```
# Step 1: Upload Dataset (Only for Google Colab)
from google.colab import files
uploaded = files.upload()
# Step 2: Load the CSV
import pandas as pd
df = pd.read_csv("/content/drive/MyDrive/elonmusk.csv")
 # Replace with actual filename if different
df.head()
# Step 3: Basic Info
print("Shape:", df.shape)
print("Columns:", df.columns.tolist())
df.info()
print(df.describe())
# Step 4: Missing values and duplicates
print("Missing values:\n", df.isnull().sum())
print("Duplicate rows:", df.duplicated().sum())
# Step 5: Visualizations
import seaborn as sns
import matplotlib.pyplot as plt
df['tweet_length'] = df['tweet'].astype(str).apply(len)
# Tweet length distribution
sns.histplot(df['tweet_length'], kde=True, bins=30, color='teal')
plt.title('Distribution of Tweet Lengths')
plt.xlabel('Tweet Length')
plt.ylabel('Frequency')
plt.show()
# Tweets per year
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
# Step 1: Convert 'date' column to datetime format
df['date'] = pd.to_datetime(df['date'], errors='coerce')
# Step 2: Extract year from 'date'
df['year'] = df['date'].dt.year
# Step 3: Plot number of tweets per year
sns.countplot(data=df, x='year', palette='coolwarm')
plt.title('Number of Tweets per Year')
plt.xlabel('Year')
plt.ylabel('Tweet Count')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
# Top usernames
top_users = df['username'].value_counts().head(10)
top_users.plot(kind='bar', color='orange')
plt.title('Top 10 Users by Number of Tweets')
plt.xlabel('Username')
plt.ylabel('Tweet Count')
plt.show()
# Step 6: Sentiment Analysis using TextBlob
!pip install -q textblob
from textblob import TextBlob
def get_sentiment(text):
 polarity = TextBlob(str(text)).sentiment.polarity
 if polarity > 0:
  return 'positive'
 elif polarity == 0:
  return 'neutral'
 else:
  return 'negative'
df['sentiment'] = df['tweet'].apply(get_sentiment)
print(df[['tweet', 'sentiment']].head())
# Step 7: Train-Test Split
from sklearn.model_selection import train_test_split
X = df['tweet'].astype(str)
y = df['sentiment']
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
stratify=y, random_state=42)
# Step 8: TF-IDF + Logistic Regression Pipeline
from sklearn.pipeline import Pipeline
from sklearn.feature_extraction.text import TfidfVectorizer
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, classification_report,confusion_matrix
model = Pipeline([
 ('tfidf', TfidfVectorizer(max_features=5000, stop_words='english')),
 ('clf', LogisticRegression(max_iter=1000))
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])
model.fit(X_train, y_train)
y_pred = model.predict(X_test)
# Step 9: Evaluation
print("✅ Accuracy:", accuracy_score(y_test, y_pred))
print("📊 Classification Report:\n", classification_report(y_test, y_pred))
# Confusion Matrix
cm = confusion_matrix(y_test, y_pred)
sns.heatmap(cm, annot=True, fmt='d', cmap='Blues')
plt.title('Confusion Matrix')
plt.xlabel('Predicted')
plt.ylabel('True')
plt.show()
# Step 10: Test on new tweets
new_tweets = [
 "Tesla's new update is amazing!",
 "I'm not happy with Twitter's new algorithm.",
 "SpaceX launch was a huge success!",
 "This is just disappointing."
]
predictions = model.predict(new_tweets)
for tweet, sentiment in zip(new_tweets, predictions):
 print(f"Tweet: {tweet}\nPredicted Sentiment: {sentiment}\n")
# Step 11: Gradio Web App
!pip install -q gradio
import gradio as gr
def predict_sentiment(tweet):
 return model.predict([tweet])[0]
iface = gr.Interface(
 fn=predict_sentiment,
 inputs=gr.Textbox(lines=3, placeholder="Enter a tweet..."),
 outputs="text",
 title="Elon Musk Tweet Sentiment Analyzer",
 description="Enter a tweet related to Elon Musk to classify sentiment as Positive, Neutral, or Negative."
)
iface.launch()
```

Choose Files elonmusk.csv (1).zip

- **elonmusk.csv (1).zip**(application/x-zip-compressed) - 977036 bytes, last modified: 5/19/2025 - 100% done

