import cv2  
import mediapipe as mp  
import pyautogui  
cap = cv2.VideoCapture(0)  
hand\_detector = mp.solutions.hands.Hands()  
drawing\_utils = mp.solutions.drawing\_utils  
screen\_width, screen\_height = pyautogui.size()  
index\_y = 0  
while True:  
 \_, frame = cap.read()  
 frame = cv2.flip(frame, 1)  
 frame\_height, frame\_width, \_ = frame.shape  
 rgb\_frame = cv2.cvtColor(frame, cv2.COLOR\_BGR2RGB)  
 output = hand\_detector.process(rgb\_frame)  
 hands = output.multi\_hand\_landmarks  
 if hands:  
 for hand in hands:  
 drawing\_utils.draw\_landmarks(frame, hand)  
 landmarks = hand.landmark  
 for id, landmark in enumerate(landmarks):  
 x = int(landmark.x\*frame\_width)  
 y = int(landmark.y\*frame\_height)  
 if id == 8:  
 cv2.circle(img=frame, center=(x,y), radius=10, color=(0, 255, 255))  
 index\_x = screen\_width/frame\_width\*x  
 index\_y = screen\_height/frame\_height\*y  
 pyautogui.moveTo(index\_x, index\_y)  
 if id == 4:  
 cv2.circle(img=frame, center=(x,y), radius=10, color=(0, 255, 255))  
 thumb\_x = screen\_width/frame\_width\*x  
 thumb\_y = screen\_height/frame\_height\*y  
 print('outside', abs(index\_y - thumb\_y))  
 if abs(index\_y - thumb\_y) < 20:  
 pyautogui.click()  
 pyautogui.sleep(1)  
 cv2.imshow('Virtual Mouse', frame)  
 cv2.waitKey(1)