

APPLICATION BUILDING

Python Code

Date	19 November 2022
Team ID	PNT2022TMID33136
Project Name	VirtualEye - Life Guard For Swimming Pools To Detect Active Drowning
Maximum Marks	8 Marks

App.py:

```
# import necessary packages
import cvlib as cv
from cvlib.object_detection import draw_bbox
# import necessary packages
from flask import Flask, render_template, request
import requests
import os
from sys import exit
import cvlib as cv
from cvlib.object_detection import draw_bbox
import cv2
import time
import numpy as np
import math
import argparse
import playsound

import mysql.connector

app = Flask(__name__)

conn=mysql.connector.connect(host="localhost", user="root", password="", database="login")
cursor=conn.cursor()

@app.route('/')
def index():
    return render_template('index.html')

@app.route('/login')
def login(): # put application's code here
    return render_template('login.html')

@app.route('/register')
def register():
```

```

return render_template('register.html')

@app.route('/home')
def home():
    return render_template('index1.html')

@app.route('/login_validation', methods=['POST'])
def login_validation():
    email=request.form.get('email')
    password=request.form.get('password')

    cursor.execute("""SELECT * FROM `users` WHERE `email` LIKE'{}' AND `password` LIKE
'{}'""".format(email,password))
    users = cursor.fetchall()

    if len(users)>0:
        return render_template('index1.html')
    else:
        return render_template('login.html', prediction_text = "1" )

@app.route('/add_user', methods=['POST'])
def add_user():
    name= request.form.get('name')
    email = request.form.get('email')
    password = request.form.get('password')

    cursor.execute("""INSERT INTO `users`(`id`, `name`, `email`, `password`) VALUES
(NULL, '{}', '{}', '{}')""".format(name,email,password))
    conn.commit()
    return render_template('login.html', prediction_text = "0")

@app.route('/step2')
def step2():

    print("Begin")

    webcam = cv2.VideoCapture("garden.mp4")
    padding = 20

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

    t0 = time.time() #gives time in seconds after 1970
    #print('t0=',t0)
    #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:
        break
    #small_frame = cv2.resize(frame,(0,0),fx = 0.5,fy = 0.5)
    # apply object detection
    bbox, label, conf = cv.detect_common_objects(frame, confidence=0.25, model='yolov3-
tiny')

    print(bbox, label, conf)

    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 moved

    x=time.time()

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

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

```

print('bbox: ', bbox, 'centre:', centre, 'centre0:', centre0)
print('Is he/she drowning: ', isDrowning)
    #print('End of the program')

    centre0 = centre
    # draw bounding box over detected objects
    # draw bounding box over detected objects
    out = draw_bbox(frame, bbox, label, conf, write_conf=True)
    # display output
    cv2.imshow("Real-time object detection", out)
    if(isDrowning == True):
        webcam.release()
        cv2.destroyAllWindows()
        return render_template('index1.html', prediction_text = "1")
# press "Q" to stop
    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

# release resources
    webcam.release()
    cv2.destroyAllWindows()
if __name__ == '__main__':
    app.run(debug=True)

```