NAME : RITAM MAJUMDER

COLLEGE : TECHNO INTERNATIONAL NEWTOWN

BRANCH : ELECTRONICS AND COMMUNICATION ENGINEERING

YEAR : 3RD

GITHUB PROFILE LINK: https://github.com/ritam0210

MAJOR PROJECT 1

Text Emotion Predictor using Support Vector Classifier (SVM)

1. Taking data and creating Dataframe

```
#Creating dataframe
import pandas as pd
df= pd.read_csv('/content/tweet_emotions.csv')
df
```

	tweet_id	sentiment	content
0	1956967341	empty	@tiffanylue i know i was listenin to bad habi...
1	1956967666	sadness	Layin n bed with a headache ughhhh...waitin o...
2	1956967696	sadness	Funeral ceremony...gloomy friday...
3	1956967789	enthusiasm	wants to hang out with friends SOON!
4	1956968416	neutral	@dannycastillo We want to trade with someone w...
...	...	...	...
39995	1753918954	neutral	@JohnLloydTaylor
39996	1753919001	love	Happy Mothers Day All my love
39997	1753919005	love	Happy Mother's Day to all the mommies out ther...
39998	1753919043	happiness	@niariley WASSUP BEAUTIFUL!!! FOLLOW ME!! PEE...
39999	1753919049	love	@mopedronin bullet train from tokyo the gf ...

40000 rows × 3 columns

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 40000 entries, 0 to 39999
Data columns (total 3 columns):
 #   Column     Non-Null Count  Dtype 
---  ------     --------------  ----- 
 0   tweet_id   40000 non-null  int64 
 1   sentiment  40000 non-null  object
 2   content    40000 non-null  object
dtypes: int64(1), object(2)
memory usage: 937.6+ KB
```

```
[ ] df.shape
```

```
(40000, 3)
```

```
[ ] df.size
```

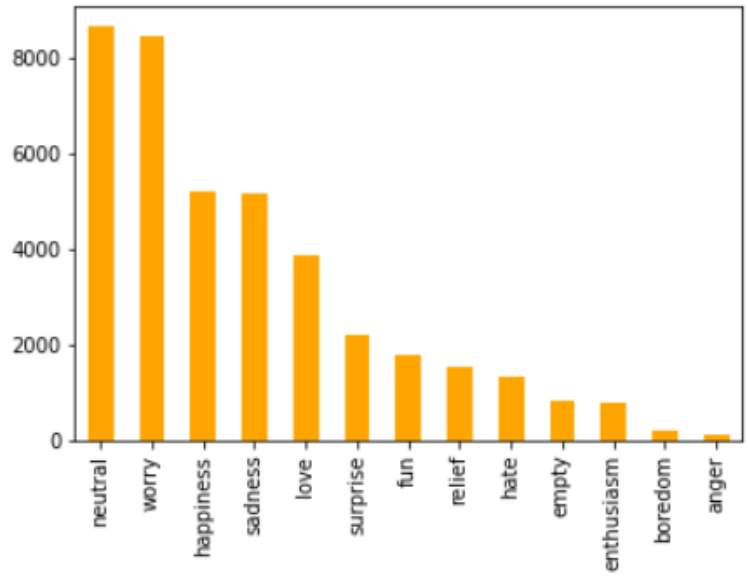
```
120000
```

2. Pre-processing or data cleaning is not required for this dataset

3. Data Visualisation

```
[ ]  #Data Visualisation
     df['sentiment'].value_counts().plot(kind='bar', color='orange')
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7f45b972af10>
```




```
df['sentiment'].value_counts()
```

```
neutral       8638
worry         8459
happiness     5209
sadness       5165
love          3842
surprise      2187
fun           1776
relief        1526
hate          1323
empty          827
enthusiasm     759
boredom        179
anger          110
Name: sentiment, dtype: int64
```

4. Dividing data into input and output

```
#Dividing data into input and output
x = df.iloc[:,1]
y = df.iloc[:,0]
print(x)
print(y)
```

```
0        @tiffanylue i know  i was listenin to bad habi...
1        Layin n bed with a headache  ughhhh...waitin o...
2                      Funeral ceremony...gloomy friday...
3                    wants to hang out with friends SOON!
4        @dannycastillo We want to trade with someone w...
                              ...
39995                                        @JohnLloydTaylor
39996                        Happy Mothers Day  All my love
39997    Happy Mother's Day to all the mommies out ther...
39998    @niariley WASSUP BEAUTIFUL!!! FOLLOW ME!!  PEE...
39999    @mopedronin bullet train from tokyo    the gf ...
Name: content, Length: 40000, dtype: object
0              empty
1            sadness
2            sadness
3         enthusiasm
4            neutral
             ...
39995        neutral
39996           love
39997           love
39998      happiness
39999           love
Name: sentiment, Length: 40000, dtype: object
```

5. Training and Testing variables

```
[ ] #train_test_split
    from sklearn.model_selection import train_test_split
    x_train,x_test,y_train,y_test = train_test_split(x,y,random_state=0)
```

6. Normalization of data

```
[ ]  #Applying TFIDF Vectorizer
     from sklearn.feature_extraction.text import TfidfVectorizer
     vec = TfidfVectorizer()
     xtr_v = vec.fit_transform(x_train)
     xts_v = vec.transform(x_test)
```

```
[ ]  xtr_v
```

```
<30000x39437 sparse matrix of type '<class 'numpy.float64'>'
        with 356125 stored elements in Compressed Sparse Row format>
```

7. Running a Classifier

```
[ ]  #Applying Classifier
     from sklearn.svm import SVC
     model=SVC()
```

8. Fitting the model

```
[ ]  #Model fitting
     model.fit(xtr_v,y_train)
```

```
SVC()
```

9. Predicting the Output

```
#Predicting the Output
y_pred = model.predict(xts_v)
y_pred
#Predicted values
```

```
array(['sadness', 'worry', 'neutral', ..., 'happiness', 'neutral',
       'neutral'], dtype=object)
```

