task-4

August 3, 2024

[24]:
```
import pandas as pd
import matplotlib.pyplot as plt
from textblob import TextBlob
```

[26]:
```
data = pd.read_csv('twitter_training.csv', names=['ID', 'Topic', 'Sentiment',␣
↪'Tweet'], header=None)
```

[28]:
```
data.head()
```

[28]:
```
     ID        Topic Sentiment  \
0  2401  Borderlands  Positive
1  2401  Borderlands  Positive
2  2401  Borderlands  Positive
3  2401  Borderlands  Positive
4  2401  Borderlands  Positive

                                                Tweet
0  im getting on borderlands and i will murder yo…
1  I am coming to the borders and I will kill you…
2  im getting on borderlands and i will kill you …
3  im coming on borderlands and i will murder you…
4  im getting on borderlands 2 and i will murder …
```

[30]:
```
data.tail()
```

[30]:
```
          ID   Topic Sentiment  \
74677  9200  Nvidia  Positive
74678  9200  Nvidia  Positive
74679  9200  Nvidia  Positive
74680  9200  Nvidia  Positive
74681  9200  Nvidia  Positive

                                                 Tweet
74677  Just realized that the Windows partition of my…
74678  Just realized that my Mac window partition is …
74679  Just realized the windows partition of my Mac …
74680  Just realized between the windows partition of…
```

```
74681  Just like the windows partition of my Mac is l…
```

[57]:
```
data.describe()
```

[57]:
```
                 ID      polarity
count  74682.000000  74682.000000
mean    6432.586165     -0.114125
std     3740.427870      0.268393
min        1.000000     -0.500000
25%     3195.000000     -0.300000
50%     6422.000000      0.000000
75%     9601.000000      0.227273
max    13200.000000      0.227273
```

