AI_PHASE-3

SENTIMENT ANALYSIS

WITH

MARKETING

INTRODUCTION

Sentiment Analysis

° Sentiment analysis for marketing is a techniqueused to determine and understand peopleattitudes, opinions, and emotions toward a product,brand, or topic. In the context of marketing, it involves analyzing textual data, such as social media posts, customer reviews, andfeedback, to gauge public sentiment.

° By employing natural language processing and learning algorithms,businesses can gain valuable insights into customer perceptions, allowing them to make data-driven decisions. Positive sentiment can be harnessed for marketing campaigns, while negative sentiment indicate areas for improvement.

Positive sentiment can be harnessed for marketing campaigns, while negative sentiment can indicate areas for improvement. Sentiment analysis empowers marketers to enhance customer experiences, tailor their strategies, and build stronger, more positive relationships with their audience.

PROGRAM

```python
import pandas as pd
import seaborn as sns
import re, nltk
nltk.download('punkt')
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split, StratifiedKFold, cross_val_score
from sklearn import model_selection, naive_bayes, svm
from sklearn.metrics import classification_report,confusion_matrix
from sklearn.metrics import roc_auc_score
from sklearn.metrics import recall_score
from sklearn.metrics import f1_score
from sklearn.metrics import confusion_matrix, accuracy_score
from sklearn.model_selection import GridSearchCV
from sklearn.metrics import precision_recall_curve
from sklearn.metrics import f1_score
from sklearn.metrics import auc
from matplotlib import pyplot
from sklearn.metrics import roc_curve
from sklearn.metrics import roc_auc_score, accuracy_score
import string
from nltk.corpus import stopwords
nltk.download('stopwords')
from sklearn.feature_extraction.text import CountVectorizer, TfidfVectorizer
from sklearn.naive_bayes import MultinomialNB, GaussianNB
from sklearn.metrics import f1_score
from sklearn.ensemble import AdaBoostClassifier
from sklearn.model_selection import cross_val_score
import numpy as np
from sklearn.ensemble import BaggingClassifier
from sklearn.ensemble import RandomForestClassifier
from lime import lime_tabular
from tensorflow.keras.layers import Embedding
from tensorflow.keras.preprocessing.sequence import pad_sequences
from tensorflow.keras.models import Sequential
from tensorflow.keras.preprocessing.text import one_hot
from tensorflow.keras.layers import LSTM
from tensorflow.keras.layers import Dense, Dropout
```

```
[nltk_data] Downloading package punkt to /usr/share/nltk_data...
[nltk_data]   Package punkt is already up-to-date!
[nltk_data] Downloading package stopwords to /usr/share/nltk_data...
[nltk_data]   Package stopwords is already up-to-date!
```

```python
df =pd.read_csv(r'../input/twitter-airline-sentiment/Tweets.csv')
df.head()
```

OUTPUT

	tweet_id	airline_sentiment	airline_sentiment_confidence	negativereason	negativereason_confidence
0	570306133677760513	neutral	1.0000	NaN	NaN
1	570301130888122368	positive	0.3486	NaN	0.0000
2	570301083672813571	neutral	0.6837	NaN	NaN
3	570301031407624196	negative	1.0000	Bad Flight	0.7033
4	570300817074462722	negative	1.0000	Can't Tell	1.0000

In [49]:
```python
# Unique values of sentiment
df['airline_sentiment'].unique()
```

Out[49]:
```
array(['neutral', 'positive', 'negative'], dtype=object)
```

In [50]:
```python
import plotly.express as px
fig = px.pie(df, names='airline_sentiment', title ='Pie chart of different sentiments of t
weets')
fig.show()
```