```
y_test #Actual values
```

```
12836     sadness
10913     neutral
4214      sadness
8198        empty
31403         fun
            ...
30790     neutral
5690      sadness
17736    surprise
12098     neutral
5315        empty
Name: sentiment, Length: 10000, dtype: object
```

10. Evaluation: Accuracy Score

```
#Accuracy
from sklearn.metrics import accuracy_score
accuracy_score(y_pred,y_test)*100
```

```
35.35
```

- Pipelining of the model for deployment

```
#Pipelining
from sklearn.pipeline import make_pipeline
text_model = make_pipeline(TfidfVectorizer(),SVC())
text_model.fit(x_train,y_train)
```

```
Pipeline(steps=[('tfidfvectorizer', TfidfVectorizer()), ('svc', SVC())])
```

```
#Predictor variable
y_pred1 = text_model.predict(x_test)
y_pred1
```

```
array(['sadness', 'worry', 'neutral', ..., 'happiness', 'neutral',
       'neutral'], dtype=object)
```

```
#Accuracy of pipelined model
accuracy_score(y_pred1,y_test)*100
```

```
35.35
```

- Individual prediction

```
[ ]  #Individual prediction
     a1= df['content'][14050]
     a1
```

```
'gotta go twitterers (?) my stupid sister wants to go on facebook  oging to montreal 2morrow so i wont be on for a while! bye!! XoXox
```

```
[ ]  a1= vec.transform([a1])
     model.predict(a1)
```

```
array(['happiness'], dtype=object)
```

- Creating a new file using JOBLIB and dumping the trained pipelined model in it

```
[ ]  #JOBLIB
     import joblib
     joblib.dump(text_model,'tweet_emotions')
```

```
['tweet_emotions']
```

- **Temporary deployment/ Local Deployment**

```
#Temporary deployment
```

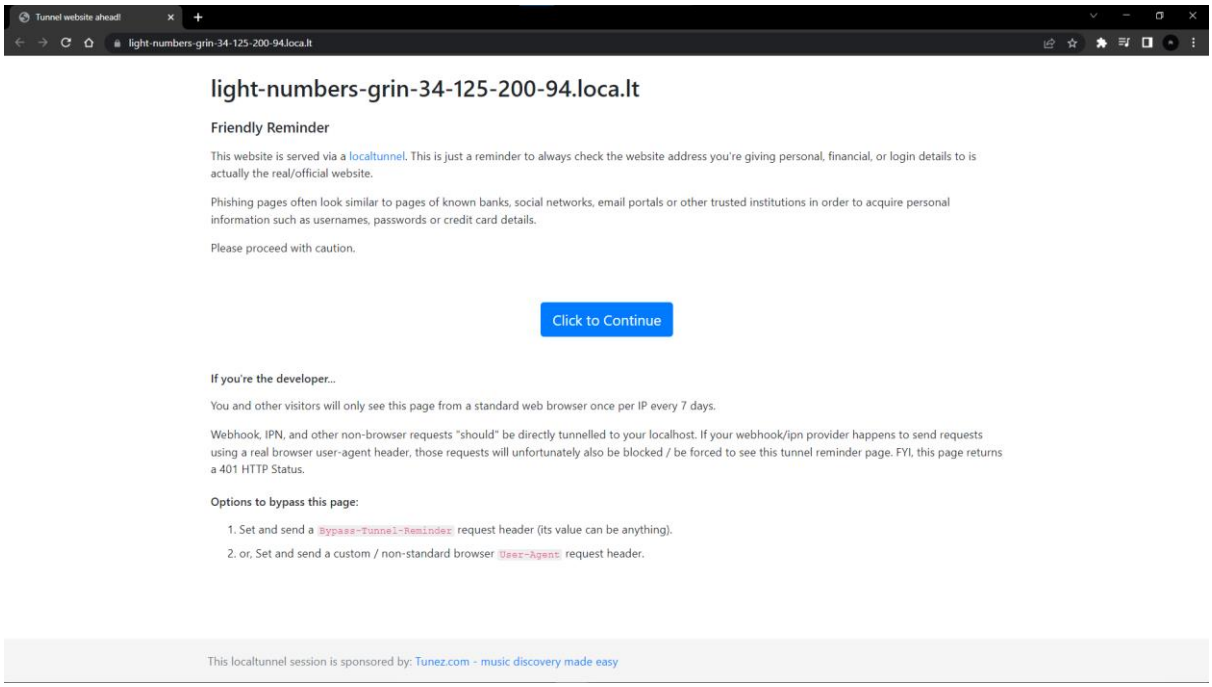
```
!pip install streamlit --quiet
```

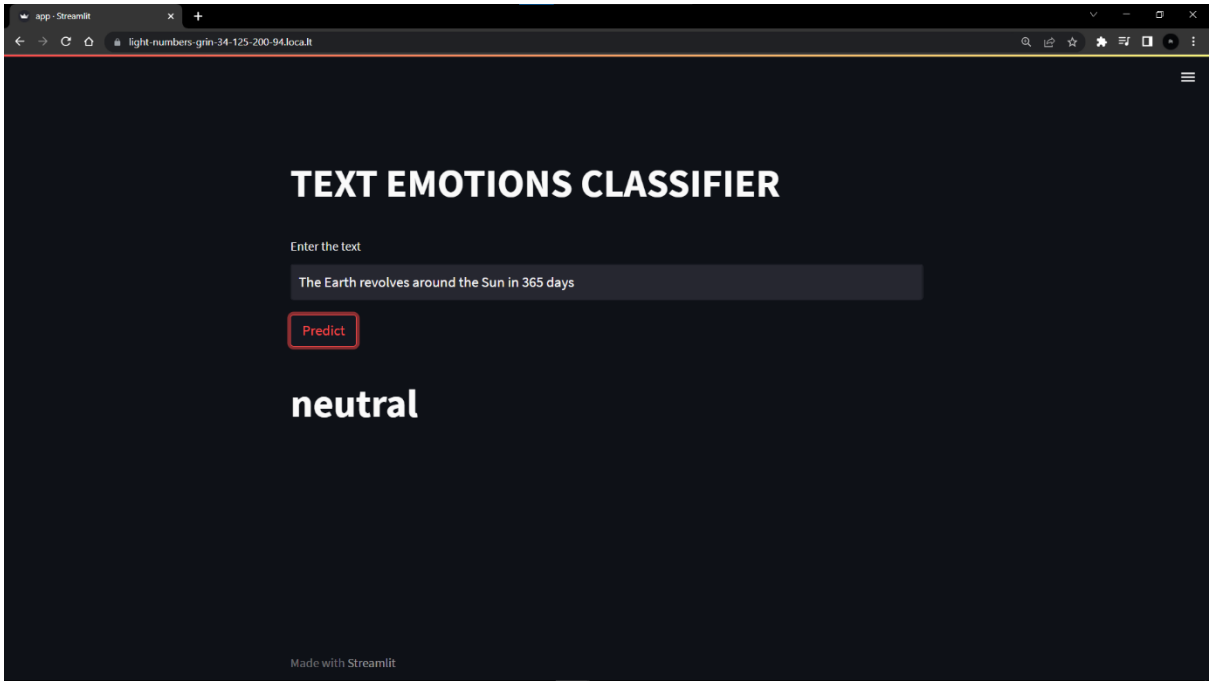
```
     |████████████████████████████████| 9.2 MB 6.7 MB/s
     |████████████████████████████████| 235 kB 46.9 MB/s
     |████████████████████████████████| 181 kB 60.0 MB/s
     |████████████████████████████████| 78 kB 5.4 MB/s
     |████████████████████████████████| 164 kB 49.7 MB/s
     |████████████████████████████████| 4.7 MB 36.0 MB/s
     |████████████████████████████████| 63 kB 1.4 MB/s
     |████████████████████████████████| 51 kB 7.3 MB/s
  Building wheel for validators (setup.py) ... done
```

