1. My github link is : [KlausChow2023/NCL\_Indiv\_Project: With Leap Motion 1 (github.com)](https://github.com/KlausChow2023/NCL_Indiv_Project)
2. Install Python 3.8.6 & Leap Motion Control Panel Orion V4.1.0
3. 一張含有 文字, 螢幕擷取畫面, 字型, 設計 的圖片

   自動產生的描述Download LEAP\_SDK\_PY3.8.6, and put below 3 files in project content same as code
4. Test Leap connect or not with below code:

import Leap  
import time  
  
controller = Leap.Controller()  
t = 0  
while controller.is\_connected == 0:  
 print("Can not connect Device"**,**end=' ')  
 time.sleep(1)  
 t = t + 1  
 print(f"Time consume {t} s")  
  
print("Connected")

1. Get hand type and position frame data every 0.5s with below code:

print("Shihao Zhou, ID: 230594553")  
print("Individual Project with LEAP MOTION 1")  
print("[Python 3.8.6],[Leap Orion V4.1.0]")  
  
import Leap  
import time  
  
 # 定义延迟函数  
dly = time.sleep  
 # 获取当前时间  
current\_t = time.ctime()  
  
 # 创建一个控制器对象  
controller = Leap.Controller()  
  
while True:  
 # 创建一个帧对象  
 frame = controller.frame()  
  
 if not frame.hands.is\_empty: # 检测手部，如果有则执行下列语句  
 for hand in frame.hands:  
 hand\_type = "Left Hand" if hand.is\_left else "Right Hand"  
 # 创建一个手掌对象  
 hand\_position = hand.palm\_position  
 # 要输出的信息  
 output = f"It's your [{hand\_type}], and position is: {hand\_position}\n"  
 print(output)  
 # 以追加模式在指定文件内写入输出的数据  
 f = open('C:\\Users\\Klaus\\Desktop\\Indiv Project\\With Python\\LEAP\\Hand Track Data\\Track\_data.txt'**,** "a"**,**)  
 # 在每行数据前加上当前时间  
 f.write(f'{current\_t} >>> ')  
 f.write(output)  
 # 关闭文件  
 f.close()  
 # 以0.5s作为每次检测间隔  
 dly(0.5)  
 break  
 else:  
 print("Where is your hand?")  
 dly(0.5)

Then create a Track\_data.txt file at folder \\Hand Track Data like below:

一張含有 文字, 螢幕擷取畫面, 字型, 數字 的圖片

自動產生的描述

1. If we want to get a JSON file, with code like below:

import json  
  
# 输入的文本文件路径  
i\_file = 'C:\\Users\\Klaus\\Desktop\\Indiv Project\\With Python\\LEAP\\Hand Track Data\\Track\_data.txt'  
  
# 输出的 JSON 文件路径  
o\_file = 'C:\\Users\\Klaus\\Desktop\\Indiv Project\\With Python\\LEAP\\Hand Track Data\\Track\_data.json'  
  
# 准备存储数据的列表  
data\_to\_save = []  
  
 # 以只读方式打开输入的文件  
with open(i\_file**,** 'r') as f:  
 # 一次性读取全部行  
 lines = f.readlines()  
  
# 解析每一行数据  
for line in lines:  
 # 去除换行符和空格  
 line = line.strip()  
 if line:  
 # 按照文档内容的格式进行分割和提取  
 timestamp\_part**,** data\_part = line.split(" >>> It's your")  
 timestamp = timestamp\_part.strip()  
 hand\_type**,** position\_str = data\_part.strip().split(", and position is: ")  
 position = eval(position\_str) # 将位置信息字符串转换为元组  
  
 # 构建字典  
 entry = {  
 "timestamp": timestamp**,** "hand\_type": hand\_type.strip("[]")**,** "position": position  
 }  
  
 # 添加到数据列表中  
 data\_to\_save.append(entry)  
  
 # 将数据保存为 JSON 文件  
with open(o\_file**,** 'w') as f:  
 # indent=4，代表每个级别缩进四个空格。  
 json.dump(data\_to\_save**,** f**,** indent=4)  
  
print('-----JSON Covert Done-----')

