Project Development Phase
Sprint-2

Date	07 November 2022
Team ID	PNT2022TMID27823
Project Name	Virtual Eye - Life Guard for Swimming Pools to Detect Active Drowning
Maximum Marks	8 Marks

```
import cvlib as cv
from cvlib.object_detection import draw_bbox
import cv2
import time
import numpy as np
#for PiCamera
#from picamera Import PiCamera
#camera = PiCamera
#camera.start_preview()
# open webcam
webcam = cv2.VideoCapture(0)

if not webcam.isOpened(): print("Could
    not open webcam") exit()



t0 = time.time() #gives time in seconds after 1970

#variable dcount stands for how many seconds the person has been
standing still for
centre0 = np.zeros(2)
isDrowning = False

#this loop happens approximately every 1 second, so if a person doesn't
move,
#or moves very little for 10seconds, we can say they are drowning

#loop through frames
while webcam.isOpened():

    # read frame from webcam
    status, frame = webcam.read()
```

```
if not status:
        print("Could not read frame")
        exit()

# apply object detection
bbox, label, conf = cv.detect_common_objects(frame)
#simplifying for only 1 person #s =

(len(bbox), 2)

if(len(bbox)>0):
            bbox0 = bbox[0]
            #centre = np.zeros(s)
```

```
                centre = [0,0]


                #for i in range(0, len(bbox)):
                    #centre[i] =[(bbox[i][0]+bbox[i][2])/2,(bbox[i]
[1]+bbox[i][3])/2 ]

                centre =[(bbox0[0]+bbox0[2])/2,(bbox0[1]+bbox0[3])/2 ]

                #make vertical and horizontal movement variables
                hmov = abs(centre[0]-centre0[0])
                vmov = abs(centre[1]-centre0[1])

                #there is still need to tweek the threshold
                #this threshold is for checking how much the centre has
move
d


                x=time.time()

                threshold = 10
                if(hmov>threshold or vmov>threshold):
                    print(x-t0, 's')
                    t0 = time.time()
                    isDrowning = False

                else:

                    print(x-t0, 's')
                    if((time.time() - t0) > 10):
                        isDrowning = True




                #print('bounding box: ', bbox, 'label: ' label
,'confidence: ' conf[0], 'centre: ', centre)
                #print(bbox,label ,conf, centre)
                print('bbox: ', bbox, 'centre:', centre, 'centre0:',
centre0)
                print('Is he drowning: ', isDrowning)

                centre0 = centre
                # draw bounding box over detected objects

    out = draw_bbox(frame, bbox, label, conf,isDrowning)

    #print('Seconds since last epoch: ', time.time()-t0)
```

```
        # display output
        cv2.imshow("Real-time object detection", out)

        # press "Q" to stop
        if cv2.waitKey(1) & 0xFF == ord('q'):
            break

# release resources
webcam.release()
cv2.destroyAllWindows()
```