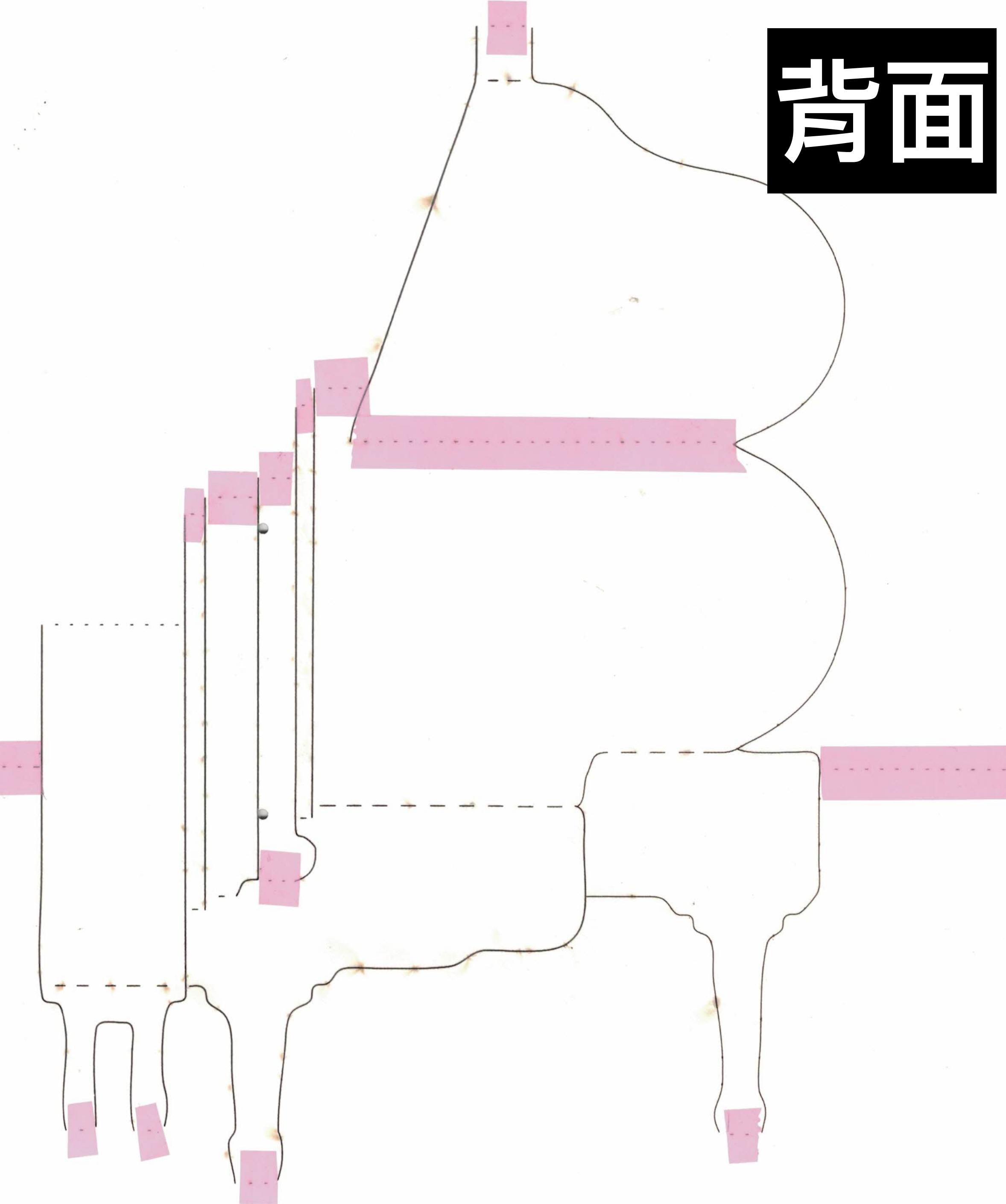
THONNY

- 介面使用
- 韌體操作
- 寫三行程式

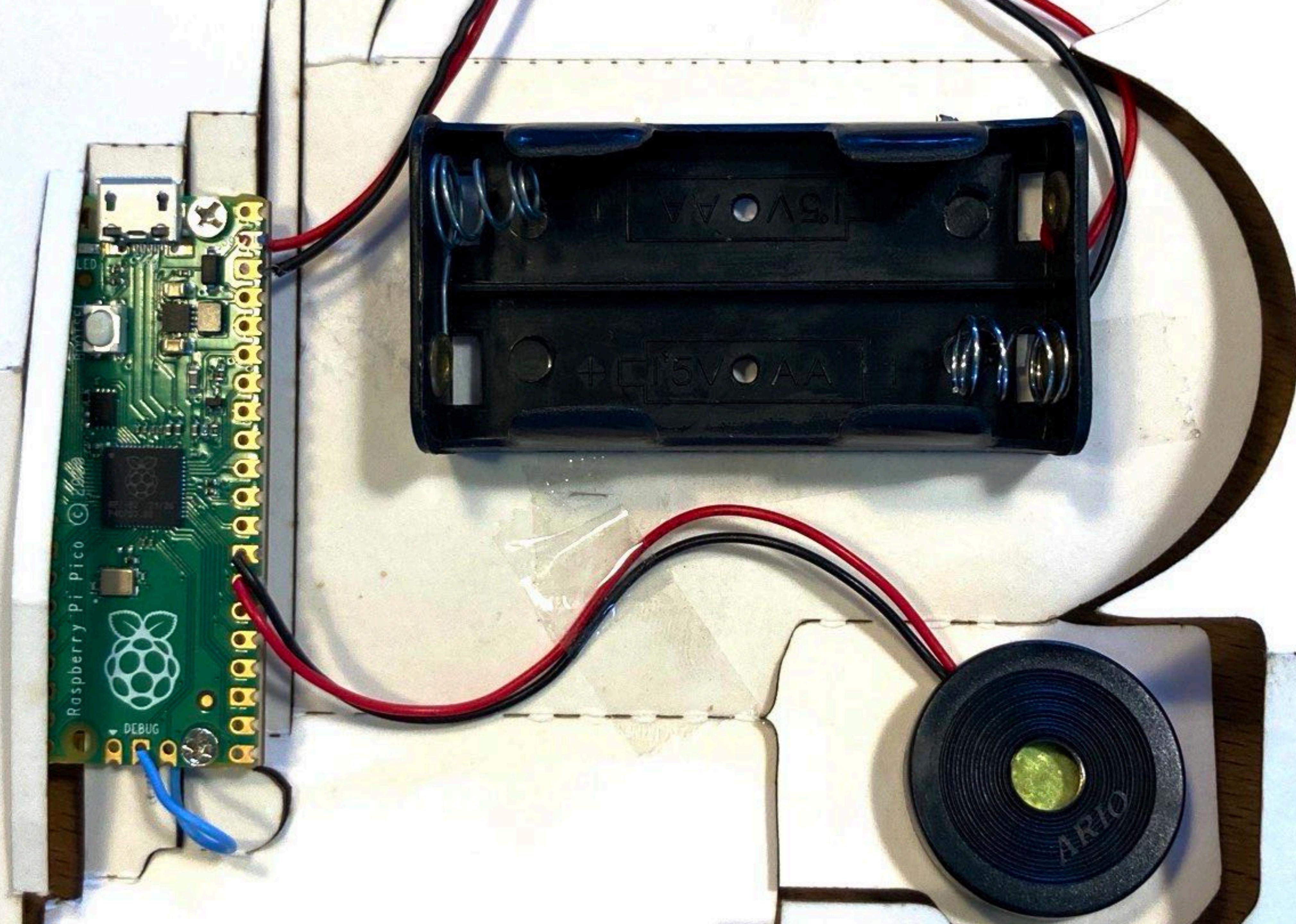




正面



背面



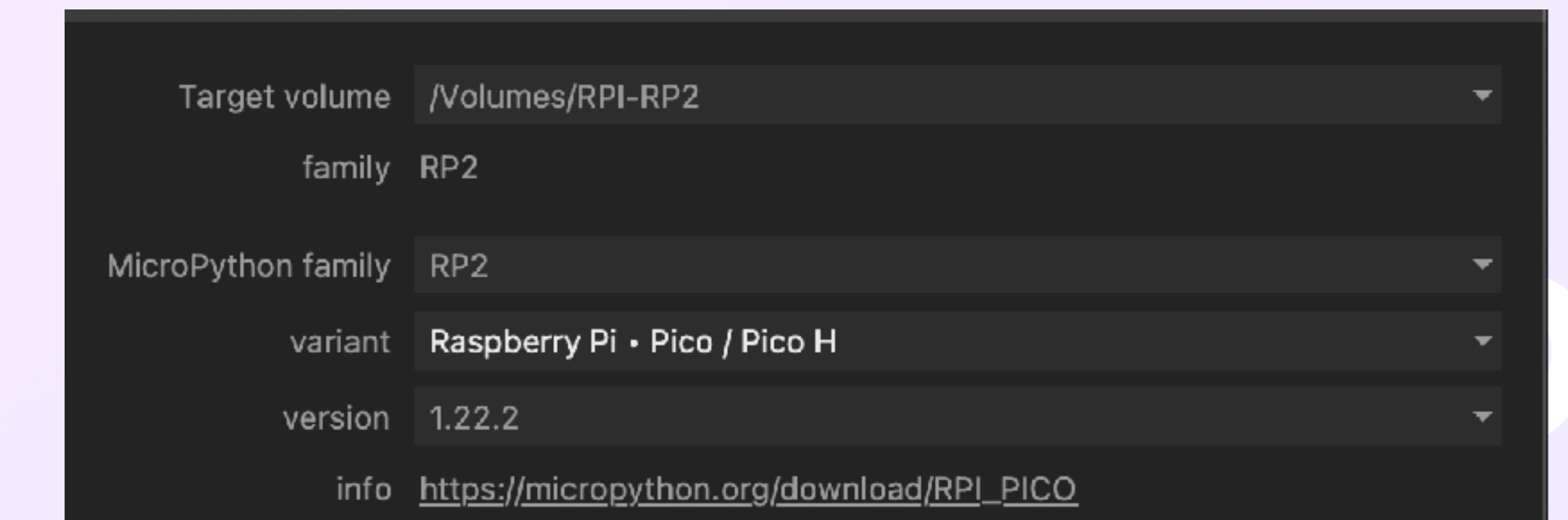
韌體

按住`BOOT SEL` - 插入USB--讀取如隨身碟

推薦使用

- 下載韌體
- 拖拉韌體進入
- 隨身碟顯示退出

- 工具 - 選項 - 直譯器
選 **PICO**
- 安裝或更新**MICROPYTHON**



檔案 × 00_pinTest.py ×

```
1 from machine import Pin, I2C, PWM
2 from ssd1306 import SSD1306_I2C#with package micropython(ssd1306)
3 import time
4
5 i2c=I2C(0,sda=Pin(20), scl=Pin(21), freq=40000)
6 oled = SSD1306_I2C(128, 64, i2c)
7 buzzer = PWM(Pin(12))
8 buzzer.freq(500)
9 buttonR = machine.Pin(16, machine.Pin.IN, machine.Pin.PULL_UP)#press = 0 , unpress = 1
10 buttonL = machine.Pin(15, machine.Pin.IN, machine.Pin.PULL_UP)
11
12 oled.fill(0)
13 oled.text('hello',0,0)
14 oled.text('hello2',0,10)#寫文字於(0,10)
15 oled.line(0,15,127,15,1)#畫條線(x0,y0,x1,y1,1)
16 oled.pixel(64,30,1)#放一個點於64,30
17 oled.show()
```

