Tracker code explaination

class CusTrackers: the mother class contains all functions and subclasses

class perTracker: the class for 1 tracker

class perDetectContour : the class for a contour detected by detector

class occulusionedBox: the class for a tracker box which is temporarily blocked

class perBorder: the class of a border, used for counting people get in / get out.

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when used call functions with this order:

custrackers=CusTrackers() #create a mother tracker object

custrackers.updateframe(image) #load the image to the object

custrackers.clearDetectionContours() #clear detected contours from the last frame

for points in pointslist: # update each detected contour

person\_contour=(points[0],points[1],points[2],points[3])

custrackers.addDetectionContours(person\_contour)

custrackers.updateTrackers() #update opencv trackers

custrackers.adjustTrackersbyDetection() # addjust tracker location if it's too far away from the location it should be, the standard location is provided by the detection contour the tracker nox is in.

custrackers.recordPatternofNear()

custrackers.retireTrackersAndOcculusion()

custrackers.addTrackersbyDetection() #add new trackers by detection contour

custrackers.nms() # Non-Maximum Suppression

custrackers.updateBorders() #check if borders are crossed by people

Variables explaination

class perTracker:

def \_\_init\_\_(self,no,box,frame,tracker\_type,typef):

self.lostTrackCnt=0 # how many time this tracker losts its tracking, not used.

self.noDetectionCnt=0 # how many time this tracker is not backuped by a detection contour

self.detectedcnt=0 # how many times this tracker is continuously backed up by a detection contour

self.no=no # no number of the tracker

self.box=box # the box of the tracker

self.historylength=10 # the length of lovation history

self.patternmatchingcnt=0

self.pattern=[-1,-1,-1] #average of b,g,r value

self.boxmidpointx=

self.boxmidpointy=

self.locationhistory=[[pointneartomidx,pointneartomidy]] #record the location of the mid point of the box

class perDetectContour:

def \_\_init\_\_(self,ContourPts):

self.trackerno=-1 # the tracker number this detection backed up

self.contour=ContourPts # counter clockwise 4 contour points

class perBorder:

def \_\_init\_\_(self,leftpoint,rightpoint):

self.leftpoint=leftpoint #left point of this border

self.inoutcount=0 #in+=1 out-=1

self.rightpoint=rightpoint

self.ConsiderRange=CusTrackers.borderConsiderRange #only consider trackers in side this range

#define the inside and outside aura

if self.getDistance(area1midpoint,[CusTrackers.frame.shape[1]/2,CusTrackers.frame.shape[0]/2])<self.getDistance(area2midpoint,[CusTrackers.frame.shape[1]/2,CusTrackers.frame.shape[0]/2]):

self.insideArea=area1 #four point counter clockwise

self.outsideArea=area2

else :

self.insideArea=area2

self.outsideArea=area1

self.statehistory=[0]\*10 #0 nothing happens,1 outside to inside, 2 inside to outside, not used

self.insideTrackersNow=[] #trackers in the inside area

self.outsideTrackersNow=[] #trackers in the outisde area

self.insideTrackersHistory=[] #list of list

self.outsideTrackersHistory=[]

class CustTracker:

typef=7 #type of opencv tracker used

tracker\_types = ['BOOSTING', 'MIL','KCF', 'TLD', 'MEDIANFLOW', 'GOTURN', 'MOSSE', 'CSRT']

tracker\_type = tracker\_types[typef]

tracker\_type=tracker\_type

totalcount=0

numbertoAssignList=[0]\*20 #the list to keep numbers have already been asigned

occulusionTakenList=[0]\*20 #the list to keep the correspoiding box numbers of occulusioned box

patternmatchinglsit=[]

trackerlist=[] #list to store trackers

occulusionlist=[] #list to store occulusioned boxes

detectContourList=[] # list to store detected contours

borderList=[] #a boarder is defined by 2 points, the side frame mid point is in is defined as "inside" # list to store borders

lostTrackerThreshold=3

qualifyCntThreshold=1000 #if detected more than this frame count, then it's qualified for a occulusioned box

noDetectionCntThreshold=100

occulusionedThreshold=5 #if occulusioned for more frames than this cnt, delete occulusioned tracker

borderHistoryLength=10

borderConsiderRange = 0