PROBLEM

To detect the speed of the pedestrian who is crossing diagonally approaching the camera

SOLUTION

REQUIREMENT

- OpenCV
- Time

PROCEDURE

OBJECT IDENTIFICATION:

- Detection of the object in motion using grayscale convertion guassianblur , threshold, dilate which are the functions of OpenCV.
- Then using contour function which finds the object in motion and draws a line over the moving object
- Using the boundingrect() function I can draw a rectangle contour over the moving object

DISTANCE CALCULATION:

- I had an idea of using triangle similarity to calculate the distance of the object but we need input such as focal length, pixel , width

   D= (F*W)/P

- Then I chose distance formula using coorinates(x,y)
- For that I need two points i.e initial position of the object (x1,y1)and the point where the object moved i.e the final position of the object(x2,y2)

- DISTANCE FORMULA = sqrt((x2-x1)^2+(y2-y1)^2) or sqrt((x2-x1)^2+(y2-y1)^2+(z2-z1)^2)
- From the contour moment function we can get the centroid position i.e the midpoint of the rectangle contour(Cx,Cy)
- when the object is detected first I will store the centroid as (x1,y1)
- when the object is detected last I will store the centroid as (x2,y2)
- And z1 is the distance of the camera from the object and taking z2=0 as it is at the origin
- by applying these in the distance formula I would get the distance

TIME CALCULATION:

- when the object is detected first I will store that time as start_time using time.time() function which records the time in seconds
- when the object is detected last I will store that time as end_time using time.time() function
- The difference of end_time and start_time we will get the actual time
  Detected_time = end_time - start_time

SPEED CALCULATION:

- By coverting the distance from mm to feet we will get the distance in feet

- Speed= distance/time using this formula we can find the speed of the object in feets/sec

Output

I am getting the distance and time inside the loop.but I want to get the distance outside the loop to calculate the speed but there is an error in that.