```
[ ]  %%writefile app.py
     #%%writefile is amagic command to create app.py file
     import streamlit as st
     import joblib
     model = joblib.load('tweet_emotions')
     st.title('TEXT EMOTIONS CLASSIFIER')  #creates a title in web app
     ip = st.text_input('Enter the text')  #creates a text box in web app
     op = model.predict([ip])
     if st.button('Predict'):
       st.title(op[0]) # st.button will create a button with name Predict
       #st.title(op[0]) # the output will be displayed as a title
```

```
Writing app.py
```

```
!streamlit run app.py & npx localtunnel --port 8501

2022-09-24 07:02:26.065 INFO    numexpr.utils: NumExpr defaulting to 2 threads.

Collecting usage statistics. To deactivate, set browser.gatherUsageStats to False.


  You can now view your Streamlit app in your browser.

  Network URL: http://172.28.0.2:8501
  External URL: http://34.125.200.94:8501

npx: installed 22 in 4.213s
your url is: https://light-numbers-grin-34-125-200-94.loca.lt
```

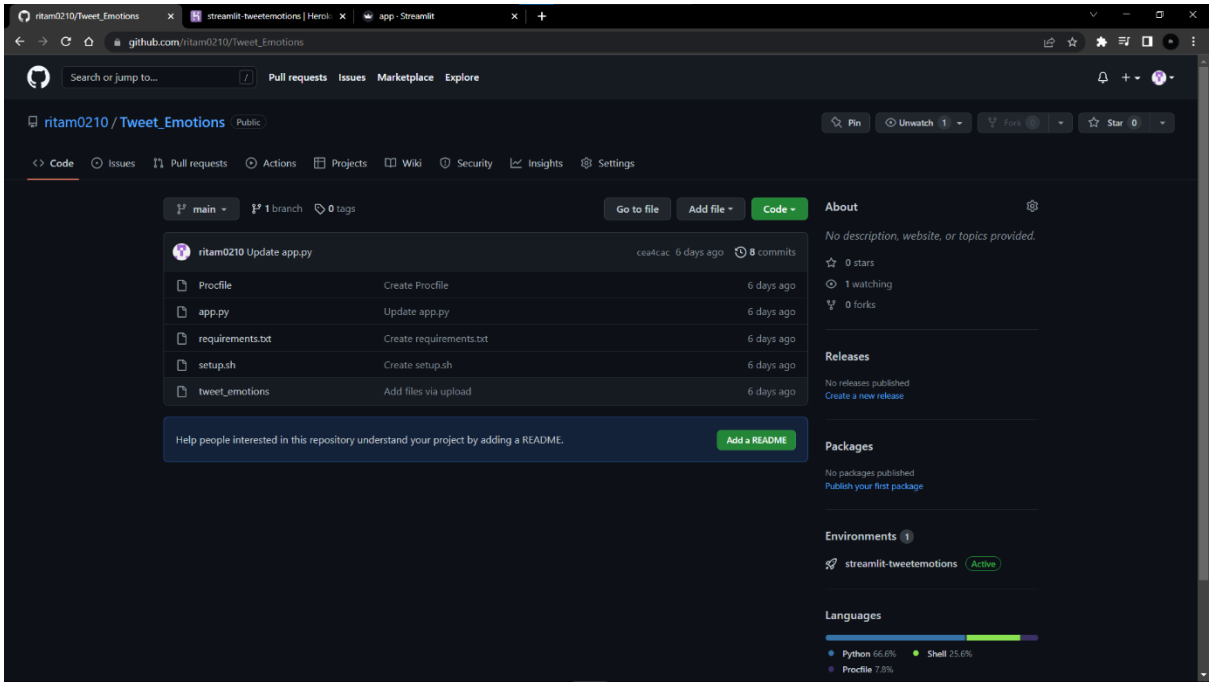




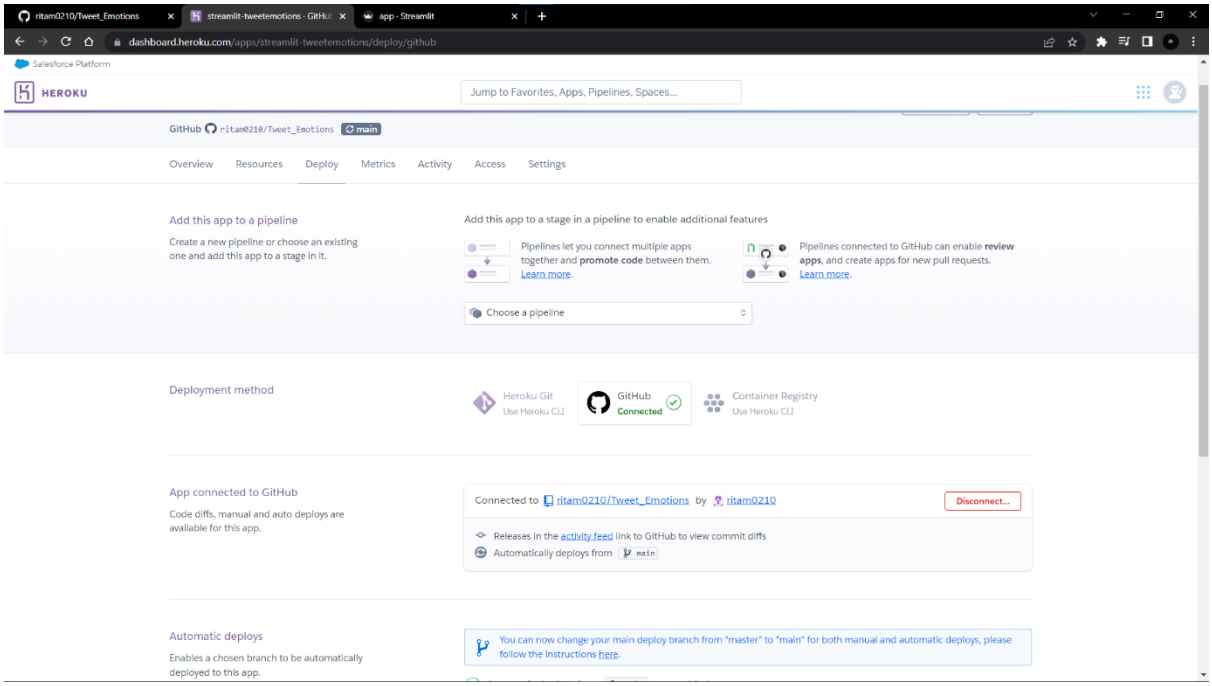
- **Permanent deployment using Heroku:** https://streamlit-tweetemotions.herokuapp.com/

Github Repository: https://github.com/ritam0210/Tweet_Emotions

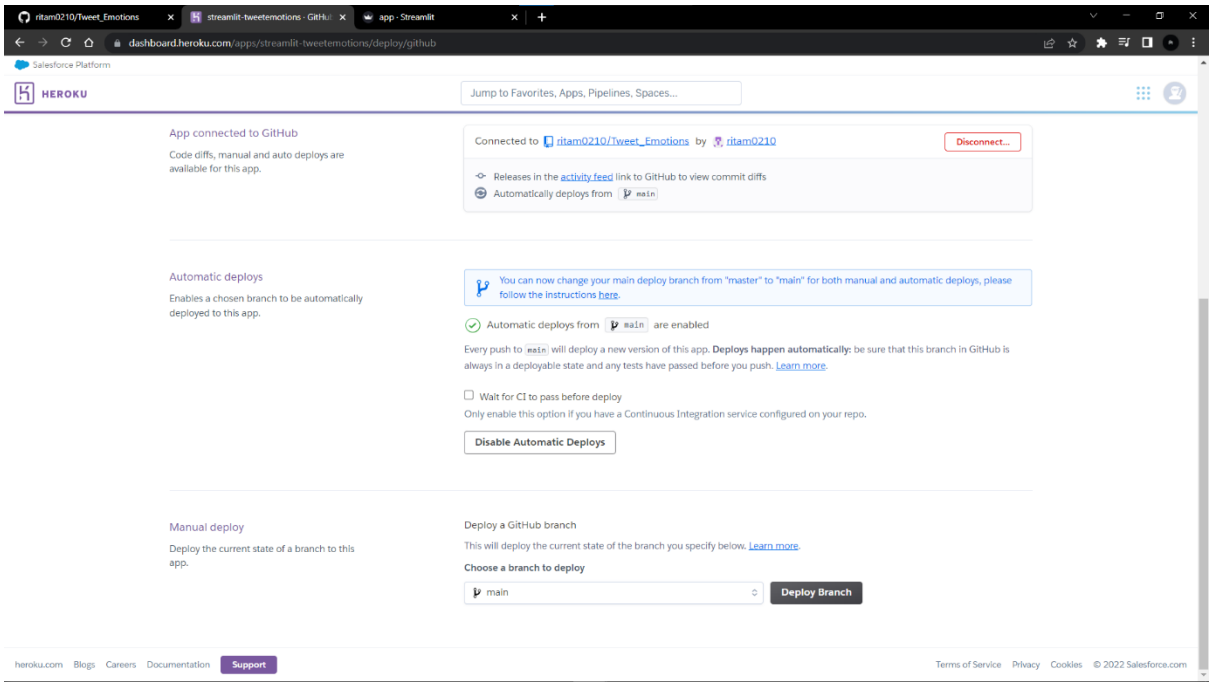
Uploaded and added required files for the web app



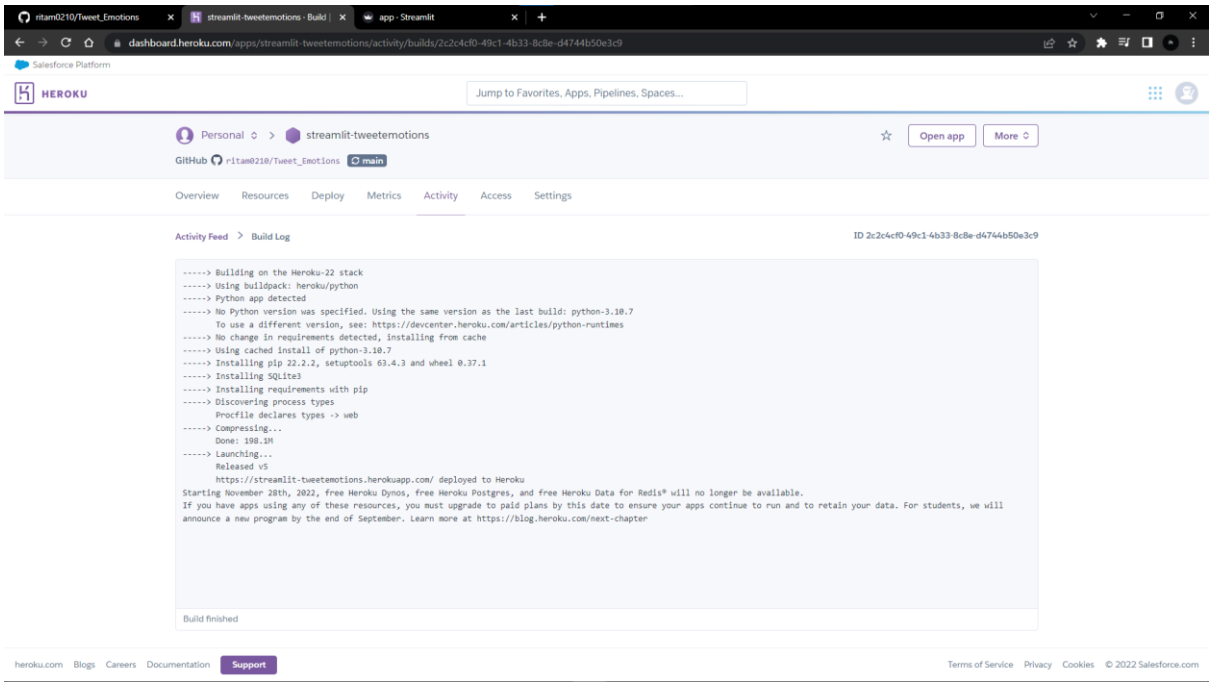
Connecting the Github account and adding the repository on Heroku:



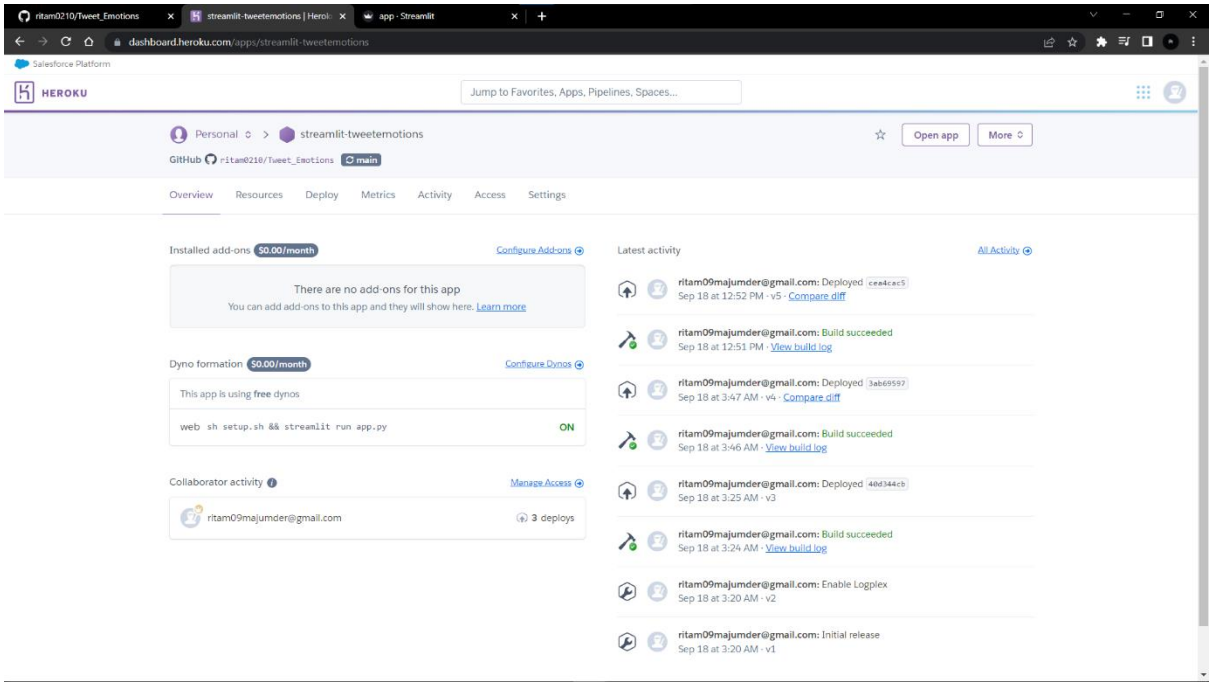
