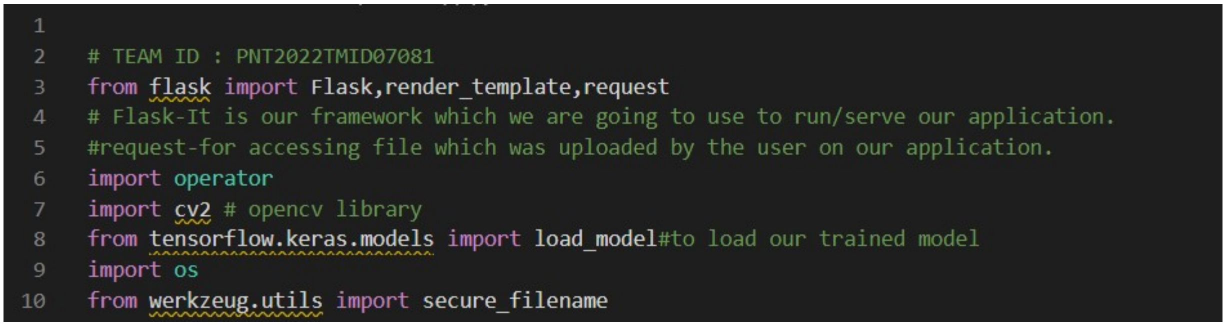
Build Python Code

- Build flask file ‘app.py’ which is a web framework written in python for server-side scripting.

- App starts running when “ name ” constructor is called in main.
- Render template is used to return html file.

- “GET” method is used to take input from the user.

- “POST” method is used to display the output to the user.
- Importing Libraries



```

# TEAM ID : PNT2022TMID07081
from flask import Flask,render_template,request
# Flask-It is our framework which we are going to use to run/serve our application.
#request-for accessing file which was uploaded by the user on our application.
import operator
import cv2 # opencv library
from tensorflow.keras.models import load_model#to load our trained model
import os
from werkzeug.utils import secure_filename
```

app.py

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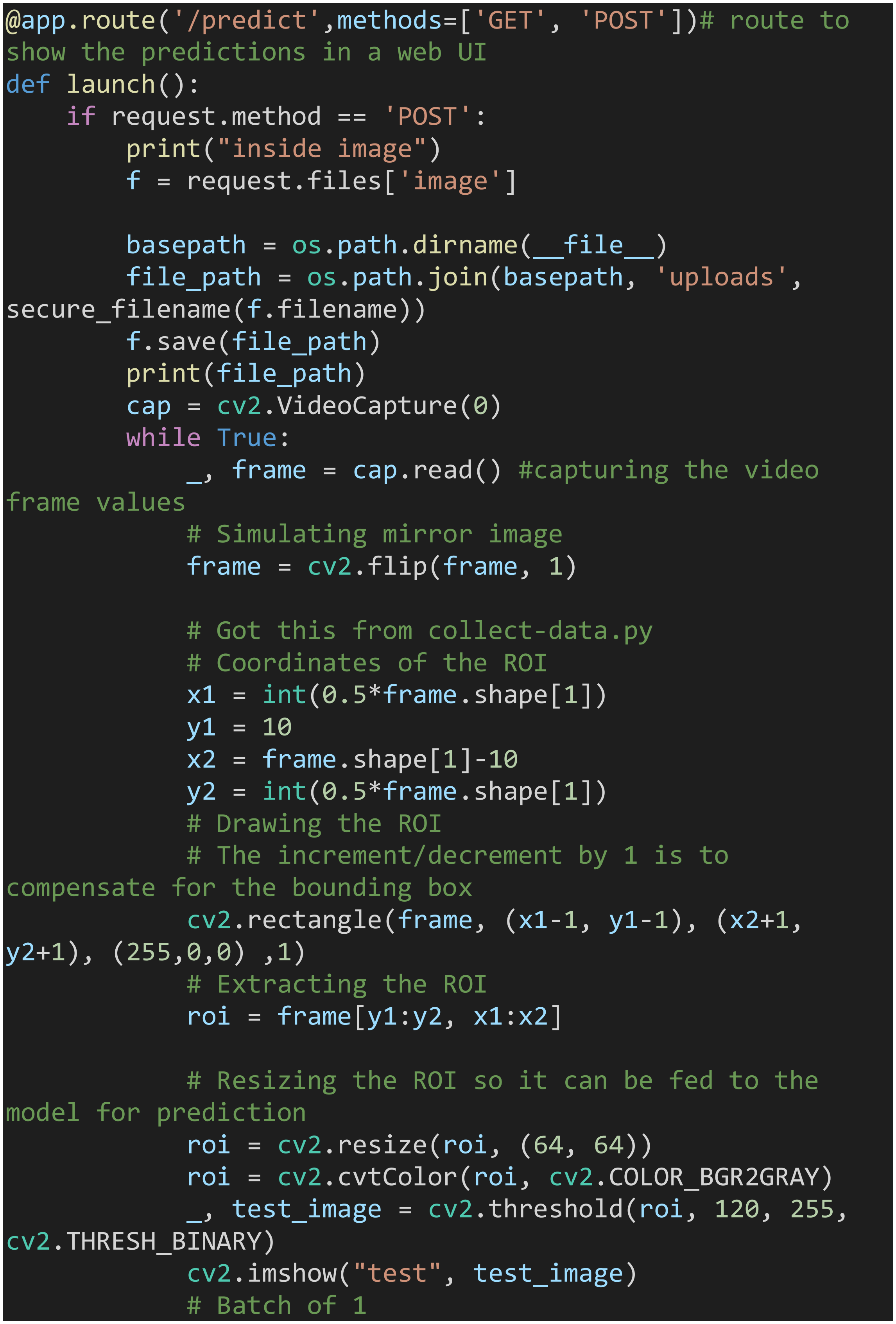
app = Flask(__name__,template_folder="templates") #
initializing a flask app
# Loading the model
model=load_model("gesture.h5")
print("Loaded model from disk")