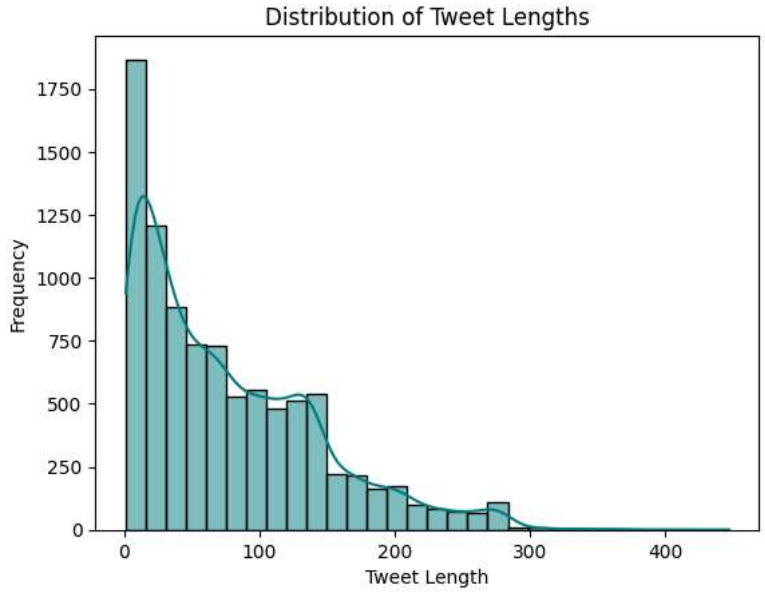
```
Saving elonmusk.csv (1).zip to elonmusk.csv (1).zip
Shape: (9286, 34)
Columns: ['id', 'conversation_id', 'created_at', 'date', 'time', 'timezone', 'user_id', 'username', 'name', 'place', 'tweet', 'mentions'
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9286 entries, 0 to 9285
Data columns (total 34 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   id               9286 non-null   int64
 1   conversation_id  9286 non-null   int64
 2   created_at       9286 non-null   int64
 3   date             9286 non-null   object
 4   time             9286 non-null   object
 5   timezone         9286 non-null   object
 6   user_id          9286 non-null   int64
 7   username         9286 non-null   object
 8   name             9286 non-null   object
 9   place            0 non-null      float64
 10  tweet            9286 non-null   object
 11  mentions         9286 non-null   object
 12  urls             9286 non-null   object
 13  photos           9286 non-null   object
 14  replies_count    9286 non-null   int64
 15  retweets_count   9286 non-null   int64
 16  likes_count      9286 non-null   int64
 17  hashtags         9286 non-null   object
 18  cashtags         9286 non-null   object
 19  link             9286 non-null   object
 20  retweet          9286 non-null   bool
 21  quote_url        355 non-null    object
 22  video            9286 non-null   int64
 23  near             0 non-null      float64
 24  geo              0 non-null      float64
 25  source           0 non-null      float64
 26  user_rt_id       0 non-null      float64
 27  user_rt          0 non-null      float64
 28  retweet_id       0 non-null      float64
 29  reply_to         9286 non-null   object
 30  retweet_date     0 non-null      float64
 31  translate        0 non-null      float64
 32  trans_src        0 non-null      float64
 33  trans_dest       0 non-null      float64
dtypes: bool(1), float64(11), int64(8), object(14)
memory usage: 2.3+ MB
                 id  conversation_id    created_at     user_id  place  \
count  9.286000e+03     9.286000e+03  9.286000e+03      9286.0    0.0
mean   1.055061e+18     1.052389e+18  1.540381e+12  44196397.0    NaN
std    1.695110e+17     1.740050e+17  4.041457e+10         0.0    NaN
min    5.610022e+17     1.659576e+09  1.422588e+12  44196397.0    NaN
25%    9.667040e+17     9.610311e+17  1.519315e+12  44196397.0    NaN
50%    1.089662e+18     1.088672e+18  1.548631e+12  44196397.0    NaN
75%    1.187852e+18     1.187320e+18  1.572041e+12  44196397.0    NaN
max    1.282940e+18     1.282933e+18  1.594712e+12  44196397.0    NaN

       replies_count  retweets_count   likes_count        video  near  geo  \
count    9286.000000     9286.000000  9.286000e+03  9286.000000   0.0  0.0
mean      512.958432     2282.844066  1.873480e+04     0.007538   NaN  NaN
std      1720.320306    10546.775719  5.929579e+04     0.086500   NaN  NaN
min         0.000000        0.000000  2.100000e+01     0.000000   NaN  NaN
25%        43.250000       43.000000  9.430000e+02     0.000000   NaN  NaN
50%       103.000000      129.000000  2.341500e+03     0.000000   NaN  NaN
75%       371.000000      955.750000  1.159850e+04     0.000000   NaN  NaN
max     49529.000000   384289.000000  1.682551e+06     1.000000   NaN  NaN

       source  user_rt_id  user_rt  retweet_id  retweet_date  translate  \
count     0.0         0.0      0.0         0.0           0.0        0.0
mean      NaN         NaN      NaN         NaN           NaN        NaN
std       NaN         NaN      NaN         NaN           NaN        NaN
min       NaN         NaN      NaN         NaN           NaN        NaN
25%       NaN         NaN      NaN         NaN           NaN        NaN
50%       NaN         NaN      NaN         NaN           NaN        NaN
75%       NaN         NaN      NaN         NaN           NaN        NaN
max       NaN         NaN      NaN         NaN           NaN        NaN

       trans_src  trans_dest
count        0.0         0.0
mean         NaN         NaN
std          NaN         NaN
min          NaN         NaN
25%          NaN         NaN
50%          NaN         NaN
75%          NaN         NaN
```