Enabling Automatic Deploys for the app:



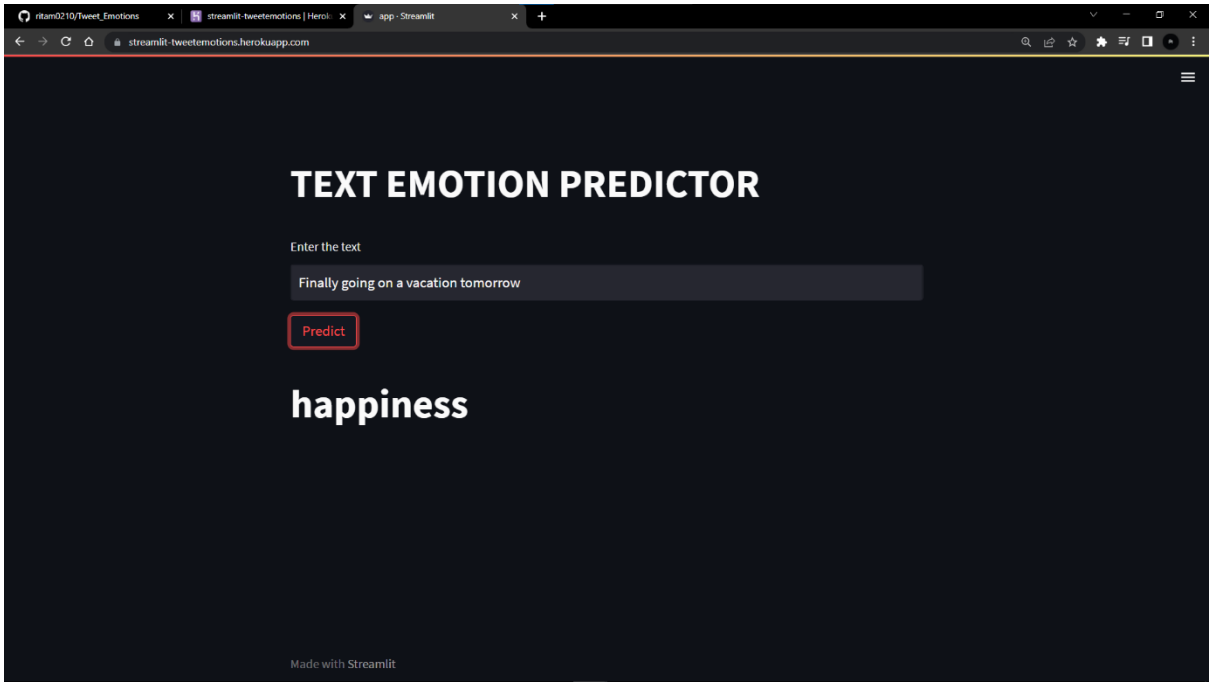
Made some minor changes in the app.py file in the Github repository and the app started building:

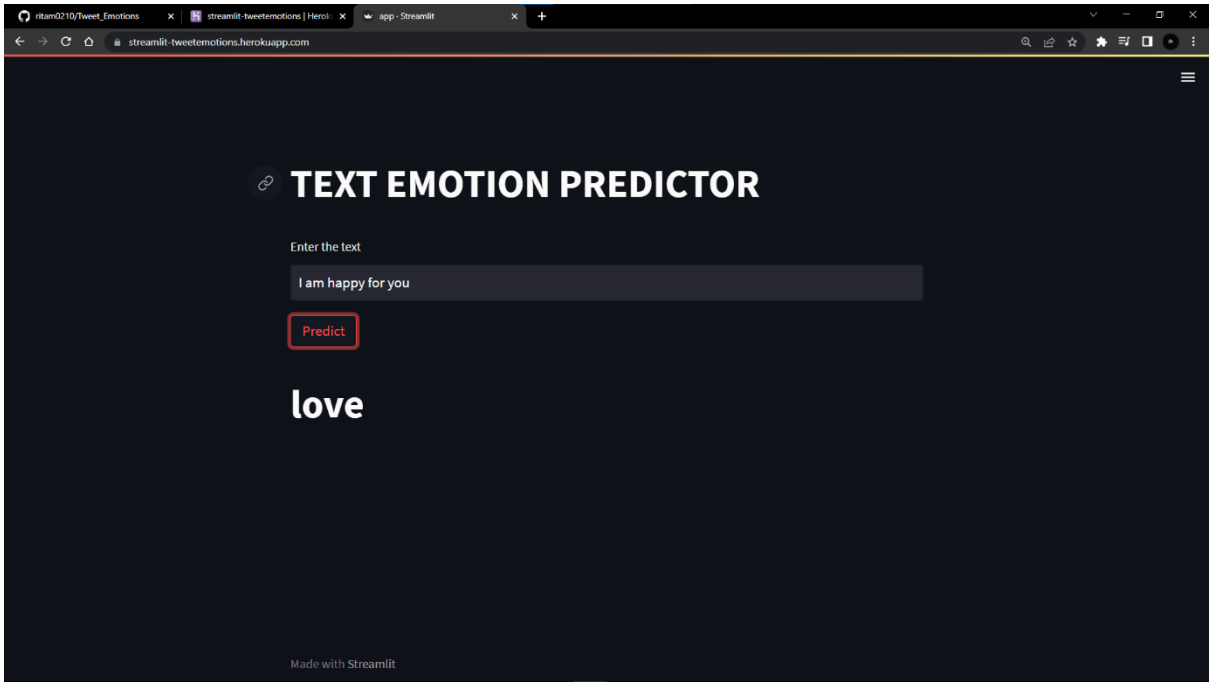


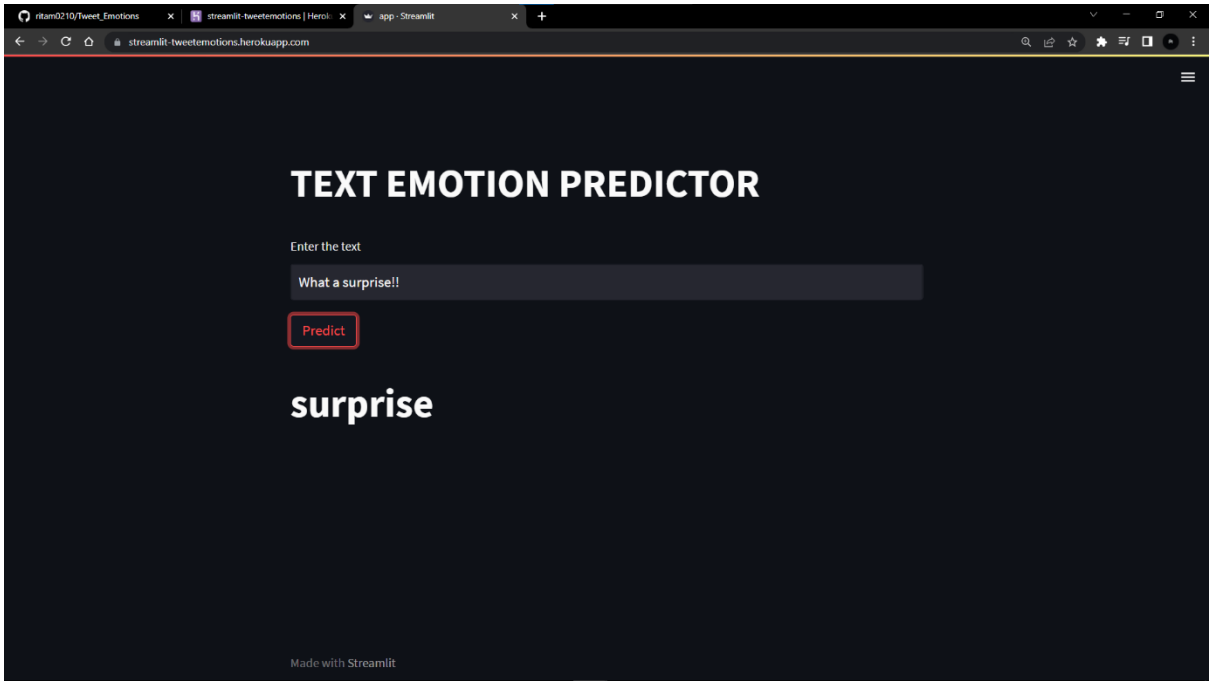
App built successfully and ready to be opened:



Heroku app screenshots:




ritam0210/Tweet_Emotions
streamlit-tweetemotions | Heroku
app · Streamlit
streamlit-tweetemotions.herokuapp.com
TEXT EMOTION PREDICTOR