@app.route('/')# route to display the home page
def home():
    return render_template('home.html')#rendering the home
page


@app.route('/intro') # routes to the intro page
def intro():
    return render_template('intro.html')#rendering the
intro page

@app.route('/image1',methods=['GET','POST'])# routes to
the index html
def image1():
    return render_template("index6.html")
```



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@app.route('/predict',methods=['GET', 'POST'])# route to
show the predictions in a web UI
def launch():
    if request.method == 'POST':
        print("inside image")
        f = request.files['image']

        basepath = os.path.dirname(__file__)
        file_path = os.path.join(basepath, 'uploads',
secure_filename(f.filename))
        f.save(file_path)
        print(file_path)
        cap = cv2.VideoCapture(0)
        while True:
            _, frame = cap.read() #capturing the video
frame values
            # Simulating mirror image
            frame = cv2.flip(frame, 1)

            # Got this from collect-data.py
            # Coordinates of the ROI
            x1 = int(0.5*frame.shape[1])
            y1 = 10
            x2 = frame.shape[1]-10
            y2 = int(0.5*frame.shape[1])
            # Drawing the ROI
            # The increment/decrement by 1 is to
compensate for the bounding box
            cv2.rectangle(frame, (x1-1, y1-1), (x2+1,
y2+1), (255,0,0) ,1)
            # Extracting the ROI
            roi = frame[y1:y2, x1:x2]

            # Resizing the ROI so it can be fed to the
model for prediction
            roi = cv2.resize(roi, (64, 64))
            roi = cv2.cvtColor(roi, cv2.COLOR_BGR2GRAY)
            _, test_image = cv2.threshold(roi, 120, 255,
cv2.THRESH_BINARY)
            cv2.imshow("test", test_image)
            # Batch of 1
```