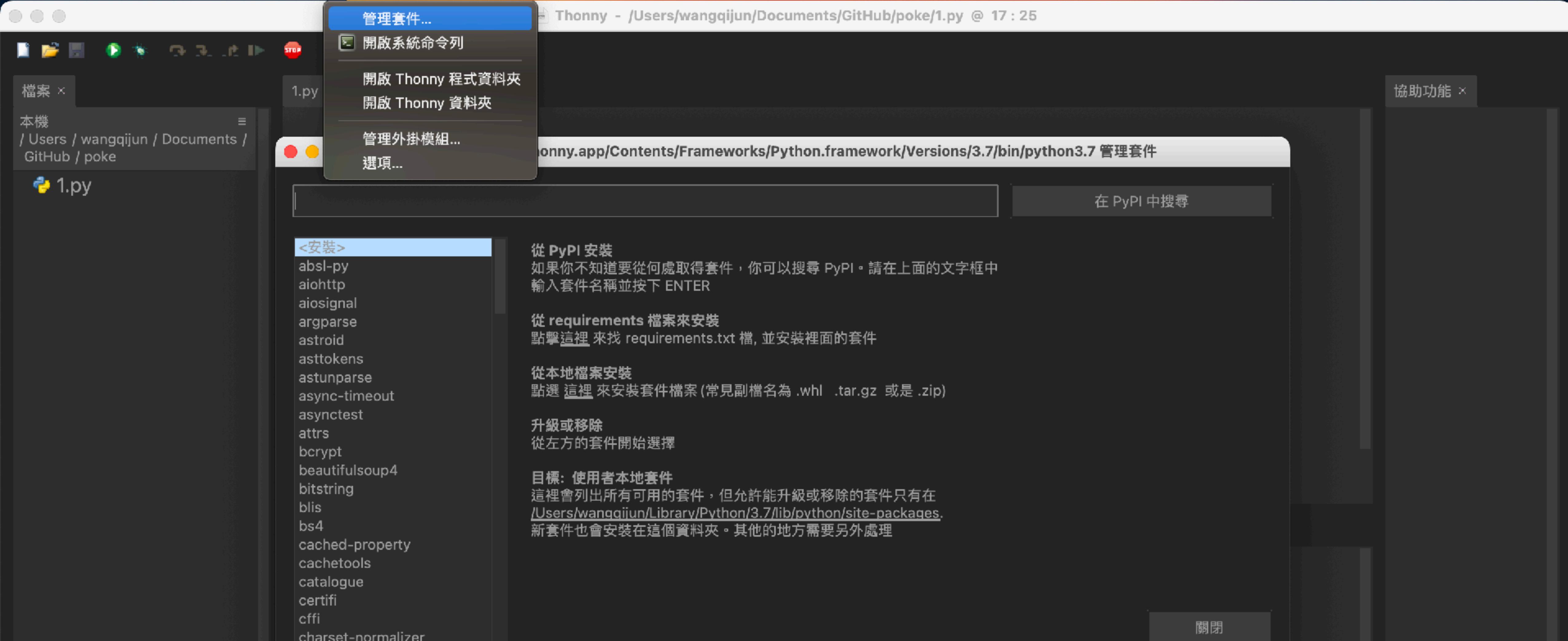
Raspberry Pi Pico ×

```
互動環境 (Shell) ×
Traceback (most recent call last):
File "main.py", line 120, in <module>
KeyboardInterrupt:
MicroPython v1.19.1 on 2022-06-18: Raspberry Pi Pico with RP2040
Type "help()" for more information.
>>>
```

