

```

import cv2
import numpy as np
import pyautogui
import time
cap = cv2.VideoCapture(0)

if not cap.isOpened():
    print("Error: the camera is not opened")
    exit()

prev_y= None
prev_time= time.time()

print("Hand motion detected will now control scrolling")

while True:
    ret, frame = cap.read()
    if not ret:
        print("Error Failed to open image")
        break
    frame= cv2.flip(frame,1)

    hsv=cv2.cvtColor(frame,cv2.COLOUR_BGR2HSV)
    lowerskin = np.array([0,20,70],dtype=np.uint8)
    upperskin = np.array([20,255,255],dtype=np.uint8)

    mask = cv2.inRange(hsv,lowerskin,upperskin)
    result= cv2.bitwise_and(frame,frame,mask=mask)

    contours, _ = cv2.findContours(mask, cv2.RETR_EXTERNAL,cv2.CHAIN_APPROX_SIMPLE)
    if contours:
        maxcontour = max(contours,key=cv2.contourArea)
        if cv2.contourArea(maxcontour)>500:
            x,y,w,h =cv2.boundingRect(maxcontour)
            cv2.rectangle(frame, (x,y) (x+w,y+h), (0,255,0),2)
            centerx= int(x+w/2)
            centery= int(y+h/2)
            cv2.circle(frame, (centerx,centery),5, (0,0,255),-1)
            if prev_y is not None:
                if centery < prev_y-10:
                    pyautogui.scroll(10)
                    print("Scrolled Up")

```

```
        elif centery > prev_y + 10:
            pyautogui.scroll(-10)
            print("Scrolled Down")

    prev_y=centery

    curr_time=time.time()
    fps = 1/ (curr_time -prev_time)
    prev_time=curr_time

cv2.putText(frame,f"FPS:{int(fps)}", (10,30),cv2.FONT_HERSHEY_SIMPLEX,1,(255,255,255),2)
cv2.imshow("Original Frame",frame)
cv2.imshow("Filtered Frame",result)

key= cv2.waitKey(1) & 0xFF
if key == ord("q"):
    break

cap.release()
cv2.destroyAllWindows()
```