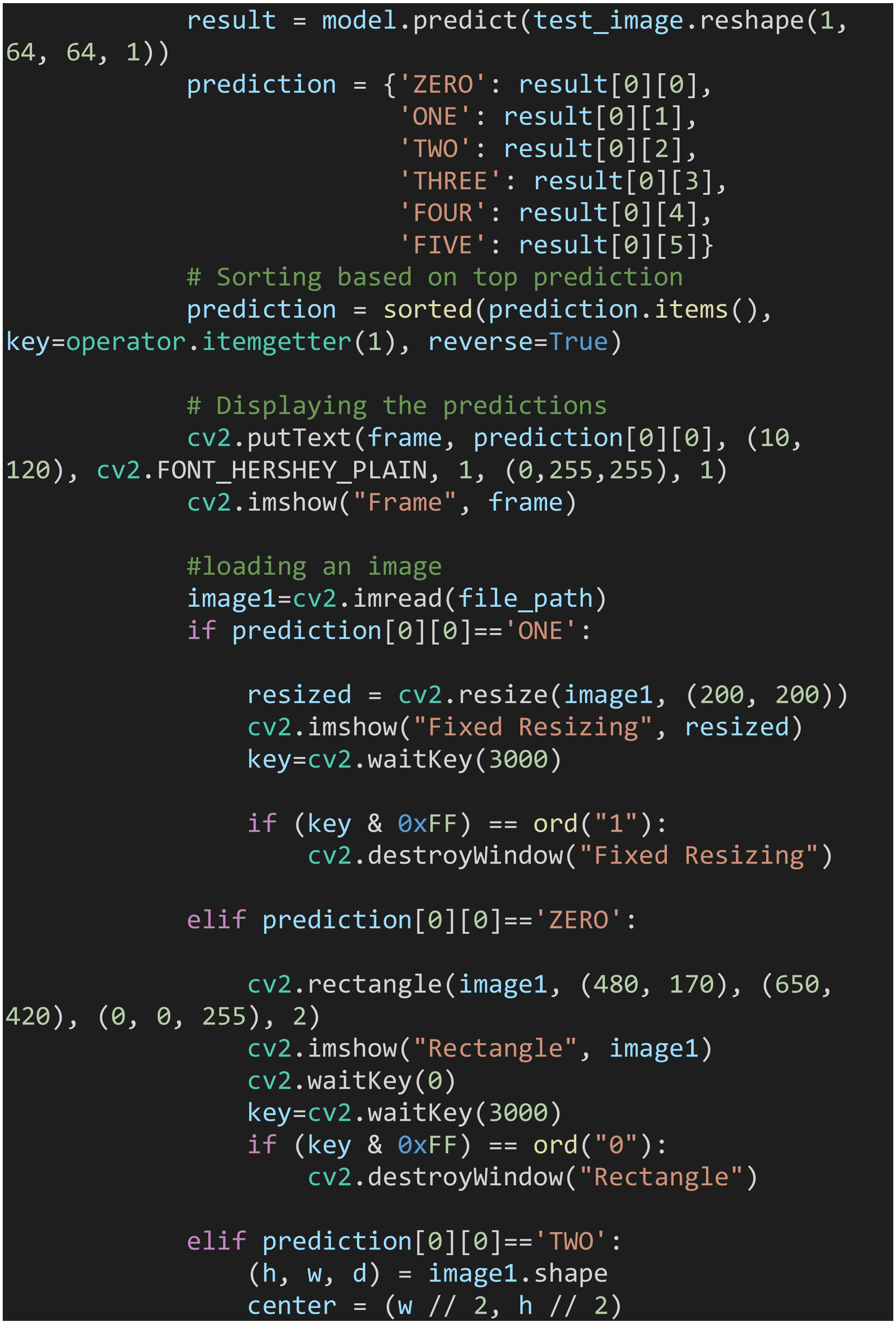

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            result = model.predict(test_image.reshape(1,
64, 64, 1))
            prediction = {'ZERO': result[0][0],
                          'ONE': result[0][1],
                          'TWO': result[0][2],
                          'THREE': result[0][3],
                          'FOUR': result[0][4],
                          'FIVE': result[0][5]}
            # Sorting based on top prediction
            prediction = sorted(prediction.items(),
key=operator.itemgetter(1), reverse=True)

            # Displaying the predictions
            cv2.putText(frame, prediction[0][0], (10,
120), cv2.FONT_HERSHEY_PLAIN, 1, (0,255,255), 1)
            cv2.imshow("Frame", frame)

            #loading an image
            image1=cv2.imread(file_path)
            if prediction[0][0]=='ONE':

