

同動車 API 簡易使用說明

一、登入小電腦

1. 輸入登入密碼：itri
2. 連線到 AP (Access Point)

二、執行 python 程式

1. 開啟 Terminal



2. 取得小電腦的 IP 位址

```
ifconfig -a
```

```
ltri@ltri: ~
ltri@ltri: $ ifconfig -a
eno1: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
      ether 80:ee:73:f8:1d:5a txqueuelen 1000  (Ethernet)
      RX packets 0 bytes 0 (0.0 B)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 0 bytes 0 (0.0 B)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
      device interrupt 19 memory 0x80900000-80920000

enp1s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
      ether 80:ee:73:f8:1d:59 txqueuelen 1000  (Ethernet)
      RX packets 0 bytes 0 (0.0 B)
      RX errors 0 dropped 0 overruns 0 frame 0
      TX packets 0 bytes 0 (0.0 B)
      TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
      device interrupt 19 memory 0x80a00000-80afffff

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
      inet 127.0.0.1 netmask 255.0.0.0
      inet6 ::1 prefixlen 128 scopeid 0x10<host>
          loop txqueuelen 1000  (Local Loopback)
          RX packets 5009 bytes 359309 (359.3 KB)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 5009 bytes 359309 (359.3 KB)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp2s0: flags=4163<IP,BROADCAST,RUNNING,MULTICAST> mtu 1500
      inet 192.168.135.234 netmask 255.255.255.0 broadcast 192.168.135.255
          inet6 2401:e180:8dec:7f56:a44f:f4da:3f7c prefixlen 64 scopeid 0x0<global>
          inet6 fe80::4d3a:1b1a:4eec:7b12 prefixlen 64 scopeid 0x20<link>
          ether b4:8c:9d:1b:bf:33 txqueuelen 1000  (Ethernet)
          RX packets 140662 bytes 207478943 (207.4 MB)
          RX errors 0 dropped 0 overruns 0 frame 0
          TX packets 76518 bytes 9238056 (9.2 MB)
          TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

ltri@ltri: $
```

3. 輸入以下指令以切換至程式目錄

```
cd ~/Downloads/
```

4. 執行手部追蹤程式

```
python3 websocket_hand_tracking_0106.py
```

三、 在筆電上執行網頁測試程式

1. 確認筆電已連線至與小電腦相同的 AP (網路)
2. 使用瀏覽器開啟 artist.html
 - ① 輸入小電腦的 IP 位址
 - ② 點擊「連接」按鈕
 - ③ 連接成功後，狀態燈號會轉為綠色，並顯示「已連接」
 - ④ 系統將即時偵測左手座標，並顯示於畫布中
 - ⑤ 畫面下方會顯示目前偵測到的左手座標值與移動速度
 - ⑥ 系統運作與連線狀態會顯示於 Log 訊息區



四、 API 使用方式（以 Web 為例）

```
function connect() {
    // 修改這裡為小電腦的 IP 位址
    const raspberryPiIP = document.getElementById('serverIP').value || '192.168.1.100';
    const wsUrl = `ws://${raspberryPiIP}:8765`;
    addLog(`正在連接到 ${wsUrl}...`);

    try {
        ws = new WebSocket(wsUrl);
        透過 WebSocket 與小電腦建立即時連線
        ws.onopen = () => {
            updateStatus(true, '已連接');
            addLog('WebSocket 連接成功');
            document.getElementById('connectBtn').disabled = true;
            document.getElementById('disconnectBtn').disabled = false;
        };
    }

    ws.onmessage = (event) => {
        const message = JSON.parse(event.data);
        接收手部追蹤資料
        if (message.type === 'connection') {
            addLog(`模式: ${message.mode}, 解析度: ${message.resolution.width}x${message.resolution.height}`);
        } else if (message.type === 'tracking_data') {
            updateData(message.data);
        }
    };

    ws.onerror = (error) => {
        addLog('WebSocket 錯誤: ' + error);
        updateStatus(false, '連接錯誤');
    };

    ws.onclose = () => {
        updateStatus(false, '連接已關閉');
        addLog('WebSocket 連接已關閉');
        document.getElementById('connectBtn').disabled = false;
        document.getElementById('disconnectBtn').disabled = true;
        positions = [];
        clearCanvas();
    };
} catch (error) {
    addLog('連接失敗: ' + error.message);
    updateStatus(false, '連接失敗');
}

}

function updateData(data) {
    document.getElementById('xValue').textContent = data.x;
    document.getElementById('yValue').textContent = data.y;
    document.getElementById('velocityValue').textContent = data.velocity.toFixed(1);

    // 添加位置到軌跡
    positions.push({
        x: data.x / 1920 * canvas.width,
        y: canvas.height - (data.y / 1080 * canvas.height)
    });

    if (positions.length > MAX_POSITIONS) {
        positions.shift();
    }

    drawTracking();
}
```

資料內容包含左手的 X、Y 座標及移動速度，可供前端應用或互動設計使用