Enter the text
I am happy for you
Predict
love
Made with Streamlit


ritam0210/Tweet_Emotions
streamlit-tweetemotions | Heroku
app · Streamlit
streamlit-tweetemotions.herokuapp.com
TEXT EMOTION PREDICTOR
Enter the text
What a surprise!!
Predict
surprise
Made with Streamlit

MAJOR PROJECT 2

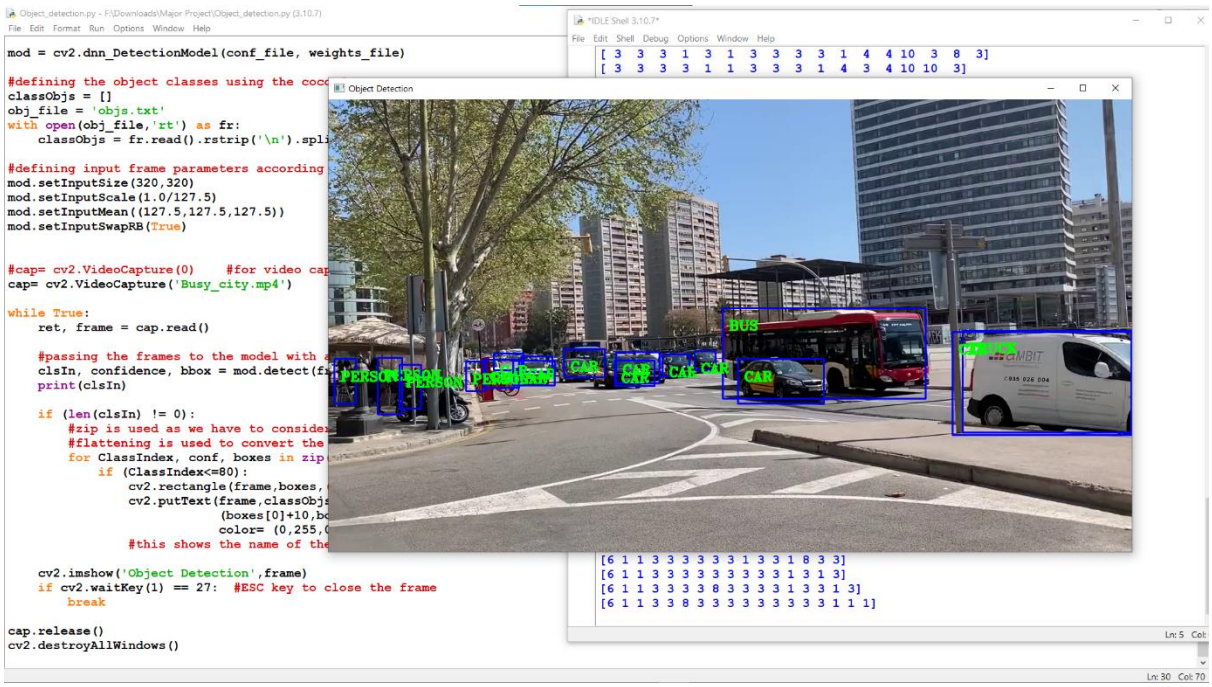
Object Detection (in both real-time and from a video file) using openCV

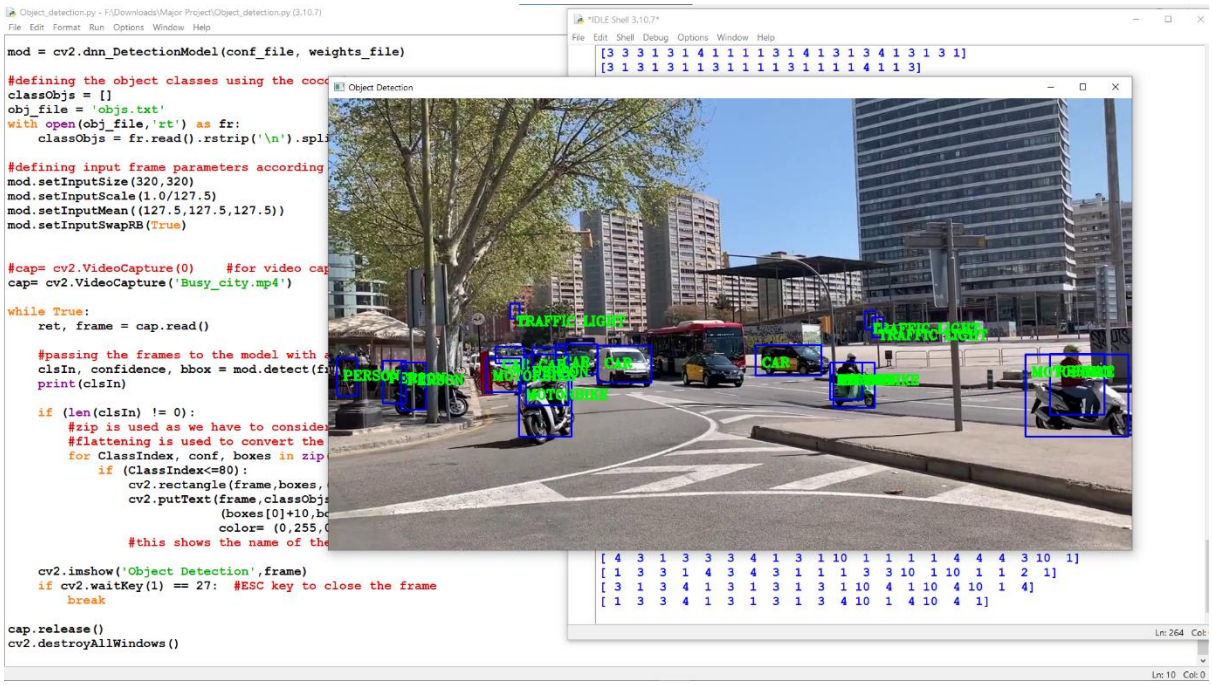
```
#OBJECT DETECTION USING OPENCV