In [51]:
```python
# Unique values of sentiment plot

plt.style.use('seaborn-whitegrid')
plt.figure(figsize=(8,6))
col = ['slateblue', 'yellowgreen', 'red']
ax = sns.countplot(x="airline_sentiment", data=df, palette = col)
```
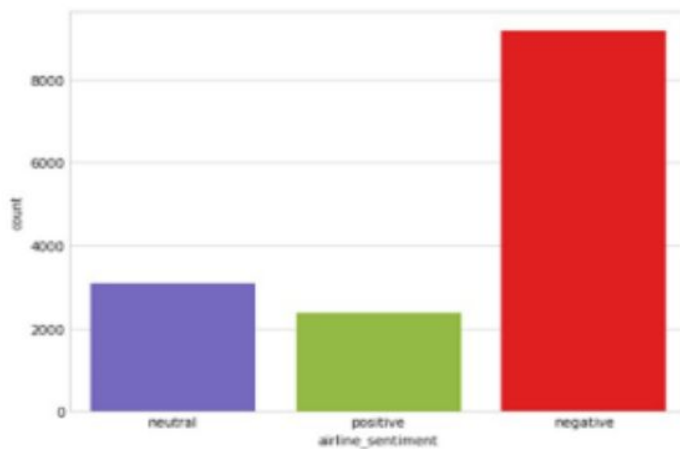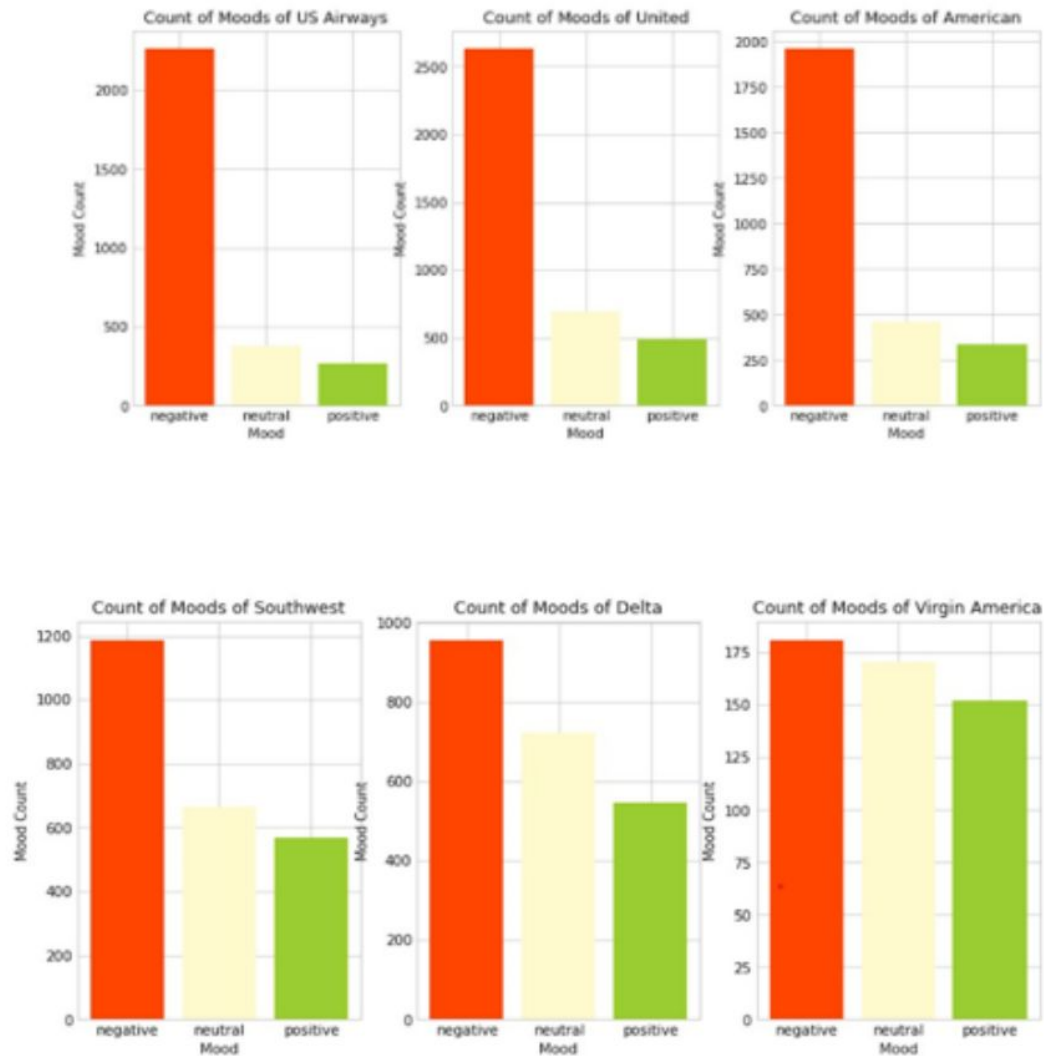
Positive and neutral tweets are almost equal.