[39]:
```
print(data.isnull().sum())
```

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

[59]:
```
data.info()
```

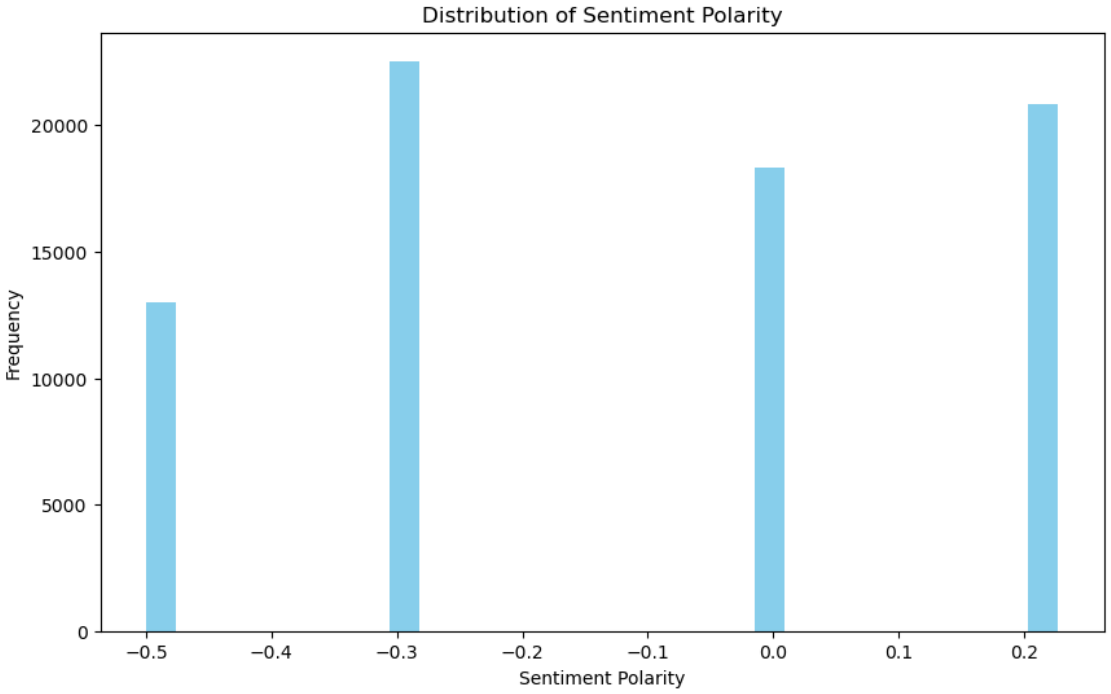
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 74682 entries, 0 to 74681
Data columns (total 5 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   ID         74682 non-null  int64
 1   Topic      74682 non-null  object
 2   Sentiment  74682 non-null  object
 3   Tweet      73996 non-null  object
 4   polarity   74682 non-null  float64
dtypes: float64(1), int64(1), object(3)
memory usage: 2.8+ MB
```

[42]:
```
print(data['Sentiment'].unique())
```

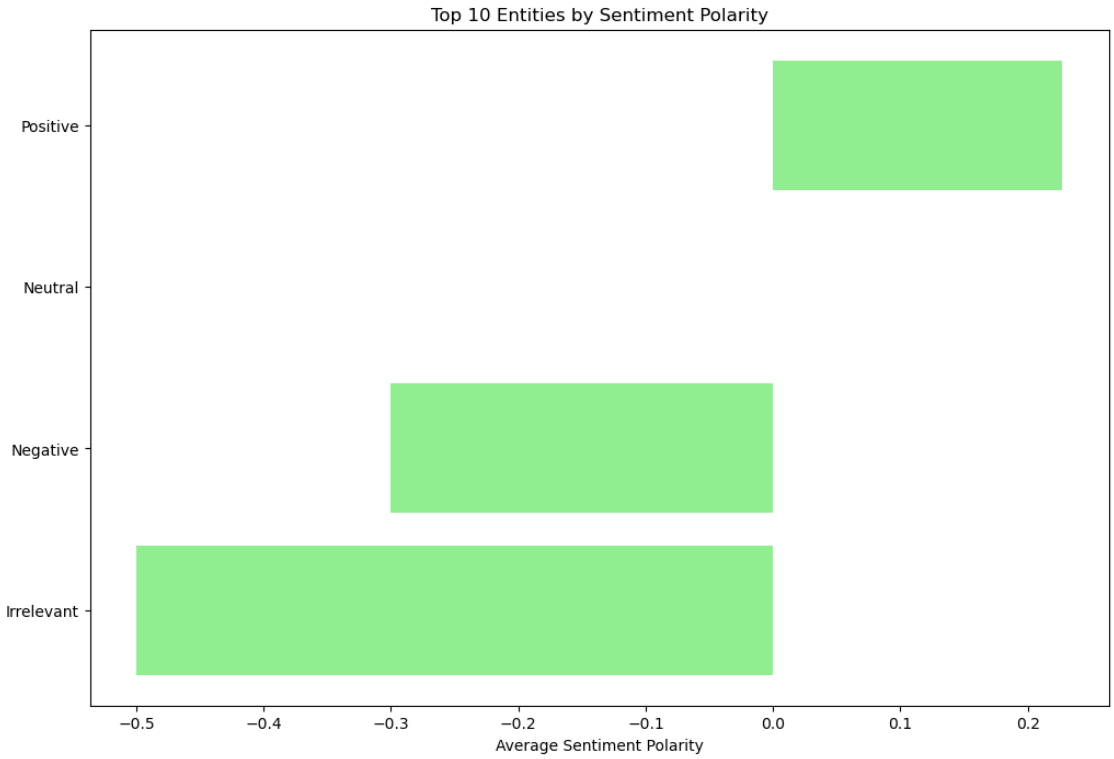
```
['Positive' 'Neutral' 'Negative' 'Irrelevant']
```

[44]:
```
def get_sentiment(text):
    analysis = TextBlob(text)
    return analysis.sentiment.polarity
