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

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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. 0
2. 0
3. 0
4. 0
5. 0
6. 0
7. 0
8. 0
9. 0
10. 0
11. 0
12. 0
13. 0