Project Development Phase
Sprint 3 Source code

Date	13 November 2022
Team ID	PNT2022TMID51072
Project Name	Virtual Eye - Life Guard For Swimming Pools To Detect Active Drowning
Maximum Marks	8 Marks

```
import re
import numpy
as npimport os
from flask import Flask, app, request,
render_template, redirect, url_forfrom
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 concatimport cvlib as cv
from cvlib.object_detection import
draw_bboximport cv2
import time
from playsound import
playsoundimport 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_qzZ43qaI3UVR77GOI2
GX', connect=True)


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

app=Flask(__name__)
```

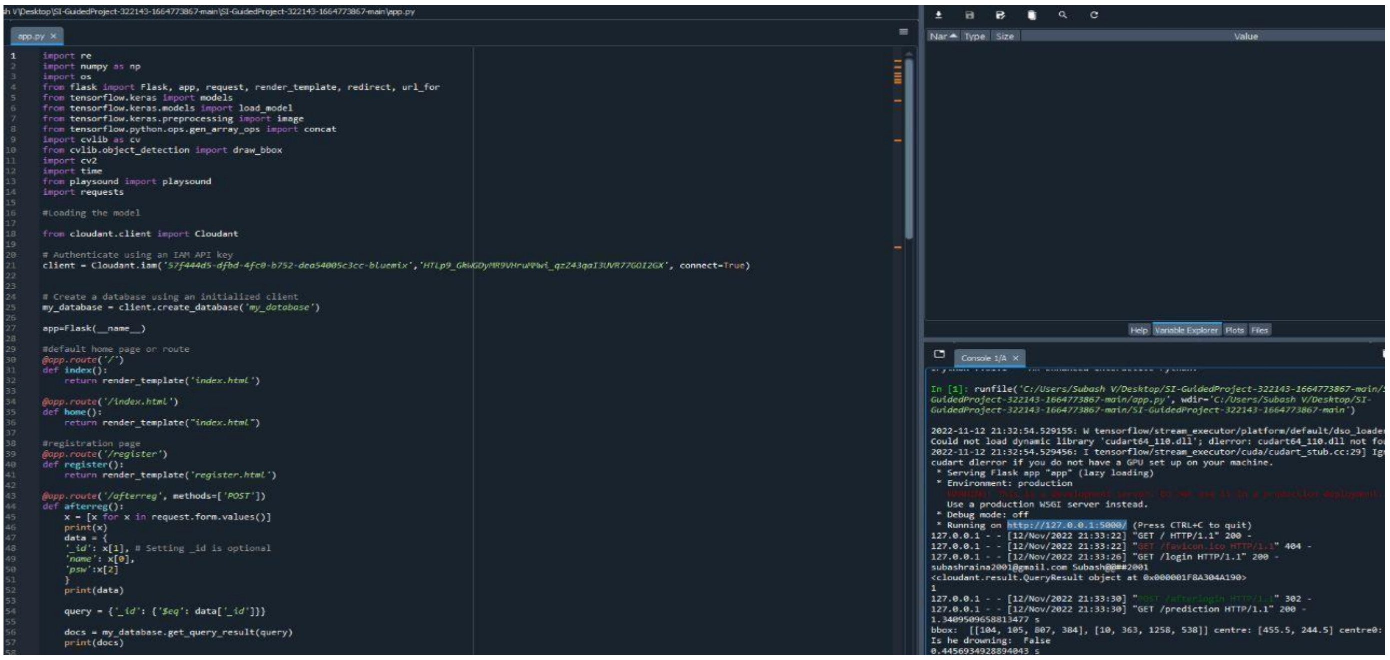
```
#default home page
or route
@app.route('/')
def index():
  return render_template('index.html')

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

#registration
page
@app.route('/regi
ster') 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(qu
  ery)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, pleaselogin using your details")
  else:
    return render_template('register.html', pred="You are
already a member, please login using your details")

#login page
@app.route('/lo
gin')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(qu
  ery)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('/log
out')def
logout():
  return render_template('logout.html')
```

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

@app.route('/result',methods=["GE
T","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 stillfor
  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 variableshmov =
  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 movedx=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.destroyAllWin
        dows()
        #return
render_template('prediction.html',prediction="Emergency !!!
ThePerson 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 isdrowning")

""" 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
Help
Variable Explorer
Plots
Files
Console 1/A

```
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

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def register():
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@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)
```

```
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
   [illegible]
   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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