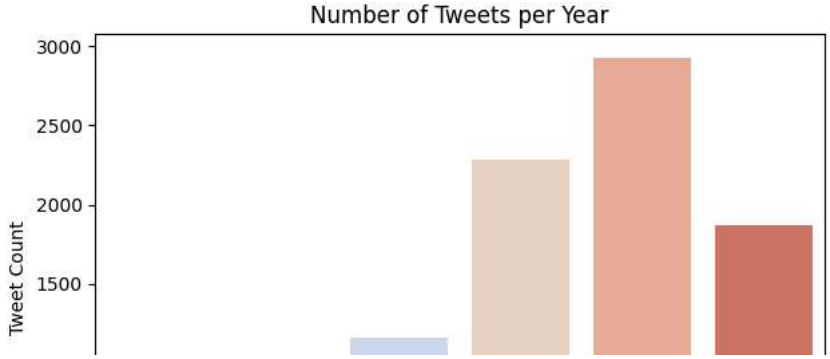
```
max          NaN         NaN
Missing values:
 id                    0
conversation_id        0
created_at             0
date                   0
time                   0
timezone               0
user_id                0
username               0
name                   0
place               9286
tweet                  0
mentions               0
urls                   0
photos                 0
replies_count          0
retweets_count         0
likes_count            0
hashtags               0
cashtags               0
link                   0
retweet                0
quote_url           8931
video                  0
near                9286
geo                 9286
source              9286
user_rt_id          9286
user_rt             9286
retweet_id          9286
reply_to               0
retweet_date        9286
translate           9286
trans_src           9286
trans_dest          9286
dtype: int64
Duplicate rows: 0
```