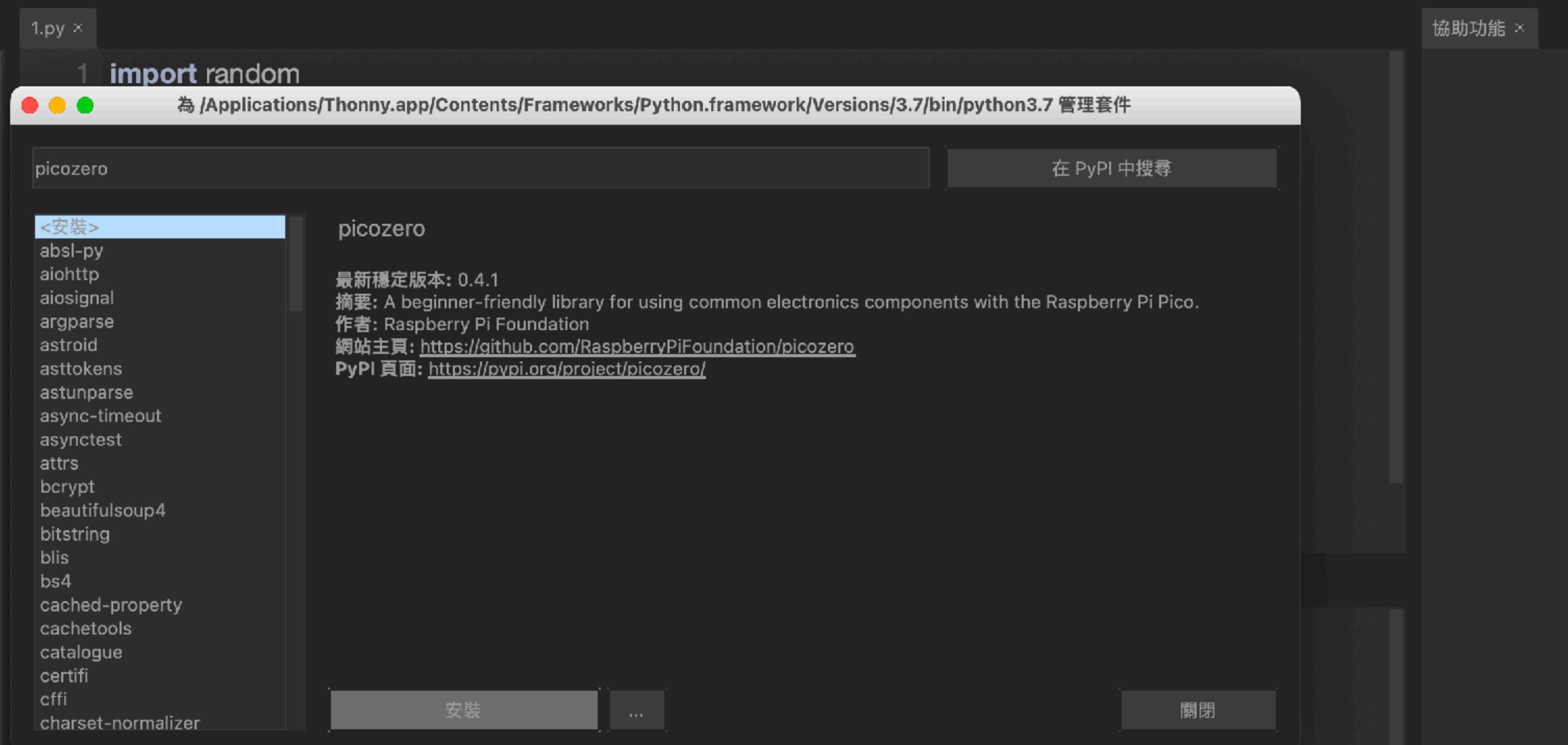
檢視 - 檔案

PICO

MicroPython (Raspberry Pi Pico) · /dev/ttym0



工具 - 管理套件



搜尋 *PICOZERO* - 安裝

Thonny - /Users/wangqijun/Documents/GitHub/poke/1.py @ 17 : 25

程式引數:

```
1 import random
2 suit = ('梅花','方塊','紅心','黑桃')#台灣小到大
3 rank = ('3','4','5','6','7','8','9','10','J','Q','K','A')
4 desklis
5
6 def shu
Raspberry Pi Pico
```

另存新檔
RASPBERRY PI PICO

Raspberry Pi Pico

MicroPython v1.22.2 on 2024-02-22; Raspberry Pi Pico with RP2040

Type "help()" for more information

另存 main.py

通電即執行