

```
1 import mediapipe as mp
2 import cv2
3 import threading
4 import socket
5 import time
6
7
8 host = '0.0.0.0'
9 port = 8889
10 #host = '192.168.10.2'
11 #port = 8889
12 locaddr = (host, port)
13
14
15
16 # Create a UDP socket
17 sock = socket.socket(socket.AF_INET, socket.SOCK_DGRAM)
18
19 tello_address = ('192.168.10.1', 8889)
20
21 sock.bind(locaddr)
22
23 def recv():
24     while True:
25         try:
26             data, server = sock.recvfrom(1518)
27             print(data.decode(encoding="utf-8"))
28         except Exception:
29             print('\nExit . . . RECV\n')
30             break
31
32 recvThread = threading.Thread(target=recv)
33 recvThread.start()
34 #send sdk
35 sock.sendto(b'command', tello_address)
36 print('command ok')
37 time.sleep(0.5)
38
39 time.sleep(1)
40 #sock.sendto(b'takeoff', tello_address)
41 #time.sleep(2)
42 #sock.sendto(b'up 80', tello_address)
43 #time.sleep(2)
44 sock.sendto(b'streamon', tello_address)
45 print('stream on')
46
47 LOCAL_IP = '192.168.10.1'
48 LOCAL_PORT = '11111'
49 addr = ("udp://%s:%s?overrun_nonfatal=1&fifo_size=5000000" % ('192.168.10.1',
50 '11111'))
51 cap = cv2.VideoCapture(addr)
52 cap.set(cv2.CAP_PROP_BUFFERSIZE, 2)
53
54
55 print('start cap')
56
57 mpHands = mp.solutions.hands
58 hands = mpHands.Hands()
59 mpDraw = mp.solutions.drawing_utils
60 while True:
```

```

59     ret, frame = cap.read()
60     # frame = cv2.flip(frame, 1)    #映像を左右反転させる。
61     if frame is None or frame.size == 0:
62         continue
63     resize_frame = cv2.resize(frame, dsize=(480, 360))
64     imageRGB = cv2.cvtColor(resize_frame, cv2.COLOR_BGR2RGB)
65
66     results = hands.process(imageRGB)
67     if results.multi_hand_landmarks:
68         for handLms in results.multi_hand_landmarks:
69             for id, lm in enumerate(handLms.landmark):
70                 h, w, c = frame.shape
71                 cx, cy = int(lm.x * w), int(lm.y * h)
72                 mpDraw.draw_landmarks(resize_frame, handLms, mpHands.HAND_CONNECTIONS)
73
74     lmList = []
75     handNo = 0
76     draw = True
77     if results.multi_hand_landmarks:
78         myHand = results.multi_hand_landmarks[handNo]
79         for handLms in results.multi_hand_landmarks:           #landmark
80             for id, lm in enumerate(handLms.landmark):
81                 #print(id, lm)
82                 h, w, c = frame.shape
83                 cx, cy = int(lm.x * w), int(lm.y * h)
84                 #print(id, cx, cy)
85                 lmList.append([id, cx, cy])
86                 #print(lmList)
87
88     #tipIds = [4, 8, 12, 16, 20]
89
90     if len(lmList) != 0:
91         if lmList[8][2] < lmList[6][2]:    #人差し指
92             sock.sendto(b'takeoff', tello_address)
93             print('takeoff')
94
95         #if lmList[4][2] < lmList[2][2]:    #親指 認識が難しかったです。
96         #    print('down')
97         if lmList[12][2] < lmList[10][2]: #中指
98             sock.sendto(b'forward 30', tello_address)
99             print('forward')
100        #    time.sleep(2)
101        #if lmList[16][2] < lmList[14][2]:    #薬指 関節が硬いので立たせるのが困難
102        #    print('left')
103        if lmList[20][2] < lmList[18][2]: #小指
104            sock.sendto(b'back 30', tello_address)
105            print('back')
106
107
108
109     cv2.imshow("Output", resize_frame)
110     if cv2.waitKey(1) & 0xff == 27:
111         break
112     sock.sendto(b'land', tello_address)
113     cap.release()
114     cv2.destroyAllWindows()
115     sock.close()

```