Negative tweets are more than double of neutral or positive sentiments.

In [52]:
```python
print("Total number of tweets for each airline \n ",df.groupby('airline')['airline_sentime
nt'].count().sort_values(ascending=False))
airlines= ['US Airways','United','American','Southwest','Delta','Virgin America']
plt.figure(1,figsize=(12, 12))
for i in airlines:
    indices= airlines.index(i)
    plt.subplot(2,3,indices+1)
    new_df=df[df['airline']==i]
    count=new_df['airline_sentiment'].value_counts()
    Index = [1,2,3]
    plt.bar(Index,count, color=['orangered', 'lemonchiffon', 'yellowgreen'])
    plt.xticks(Index,['negative','neutral','positive'])
    plt.ylabel('Mood Count')
    plt.xlabel('Mood')
    plt.title('Count of Moods of '+i)
```

```
Total number of tweets for each airline
  airline
United           3822
US Airways       2913
American         2759
Southwest        2420
Delta            2222
Virgin America    504
Name: airline_sentiment, dtype: int64
```

Count of Moods of US Airways

Count of Moods of United

Count of Moods of American

Count of Moods of Southwest

Count of Moods of Delta

Count of Moods of Virgin America

In [53]:

```python
# Unique values of airline

col = ['slateblue', 'yellowgreen', 'red', 'turquoise', 'chocolate', 'yellow']
plt.figure(figsize=(9,8))
ax = sns.countplot(x="airline", data=df, palette = col)
```
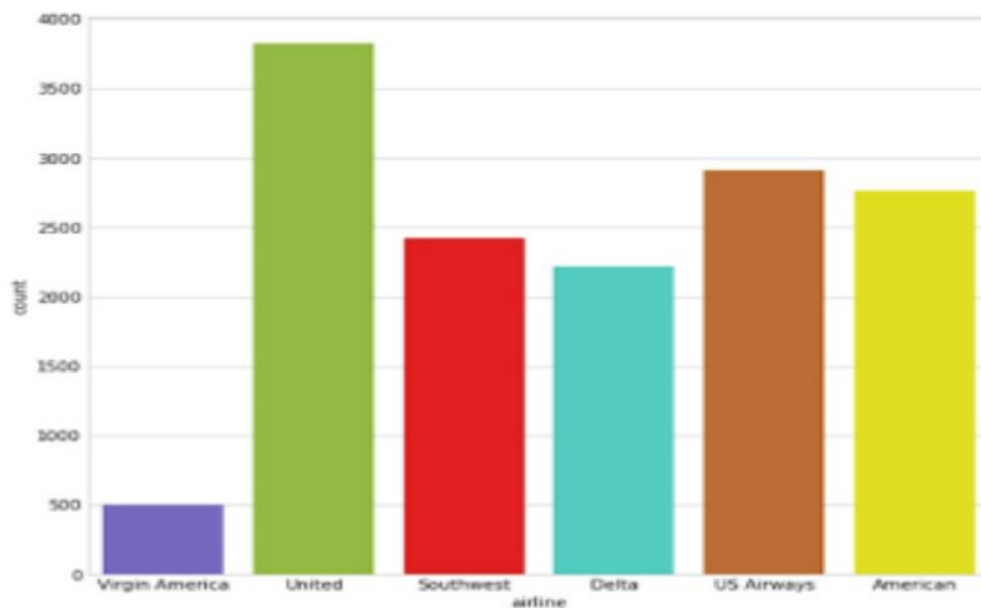
CONCLUSION

Sentiment analysis plays a crucial role in modern marketing strategies. By harnessing the power of natural language processing and machine learning, businesses can gain deep insights into customer sentiment.

Analyzing positive sentiment helps in reinforcingsuccessful marketing efforts, while addressing negative sentiment allows for proactive problem-solving and improved customer satisfaction.

Sentiment analysis is an invaluable tool that empowers businesses to stay ahead of the curve and create compelling, customer-focused marketing campaigns.