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People counter 7 – Defining a person

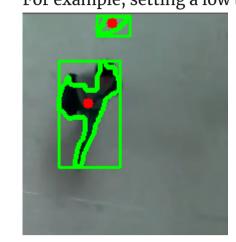
Now comes the interesting part, how do we classify a contour as a person?

A simple, but effective, step could be defining a minimum area the contour must have:

Define a minimum area, find contours, for each contour get the area and if it's more than the threshold do something.

A threshold value is not universal, meaning that is depends on your video stream, you need to test different values until it works with your video.

For example, setting a low threshold will get you things like this:



While setting on too high will get you:



No more than that.

Here's the code:

```
import numpy as np
 import cv2
cap = cv2.VideoCapture('peopleCounter.avi') #Open video file
fgbg = cv2.createBackgroundSubtractorMOG2(detectShadows = True) #Create the background substractor
kernelOp = np.ones((3,3),np.uint8)
kernelCl = np.ones((11,11),np.uint8)
areaTH = 500
 while(cap.isOpened()):
   ret, frame = cap.read() #read a frame
    fgmask = fgbg.apply(frame) #Use the substractor
        ret,imBin= cv2.threshold(fgmask,200,255,cv2.THRESH_BINARY)
        #Opening (erode->dilate) para quitar ruido.
        mask = cv2.morphologyEx(imBin, cv2.MORPH_OPEN, kernelOp)
        #Closing (dilate -> erode) para juntar regiones blancas.
        mask = cv2.morphologyEx(mask , cv2.MORPH_CLOSE, kernelCl)
     except:
        #if there are no more frames to show...
        print('EOF')
        break
     _, contours0, hierarchy = cv2.findContours(mask,cv2.RETR_EXTERNAL,cv2.CHAIN_APPROX_NONE)
     for cnt in contours0:
       cv2.drawContours(frame, cnt, -1, (0,255,0), 3, 8)
        area = cv2.contourArea(cnt)
        print area
         if area > areaTH:
            ###################
           # TRACKING #
            ###################
           M = cv2.moments(cnt)
            cx = int(M[<mark>'m10'</mark>]/M[<mark>'m00'</mark>])
            cy = int(M[<mark>'m01'</mark>]/M[<mark>'m00'</mark>])
            x,y,w,h = cv2.boundingRect(cnt)
            cv2.circle(frame,(cx,cy), 5, (0,0,255), -1)
            img = cv2.rectangle(frame,(x,y),(x+w,y+h),(\emptyset,255,\emptyset),2)
    cv2.imshow('Frame',frame)
    #Abort and exit with 'Q' or ESC
   k = cv2.waitKey(30) & 0xff
    if k == 27:
        break
cap.release() #release video file
cv2.destroyAllWindows() #close all openCV windows
```

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