# Project Development Phase
# Sprint-3

| | |
|---|---|
| Date | 18 November 2022 |
| Team ID | PNT2022TMID26961 |
| Project Name | Virtual Eye - Life Guard for Swimming Pools toDetect Active Drowning |
| Maximum Marks | 4 Marks |

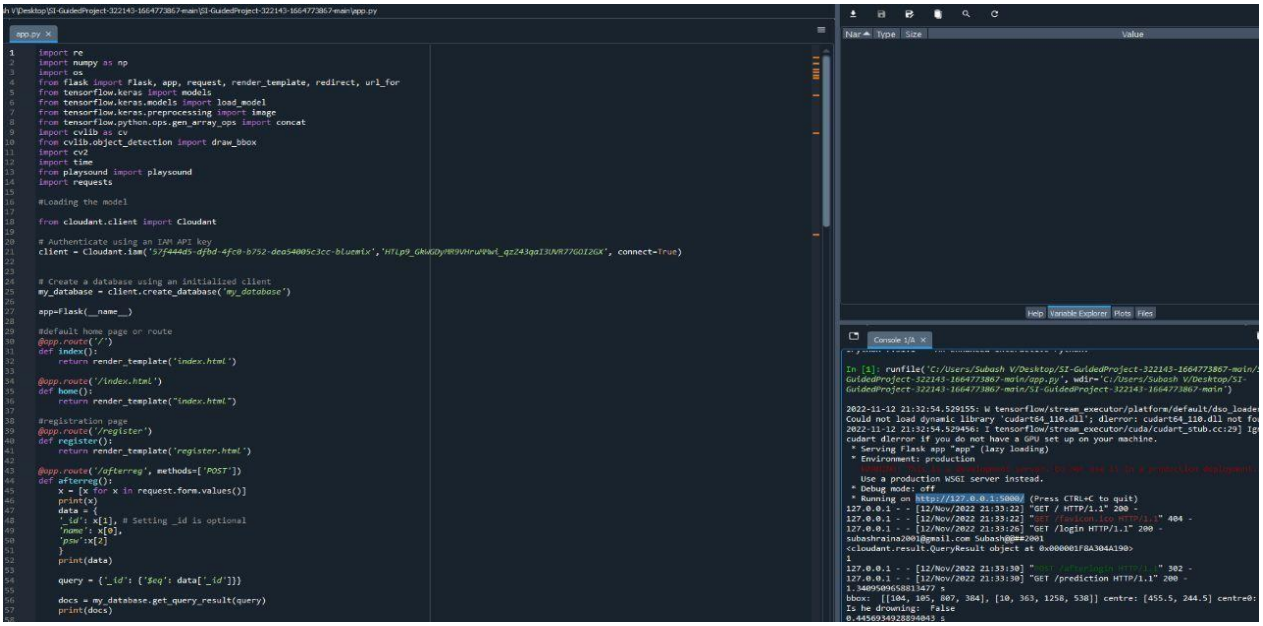
```
import re import
numpy as np
import os
from flask import Flask, app, request, render_template, redirect, url_for
from tensorflow.keras import models from tensorflow.keras.models
import load_model from tensorflow.keras.preprocessing import image
from tensorflow.python.ops.gen_array_ops import concat 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")
```

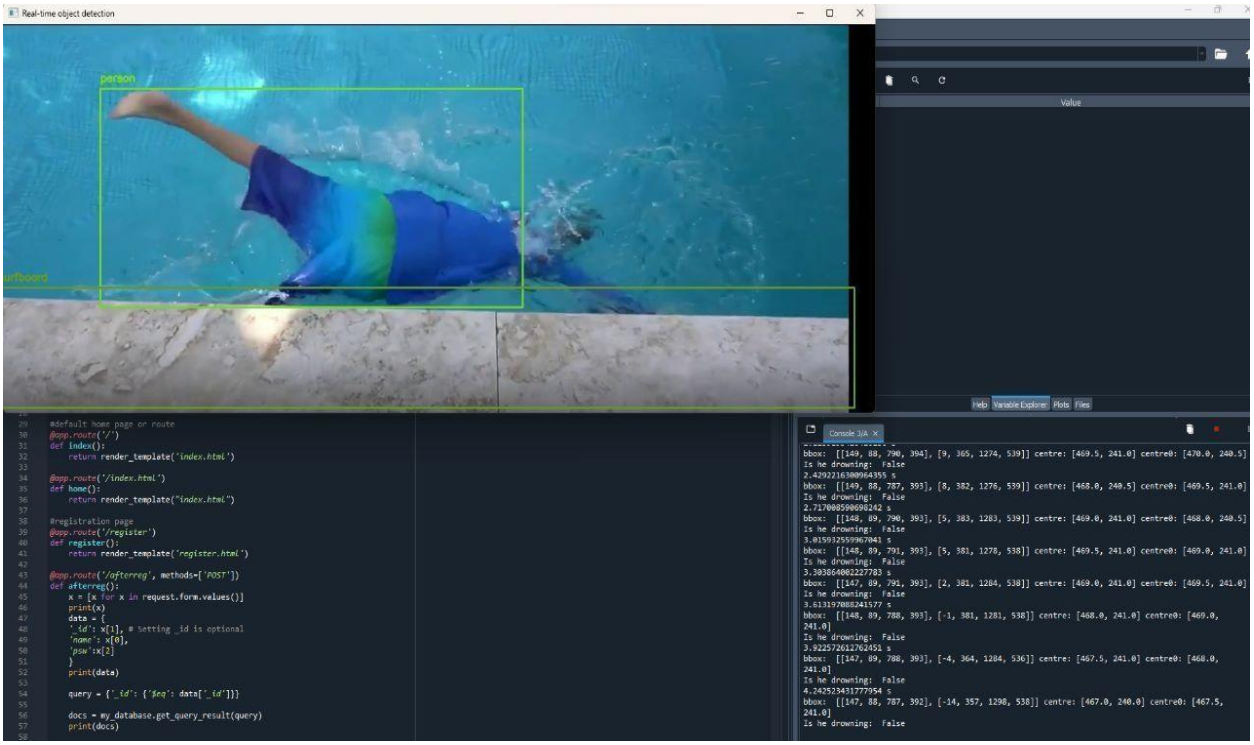
```
        #registration page
        @app.route('/register') def
        register():
            return render_template('register.html')

        @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 drowining")

""" Running our application """
if  _____name__==  "_main_":
app.run(debug=False)
```




Real-time object detection
person
surfboard
Value
Help
Variable Explorer
Plots
Files
Console 3/A
#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)
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
2.7170085906982422 s
bbox: [[148, 89, 790, 393], [5, 383, 1283, 539]] centre: [469.0, 241.0] centre0: [468.0, 240.5]
Is he drowning: False
3.0159325599670041 s
bbox: [[148, 89, 791, 393], [5, 381, 1278, 538]] centre: [469.5, 241.0] centre0: [469.0, 241.0]
Is he drowning: False
3.3038640022277832 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