Data Science Internship

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Objective: To analayze and visualize sentiment patterns in social media data for comprehensive insights into public opinion and attitudes regarding specific topics or brands.

In [3]:

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from textblob import TextBlob
import warnings
warnings.filterwarnings('ignore')
```

In [4]:

```
# oad the dataset
dt = pd.read_csv('D:/Prodigy/Task 4/twitter_training.csv', names=['ID', 'Topic', 'Sentiment', 'Tweet'], header=None)
dt.head(10)
```

Out[4]:

	ID	Topic	Sentiment	Tweet
0	2401	Borderlands	Positive	im getting on borderlands and i will murder yo...
1	2401	Borderlands	Positive	I am coming to the borders and I will kill you...
2	2401	Borderlands	Positive	im getting on borderlands and i will kill you ...
3	2401	Borderlands	Positive	im coming on borderlands and i will murder you...
4	2401	Borderlands	Positive	im getting on borderlands 2 and i will murder ...
5	2401	Borderlands	Positive	im getting into borderlands and i can murder y...
6	2402	Borderlands	Positive	So I spent a few hours making something for fu...
7	2402	Borderlands	Positive	So I spent a couple of hours doing something f...
8	2402	Borderlands	Positive	So I spent a few hours doing something for fun...
9	2402	Borderlands	Positive	So I spent a few hours making something for fu...

In [5]:

```
dt.tail(10)
```

Out[5]:

	ID	Topic	Sentiment	Tweet

	ID	Topic	Sentiment	Tweet
74672	9199	Nvidia	Positive	Let no elite go unnoticed... NVIDIA Highlights...
74673	9199	Nvidia	Positive	Let no elim go unnoticed.... NVIDIA Highlights...
74674	9199	Nvidia	Positive	Let a no information elim that go unnoticed.....
74675	9199	Nvidia	Positive	<unk> my elim be no.... NVIDIA Highlights Pict...
74676	9200	Nvidia	Positive	Just realized the windows partition of my Mac ...
74677	9200	Nvidia	Positive	Just realized that the Windows partition of my...
74678	9200	Nvidia	Positive	Just realized that my Mac window partition is ...
74679	9200	Nvidia	Positive	Just realized the windows partition of my Mac ...
74680	9200	Nvidia	Positive	Just realized between the windows partition of...
74681	9200	Nvidia	Positive	Just like the windows partition of my Mac is l...

In [6]:

```
dt.columns
```

Out[6]:

```
Index(['ID', 'Topic', 'Sentiment', 'Tweet'], dtype='object')
```

In [7]:

```
dt.index
```

Out[7]:

```
RangeIndex(start=0, stop=74682, step=1)
```

In [8]:

```
dt.shape
```

Out[8]:

```
(74682, 4)
```

In [9]:

```
dt.size
```

Out[9]:

```
298728
```

In [10]:

```
dt.describe()
```

Out[10]:

	ID
count	74682.000000
mean	6432.586165
std	3740.427870
min	1.000000
25%	3195.000000
50%	6422.000000
75%	9601.000000
max	13200.000000

In [11]:

```
dt.isna().sum()
```

```
dt.isna().sum()
```

Out[11]:

```
ID             0
Topic          0
Sentiment      0
Tweet        686
dtype: int64
```

In [12]:

```
dt.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 74682 entries, 0 to 74681
Data columns (total 4 columns):
 #   Column     Non-Null Count  Dtype 
---  ------     --------------  ----- 
 0   ID         74682 non-null  int64 
 1   Topic      74682 non-null  object
 2   Sentiment  74682 non-null  object
 3   Tweet      73996 non-null  object
dtypes: int64(1), object(3)
memory usage: 2.3+ MB
```

In [13]:

```
# Define a function to handle non-string values
def analyze_sentiment(text):
    if isinstance(text, str):
        return TextBlob(text).sentiment.polarity
    else:
        return 0.0
```

Performing sentiment analysis

In [14]:

```
dt['Polarity'] = dt['Tweet'].apply(analyze_sentiment)
```

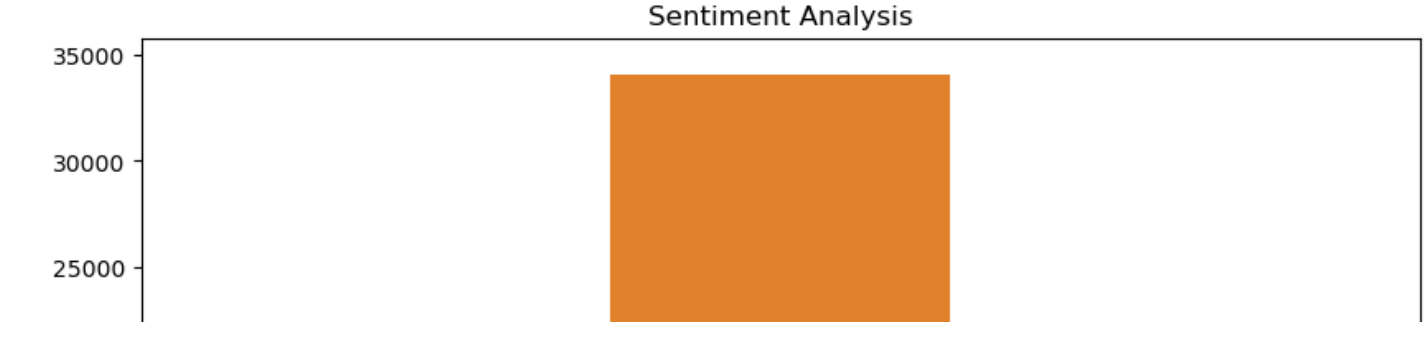
In [15]:

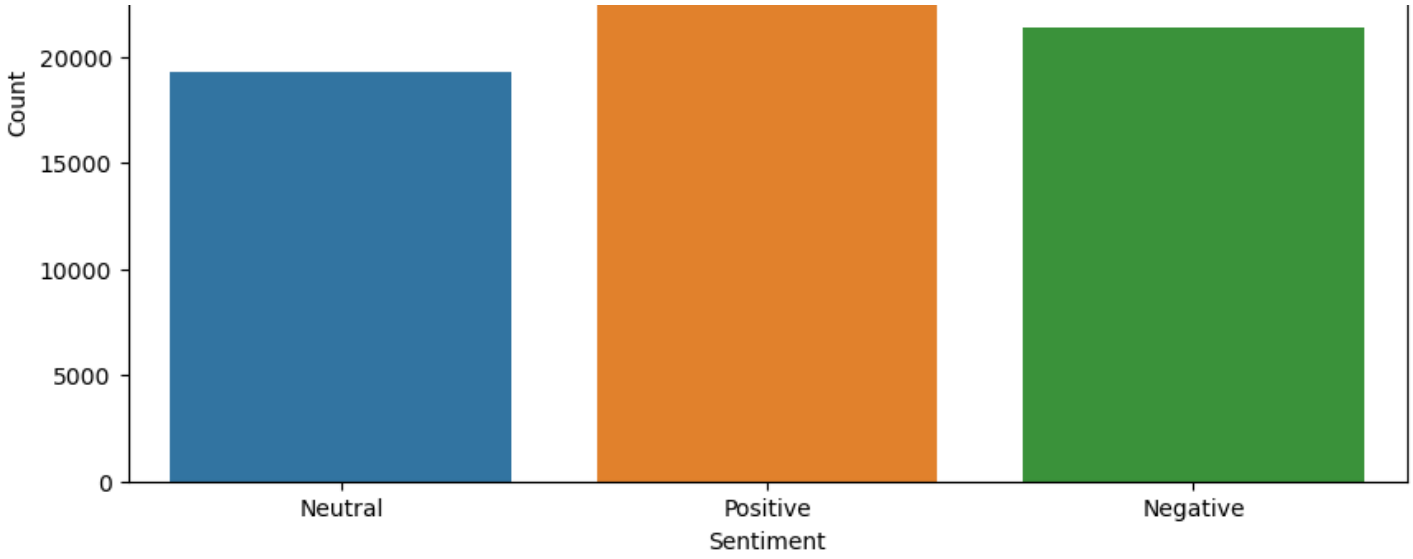
```
# Categorize sentiment
dt['Sentiment_Label'] = dt['Polarity'].apply(lambda x: 'Positive' if x > 0 else 'Negativ
e' if x < 0 else 'Neutral')
```

Analyze sentiment distribution

In [16]:

```
plt.figure(figsize=(10, 6))
sns.countplot(dt['Sentiment_Label'])
plt.title('Sentiment Analysis')
plt.xlabel('Sentiment')
plt.ylabel('Count')
plt.show()
```



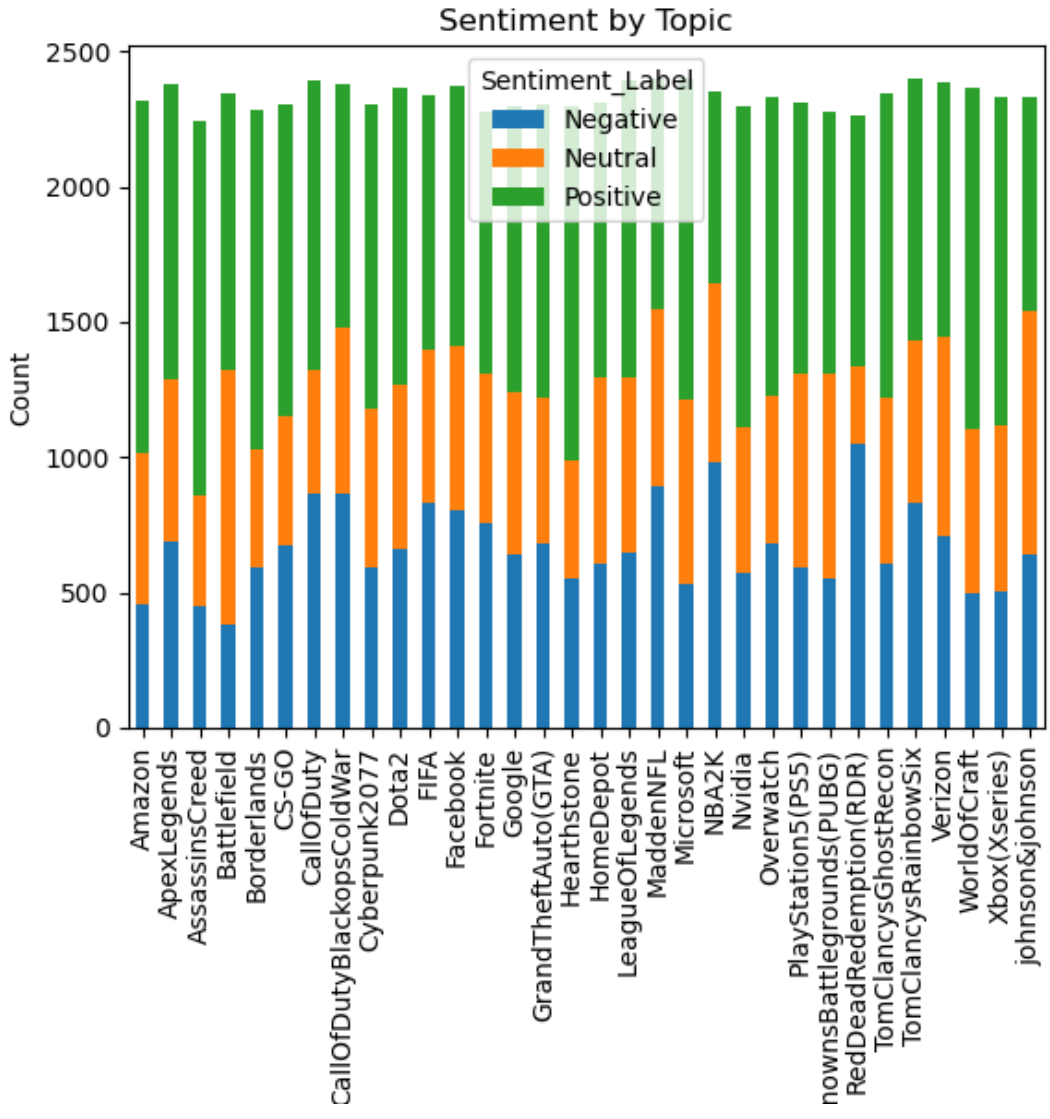


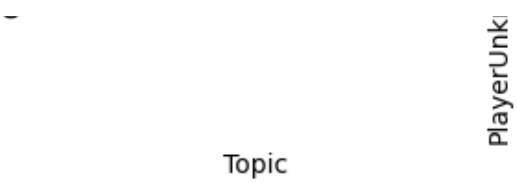
Analyze sentiment by topic

In [17]:

```
plt.figure(figsize=(15,8))
sentiment_by_topic = dt.groupby(['Topic', 'Sentiment_Label']).size().unstack(fill_value=0)
sentiment_by_topic.plot(kind='bar', stacked=True)
plt.title('Sentiment by Topic')
plt.xlabel('Topic')
plt.ylabel('Count')
plt.show()
```

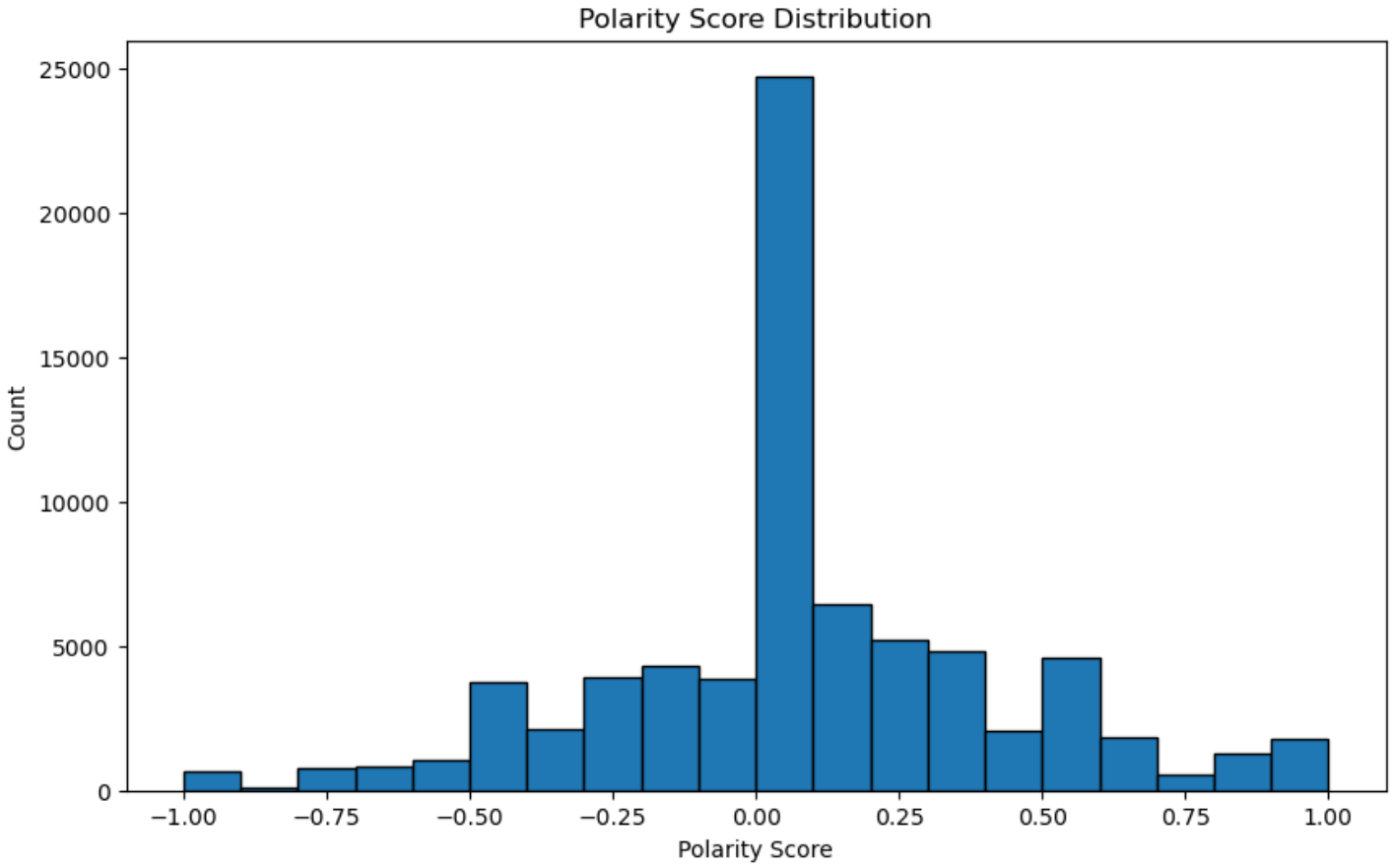
```
<Figure size 1500x800 with 0 Axes>
```





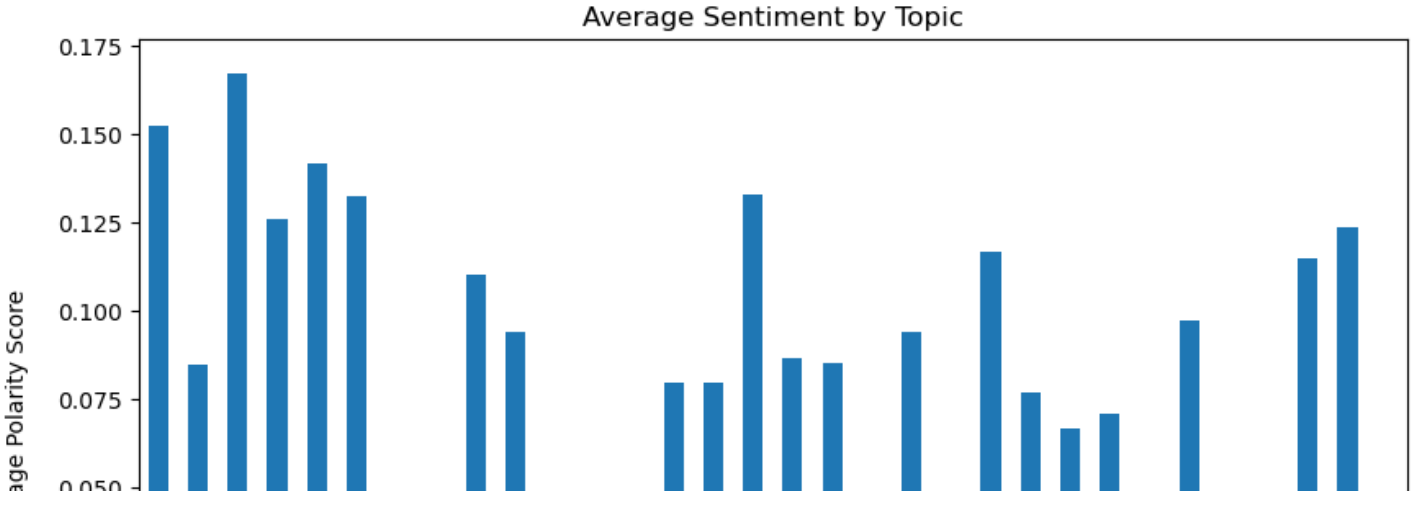
In [18]:

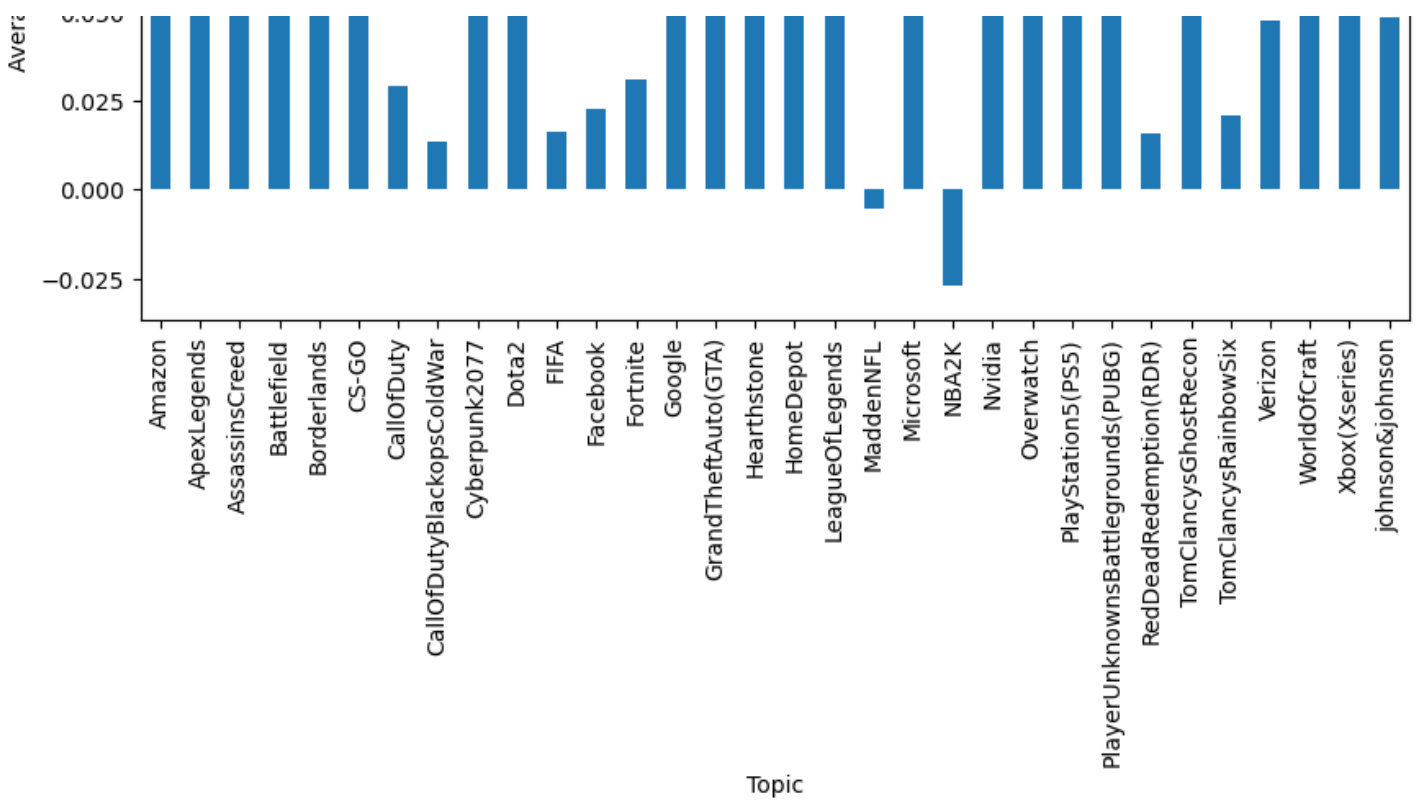
```
plt.figure(figsize=(10, 6))
plt.hist(dt['Polarity'], bins=20, edgecolor='k')
plt.title('Polarity Score Distribution')
plt.xlabel('Polarity Score')
plt.ylabel('Count')
plt.show()
```



In [19]:

```
plt.figure(figsize=(10, 6))
average_polarity_by_topic = dt.groupby('Topic')['Polarity'].mean()
average_polarity_by_topic.plot(kind='bar')
plt.title('Average Sentiment by Topic')
plt.xlabel('Topic')
plt.ylabel('Average Polarity Score')
plt.show()
```





Visualize the most positive and negative tweets

In [21]:

```
most_positive_tweet = dt[dt['Polarity'] == dt['Polarity'].max()]['Tweet'].values[0]
most_negative_tweet = dt[dt['Polarity'] == dt['Polarity'].min()]['Tweet'].values[0]

print('Most Positive Tweet:')
print(most_positive_tweet)

print('\nMost Negative Tweet:')
print(most_negative_tweet)
```

```
Most Positive Tweet:
Platinum is the best loot @Borderlands

Most Negative Tweet:
"What terrible bitch!"
```

Thank you!

In [ ]:

```
```