Project Development Phase
Sprint - 3

Date	12 November 2022
Team ID	PNT2022TMID28599
Project Name	Virtual Eye - Life Guard for Swimming Pools to Detect Active Drowning
Maximum Marks	4 Marks

```
import re
import numpy as np
import os
from flask import Flask, app, request, render_template, redirect, url_for
from tensorflow.keras import models
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
from tensorflow.python.ops.gen_array_ops import concat
import cvlib as cv
from cvlib.object_detection import draw_bbox
import cv2
import time
from playsound import playsound
import requests

#Loading the model

from cloudant.client import Cloudant

# Authenticate using an IAM API key
client = Cloudant.iam('57f444d5-dfbd-4fc0-b752-dea54005c3cc-
bluemix','HTLp9_GkWGDyMR9VHruMMwi_qzZ43qaI3UVR77GOI2GX', 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():
   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']
    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,
    #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()
        #print(frame)
        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
#print('bbox',bbox)
#print('label',label)
#print('conf',conf)

#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 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

   #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
#print('came here')
out = draw_bbox(frame, bbox, label, conf,colors=None,write_conf=isDrowning)

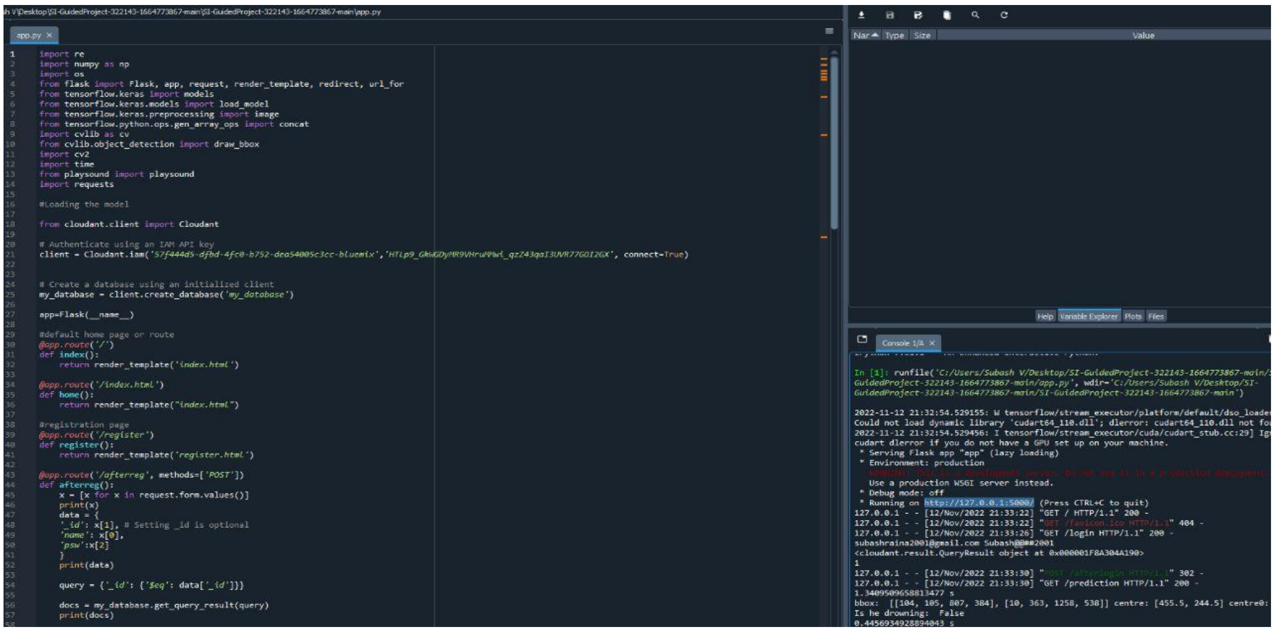
#print('Seconds since last epoch: ', time.time()-t0)
```

```
        # 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 drowining")
            #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',prediction="Emergency !!! The Person is
drowning")

""" Running our application """
if __name__ == "__main__":
    app.run(debug=False
```



```
h V\Desktop\SI-GuidedProject-322143-1664773867-main\SI-GuidedProject-322143-1664773867-main\app.py
app.py
import re
import numpy as np
import os
from flask import Flask, app, request, render_template, redirect, url_for
from tensorflow.keras import models
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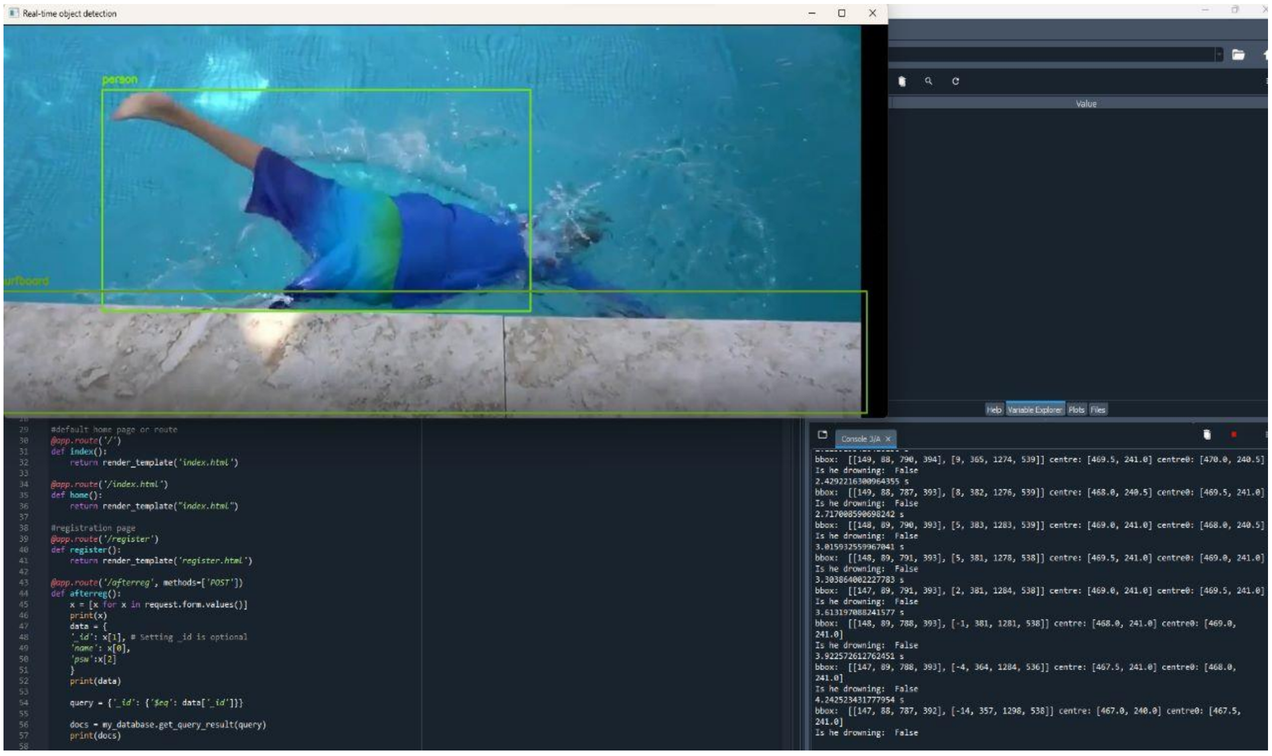
    print(x)
    data = {
    '_id': x[1], # Setting _id is optional
    'name': x[0],
    'psw':x[2]
    }
    print(data)

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

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

