

TEAM ID	PNT2022TMID03421
PROJECT NAME	VirtualEye - Life Guard for Swimming Pools to Detect Active Drowning

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import
time

import cv2
import numpy as np
from cloudant.client import Cloudant
from flask import Flask, request, render_template, redirect, url_for
from playsound import playsound

import cvlib as cv
from cvlib.object_detection import draw_bbox

# Loading the model

# Authenticate using an IAM API key
client = Cloudant.iam('8780b82a-5a3b-4da0-a180-a0e1516479f9-bluemix',
'TzYs8u0Q5eoj204gDo2e0EDAuGRhj0fG_9r1Zr5SsJUH',
connect=True)

# Create a database using an initialized client
my_database = client.create_database('my_database')

app = Flask(__name__)

# default home page or route
@app.route('/')
def index():
    return render_template('index.html')

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

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        return render_template("index.html")

# registration page
@app.route('/register')
def register():
    return render_template('register.html')

@app.route('/afterreg', methods=['POST'])
def afterreg():
    x = [x for x in request.form.values()]
    print(x)
    data = {
        '_id': x[1], # Setting _id is optional
        'name': x[0],
        'psw': x[2]
    }
    print(data)

    query = {'_id': {'$eq': data['_id']}}

    docs = my_database.get_query_result(query)
    print(docs)

    print(len(docs.all()))

    if (len(docs.all()) == 0):
        url = my_database.create_document(data)
        # response = requests.get(url)
        return render_template('register.html', pred="Registration Successful,
please login using your details")
    else:
        return render_template('register.html', pred="You are already a member,
please login using your details")

# login page
@app.route('/login')
def login():
    return render_template('login.html')

@app.route('/afterlogin', methods=['POST'])
def afterlogin():
    user = request.form['_id']

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passw = request.form['psw']
print(user, passw)

query = {'_id': {'$eq': user}}

docs = my_database.get_query_result(query)
print(docs)

print(len(docs.all()))

if (len(docs.all()) == 0):
    return render_template('login.html', pred="The username is not found.")
else:
    if ((user == docs[0][0]['_id'] and passw == docs[0][0]['psw'])):
        return redirect(url_for('prediction'))
    else:
        print('Invalid User')

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

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

@app.route('/result', methods=["GET", "POST"])
def res():
    webcam = cv2.VideoCapture('drowning.mp4')

    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,

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# 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 tweak the threshold
    # this threshold is for checking how much the centre has moved

    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

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        # 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)
    if (isDrowning == True):
        playsound('alarm.mp3')
        webcam.release()
        cv2.destroyAllWindows()
        return render_template('prediction.html', prediction="Emergency !!!
The Person is drowning")
        # return render_template('base.html')

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

    # release resources
    webcam.release()
    cv2.destroyAllWindows()
    # return render_template('prediction.html',)

""" Running our application """
if __name__ == "__main__":
    app.run(debug=True)

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