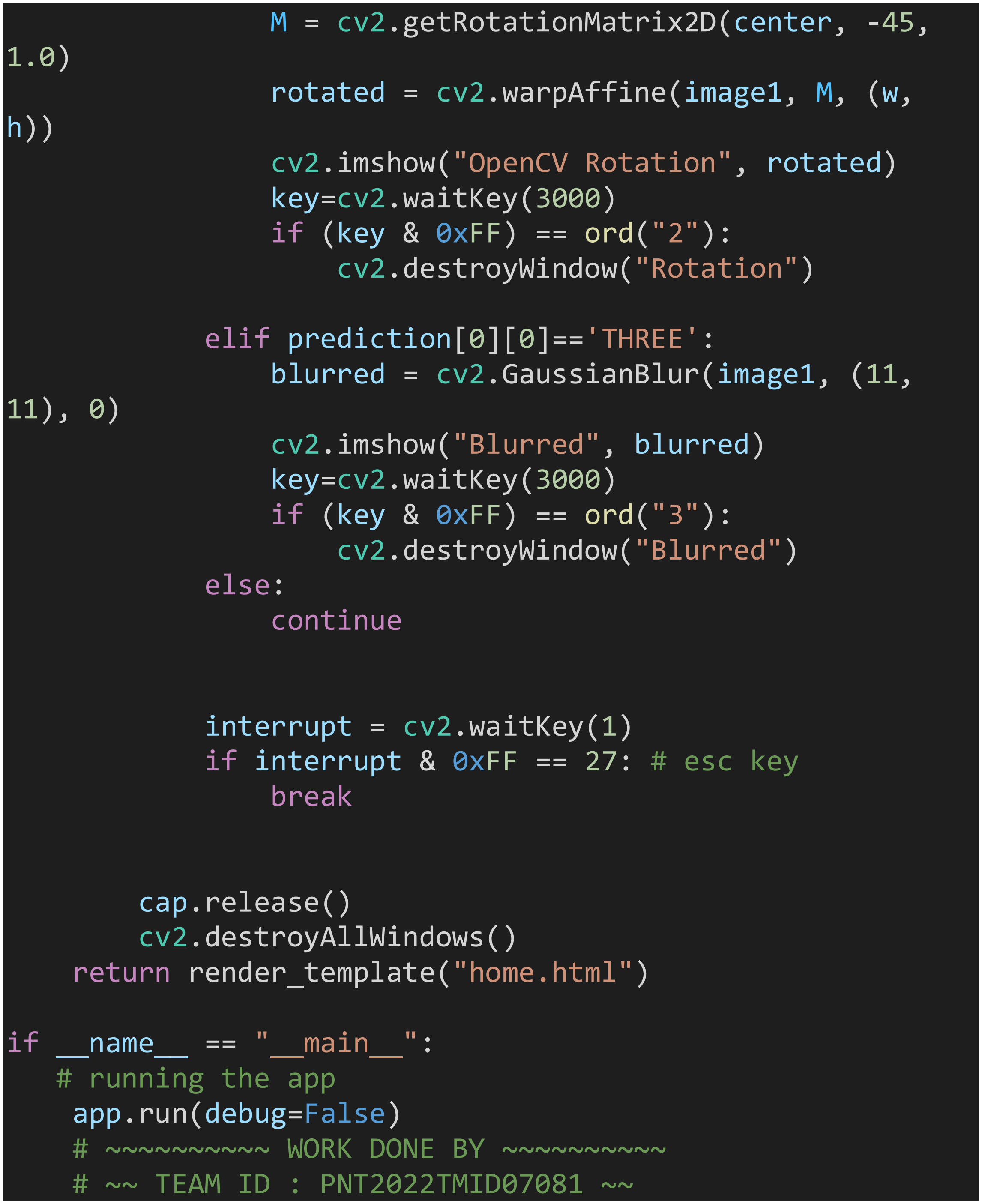
                resized = cv2.resize(image1, (200, 200))
                cv2.imshow("Fixed Resizing", resized)
                key=cv2.waitKey(3000)

                if (key & 0xFF) == ord("1"):
                    cv2.destroyWindow("Fixed Resizing")

            elif prediction[0][0]=='ZERO':

                cv2.rectangle(image1, (480, 170), (650,
420), (0, 0, 255), 2)
                cv2.imshow("Rectangle", image1)
                cv2.waitKey(0)
                key=cv2.waitKey(3000)
                if (key & 0xFF) == ord("0"):
                    cv2.destroyWindow("Rectangle")

            elif prediction[0][0]=='TWO':
                (h, w, d) = image1.shape
                center = (w // 2, h // 2)
```



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                M = cv2.getRotationMatrix2D(center, -45,
1.0)
                rotated = cv2.warpAffine(image1, M, (w,
h))
                cv2.imshow("OpenCV Rotation", rotated)
                key=cv2.waitKey(3000)
                if (key & 0xFF) == ord("2"):
                    cv2.destroyWindow("Rotation")

            elif prediction[0][0]=='THREE':
                blurred = cv2.GaussianBlur(image1, (11,
11), 0)
                cv2.imshow("Blurred", blurred)
                key=cv2.waitKey(3000)
                if (key & 0xFF) == ord("3"):
                    cv2.destroyWindow("Blurred")
            else:
                continue


            interrupt = cv2.waitKey(1)
            if interrupt & 0xFF == 27: # esc key
                break


        cap.release()
        cv2.destroyAllWindows()
    return render_template("home.html")

if __name__ == "__main__":
   # running the app
    app.run(debug=False)
    # ~~~~~~~~~~~ WORK DONE BY ~~~~~~~~~~~
    # ~~ TEAM ID : PNT2022TMID07081 ~~
```

DONE BY

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