import cv2

#importing the tensorflow trained model:
conf_file = 'ssd_mobilenet_v3_large_coco_2020_01_14.pbtxt'
weights_file = 'frozen_inference_graph.pb'

mod = cv2.dnn_DetectionModel(conf_file, weights_file)

#defining the object classes using the coco dataset:
classObjs = []
obj_file = 'objs.txt'
with open(obj_file,'rt') as fr:
   classObjs = fr.read().rstrip('\n').split('\n')

#defining input frame parameters according to the model configuration:
mod.setInputSize(320,320)
mod.setInputScale(1.0/127.5)
mod.setInputMean((127.5,127.5,127.5))
mod.setInputSwapRB(True)



#cap= cv2.VideoCapture(0)    #for video capture through webcam
cap= cv2.VideoCapture('Busy_city.mp4')     #for video capture through video file
```

```
while True:
    ret, frame = cap.read()

    #passing the frames to the model with a detection threshold of 0.5
    clsIn, confidence, bbox = mod.detect(frame,confThreshold=0.5)
    print(clsIn)

    if (len(clsIn) != 0):
        #zip is used as we have to consider 3 variables
        #flattening is used to convert the variables to an 1D-array
        for ClassIndex, conf, boxes in zip(clsIn.flatten(), confidence.flatten(), bbox):
            if (ClassIndex<=80):
                cv2.rectangle(frame,boxes,(255,0,0),2)    #blue rectangle frame
                cv2.putText(frame,classObjs[ClassIndex-1].upper(),
                        (boxes[0]+10,boxes[1]+35), cv2.FONT_HERSHEY_TRIPLEX, fontScale=0.7,
                        color= (0,255,0), thickness=2)
                #this shows the name of the objects in the rectangular frame in uppercase in green
color

    cv2.imshow('Object Detection',frame)
    if cv2.waitKey(1) == 27:  #ESC key to close the frame
        break

cap.release()
cv2.destroyAllWindows()
```

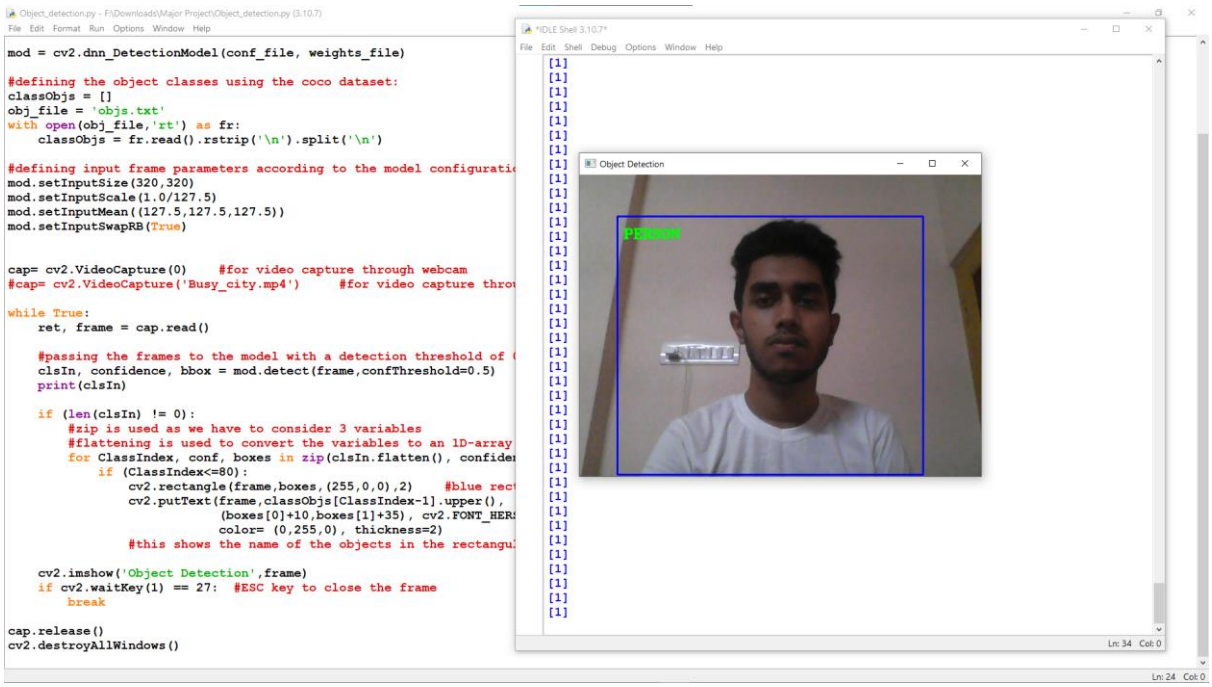
OUTPUT:

From a video file:





From a webcam:



```
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                cv2.putText(frame,classObjs[ClassIndex-1].upper(),
                            (boxes[0]+10,boxes[1]+35), cv2.FONT_HERS
                            color= (0,255,0), thickness=2)
                #this shows the name of the objects in the rectangu

    cv2.imshow('Object Detection',frame)
    if cv2.waitKey(1) == 27:  #ESC key to close the frame
        break

cap.release()
cv2.destroyAllWindows()
```