Then create a Track\_data.json file at folder \\Hand Track Data like below:

一張含有 文字, 螢幕擷取畫面, 軟體, 陳列 的圖片

自動產生的描述

1. Which hand Fist or Palm Detect with code like below:
2. import Leap  
   import time  
     
   dly = time.sleep  
     
    # 创建一个控制器对象  
   controller = Leap.Controller()  
     
   while True:  
    # 获取当前帧数据  
    frame = controller.frame()  
     
    # 检查是否有任何手部数据  
    if not frame.hands.is\_empty:  
    for hand in frame.hands:  
    # 检测左右手  
    hand\_type = "Left Hand" if hand.is\_left else "Right Hand"  
    # 检测手的握拳程度  
    if hand.grab\_strength > 0.5:  
    print(f"{hand\_type} >> Fist")  
    dly(0.5)  
    else:  
    print(f"{hand\_type} >> Palm")  
    dly(0.5)  
    break  
    else:  
    print()  
    print("Where is your hand?")  
    dly(0.5)

Result like:

***Where is your hand?***

***Right Hand >> Palm***

***Right Hand >> Palm***

***Right Hand >> Fist***

***Where is your hand?***

***Left Hand >> Palm***

***Where is your hand?***

***Where is your hand?***

***Left Hand >> Fist***

***Left Hand >> Fist***

1. Fatal Bug!

SystemError: <built-in function delete\_HandList> returned a result with an error set

一張含有 字型, 螢幕擷取畫面, 文字, 圖形 的圖片

自動產生的描述

Its SDK Problem, cant fix. But I am trying to find another method to recognize 2 hands.

Can not fix bug, but I find another method to realize the function.

I use “try…… except……” to skip the error.

And result as below:

>hand\_id<110>hand\_type<Left Hand>hand\_position<(209.063, 121.091, 130.188)>finger\_id<1100>finger\_type<Thumb>finger\_tip\_position<(255.431, 141.585, 114.671)

>hand\_id<110>hand\_type<Left Hand>hand\_position<(209.063, 121.091, 130.188)>finger\_id<1101>finger\_type<Index Finger>finger\_tip\_position<(268.051, 122.456, 112.402)

>hand\_id<110>hand\_type<Left Hand>hand\_position<(209.063, 121.091, 130.188)>finger\_id<1102>finger\_type<Middle Finger>finger\_tip\_position<(257.579, 124.274, 133.055)

>hand\_id<110>hand\_type<Left Hand>hand\_position<(209.063, 121.091, 130.188)>finger\_id<1103>finger\_type<Ring Finger>finger\_tip\_position<(245.951, 104.423, 141.5)

>hand\_id<110>hand\_type<Left Hand>hand\_position<(209.063, 121.091, 130.188)>finger\_id<1104>finger\_type<Little Finger>finger\_tip\_position<(236.627, 92.3647, 140.204)

One measure done

Then covert the data to json:

一張含有 文字, 螢幕擷取畫面 的圖片

自動產生的描述

1. Try to learn how to use IoT platform, I try to use [Adafruit IO]

ADAFRUIT\_IO\_USERNAME = "ShihaoZhou"

ADAFRUIT\_IO\_KEY = "aio\_riAL12yLeinhQrcZv2NcrUQTEupr"

Update Json data to dashboard like below:

一張含有 文字, 電子產品, 螢幕擷取畫面, 軟體 的圖片

自動產生的描述

1. Use below codes to generate json format data directly

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自動產生的描述

1. USE a browser to control my code like below:

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自動產生的描述

1. Try to make a portable version of this project, I use Ras p 3 B+ as a dev board. BUT Its ARM structure ,Leap Motion doesn’t support arm structure.

So I try to use VNC tool to connect Pi with my laptop, its working. But It is not portable anymore. So really annoying, I waste 4 days Finally find SDK for Linux but not working.

一張含有 文字, 電子產品, 螢幕擷取畫面, 陳列 的圖片

自動產生的描述



1. Got Permission now, give up the development of Portable system

一張含有 文字, 螢幕擷取畫面, 字型, 數字 的圖片

自動產生的描述

1. 0
2. 0
3. 0
4. 0
5. 0