```
In [1]: runfile('C:/Users/Subash V/Desktop/SI-GuidedProject-322143-1664773867-main/S
GuidedProject-322143-1664773867-main/app.py', wdir='C:/Users/Subash V/Desktop/SI-
GuidedProject-322143-1664773867-main/SI-GuidedProject-322143-1664773867-main')

2022-11-12 21:32:54.529155: W tensorflow/stream_executor/platform/default/dso_loade
Could not load dynamic library 'cudart64_110.dll'; dlerror: cudart64_110.dll not fo
2022-11-12 21:32:54.529456: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ig
cudart dlerror if you do not have a GPU set up on your machine.
 * Serving Flask app "app" (lazy loading)
 * Environment: production
   WARNING: This is a development server. Do not use it in a production deployment.
   Use a production WSGI server instead.
 * Debug mode: off
 * Running on http://127.0.0.1:5000/ (Press CTRL+C to quit)
127.0.0.1 - - [12/Nov/2022 21:33:22] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [12/Nov/2022 21:33:22] "GET /favicon.ico HTTP/1.1" 404 -
127.0.0.1 - - [12/Nov/2022 21:33:26] "GET /login HTTP/1.1" 200 -
subashraina2001@gmail.com Subash@@##2001
<cloudant.result.QueryResult object at 0x000001F8A304A190>
1
127.0.0.1 - - [12/Nov/2022 21:33:30] "POST /afterlogin HTTP/1.1" 302 -
127.0.0.1 - - [12/Nov/2022 21:33:30] "GET /prediction HTTP/1.1" 200 -
1.3409509658813477 s
bbox:  [[104, 105, 807, 384], [10, 363, 1258, 538]] centre: [455.5, 244.5] centre0:
Is he drowning:  False
0.4456934928894043 s
```



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

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

```

```
bbox:  [[149, 88, 790, 394], [9, 365, 1274, 539]] centre: [469.5, 241.0] centre0: [470.0, 240.5]
Is he drowning:  False
2.4292216300964355 s
bbox:  [[149, 88, 787, 393], [8, 382, 1276, 539]] centre: [468.0, 240.5] centre0: [469.5, 241.0]
Is he drowning:  False
2.717008590698242 s
bbox:  [[148, 89, 790, 393], [5, 383, 1283, 539]] centre: [469.0, 241.0] centre0: [468.0, 240.5]
Is he drowning:  False
3.015932559967041 s
bbox:  [[148, 89, 791, 393], [5, 381, 1278, 538]] centre: [469.5, 241.0] centre0: [469.0, 241.0]
Is he drowning:  False
3.303864002227783 s
bbox:  [[147, 89, 791, 393], [2, 381, 1284, 538]] centre: [469.0, 241.0] centre0: [469.5, 241.0]
Is he drowning:  False
3.613197088241577 s
bbox:  [[148, 89, 788, 393], [-1, 381, 1281, 538]] centre: [468.0, 241.0] centre0: [469.0,
241.0]
Is he drowning:  False
3.922572612762451 s
bbox:  [[147, 89, 788, 393], [-4, 364, 1284, 536]] centre: [467.5, 241.0] centre0: [468.0,
241.0]
Is he drowning:  False
4.242523431777954 s
bbox:  [[147, 88, 787, 392], [-14, 357, 1298, 538]] centre: [467.0, 240.0] centre0: [467.5,
241.0]
Is he drowning:  False
```