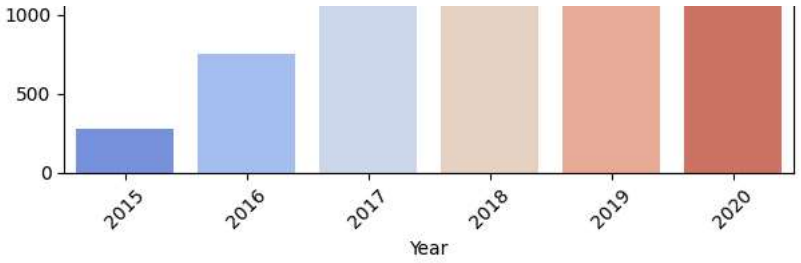


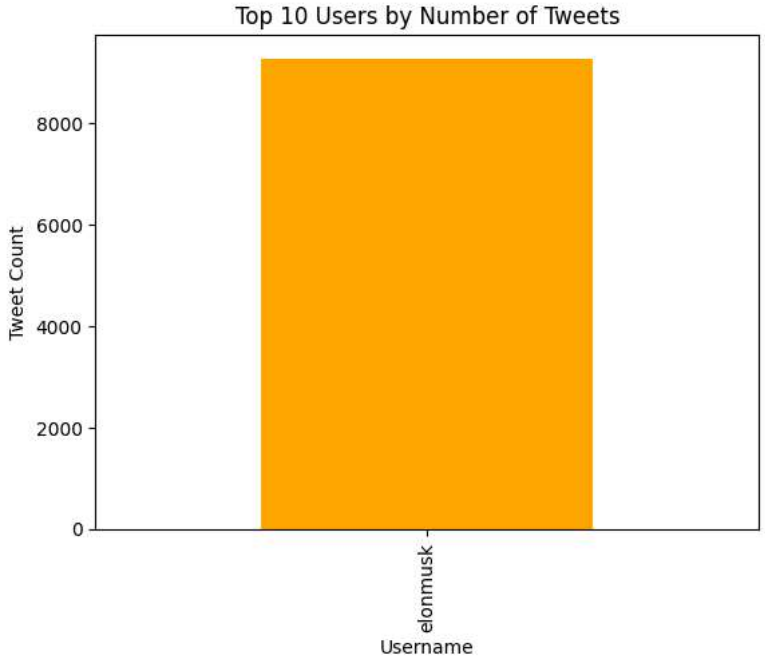

```
<ipython-input-23-f4b6e97546a9>:36: FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be removed in v0.14.0. Assign the `x` variable to `hue` and set `legend

  sns.countplot(data=df, x='year', palette='coolwarm')
```





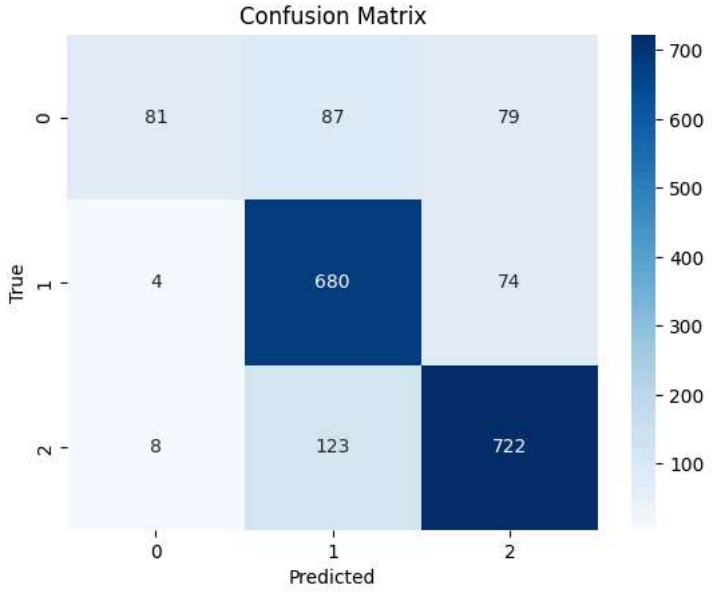


	tweet	sentiment
0	Cute	positive
1	Wow	positive
2	Reusability is essential. A rocket that is sin...	negative
3	Wild times!	positive
4	We’re being extra paranoid. Maximizing probabi...	positive

✅ Accuracy: 0.7981700753498385

📊 Classification Report:

	precision	recall	f1-score	support
negative	0.87	0.33	0.48	247
neutral	0.76	0.90	0.83	758
positive	0.83	0.85	0.84	853
accuracy			0.80	1858
macro avg	0.82	0.69	0.71	1858
weighted avg	0.81	0.80	0.78	1858



```
Tweet: Tesla's new update is amazing!
Predicted Sentiment: positive

Tweet: I'm not happy with Twitter's new algorithm.
Predicted Sentiment: positive

Tweet: SpaceX launch was a huge success!
Predicted Sentiment: positive

Tweet: This is just disappointing.
Predicted Sentiment: positive

It looks like you are running Gradio on a hosted a Jupyter notebook. For the Gradio app to work, sharing must be enabled. Automatically

Colab notebook detected. To show errors in colab notebook, set debug=True in launch()
* Running on public URL: https://3d8f9c263fe9b4863d.gradio.live

This share link expires in 1 week. For free permanent hosting and GPU upgrades, run `gradio deploy` from the terminal in the working dir
```