data['polarity'] = data['Sentiment'].apply(get_sentiment)
```

[46]:
```
plt.figure(figsize=(10, 6))
plt.hist(data['polarity'], bins=30, color='skyblue')
plt.xlabel('Sentiment Polarity')
plt.ylabel('Frequency')
plt.title('Distribution of Sentiment Polarity')
plt.show()
```

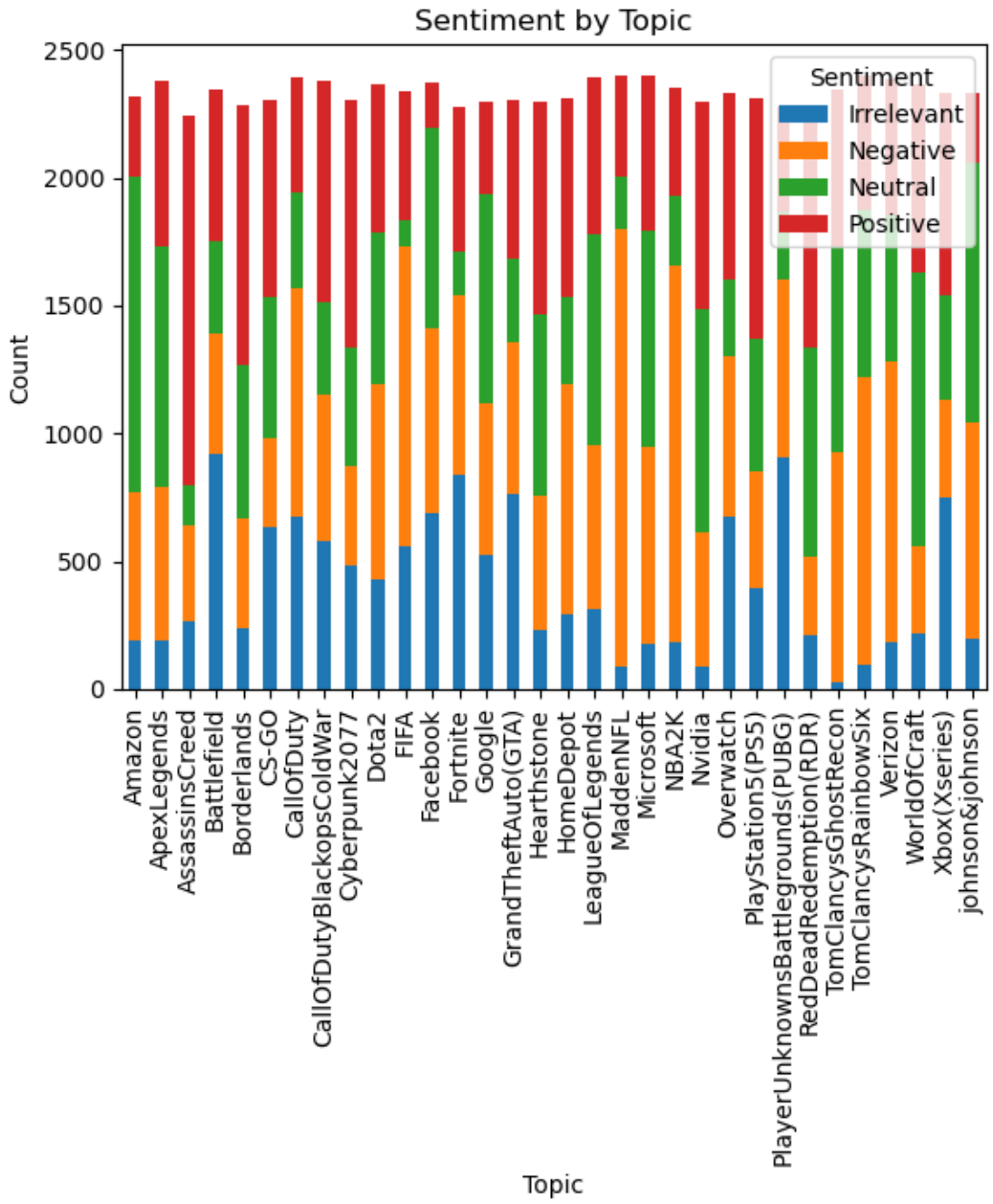


[48]:
```
entity_sentiment = data.groupby('Sentiment')['polarity'].mean().reset_index()
entity_sentiment_sorted = entity_sentiment.sort_values(by='polarity',␣
↪ascending=False)
plt.figure(figsize=(12, 8))
plt.barh(entity_sentiment_sorted['Sentiment'][:10],␣
↪entity_sentiment_sorted['polarity'][:10], color='lightgreen')
plt.xlabel('Average Sentiment Polarity')
plt.title('Top 10 Entities by Sentiment Polarity')
plt.gca().invert_yaxis()
plt.show()
```

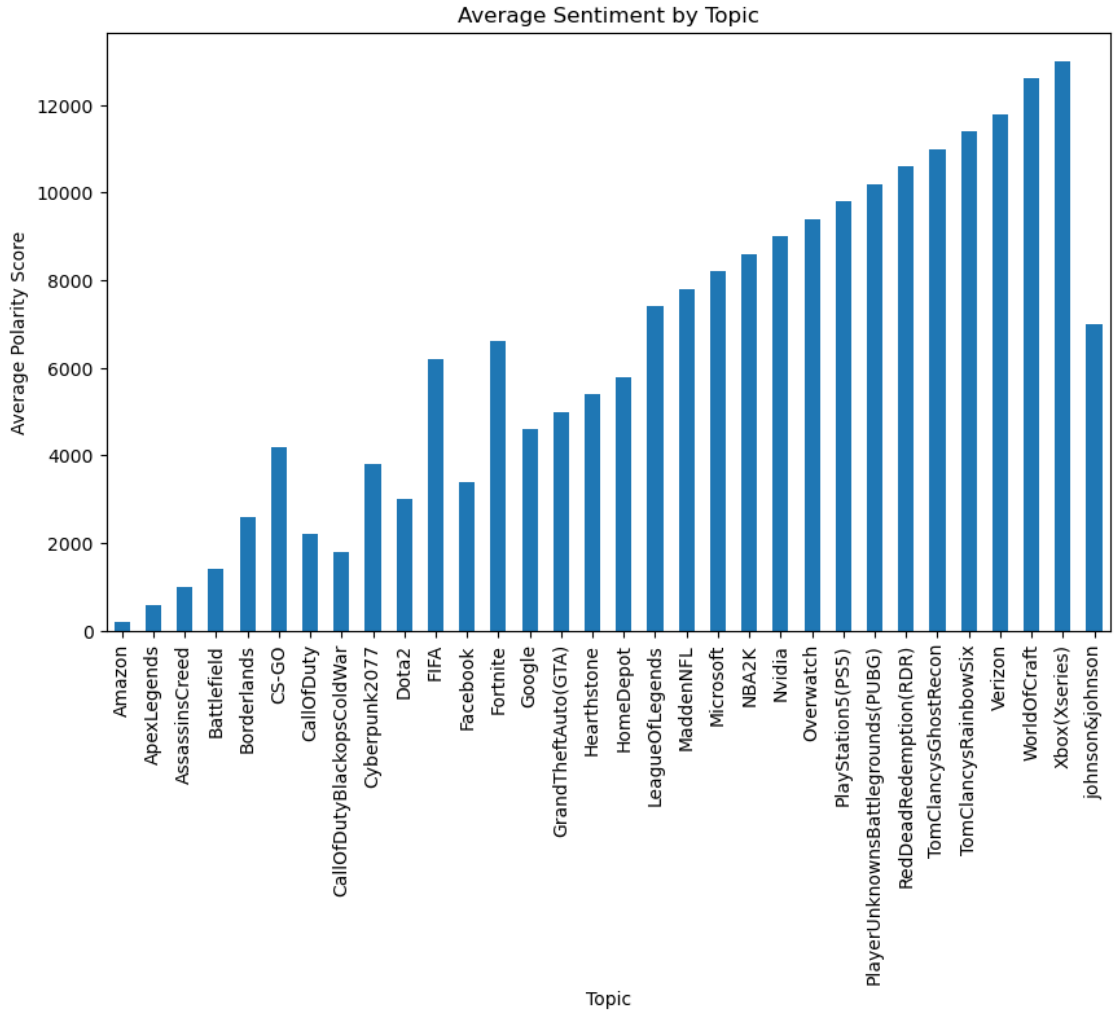


[61]:
```
plt.figure(figsize=(15,8))
sentiment_by_topic = data.groupby(['Topic', 'Sentiment']).size().
 ↪unstack(fill_value=0)
sentiment_by_topic.plot(kind='bar', stacked=True)
plt.title('Sentiment by Topic')
plt.xlabel('Topic')
plt.ylabel('Count')
plt.show()
```

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



[63]:
```
plt.figure(figsize=(10, 6))
average_polarity_by_topic = data.groupby('Topic')['ID'].mean()
average_polarity_by_topic.plot(kind='bar')
plt.title('Average Sentiment by Topic')
plt.xlabel('Topic')
plt.ylabel('Average Polarity Score')
plt.show()
```


Average Sentiment by Topic
Average Polarity Score
0
2000
4000
6000
8000
10000
12000
Amazon
ApexLegends
AssassinsCreed
Battlefield
Borderlands
CS-GO
CallOfDuty
CallOfDutyBlackopsColdWar
Cyberpunk2077
Dota2
FIFA
Facebook
Fortnite
Google
GrandTheftAuto(GTA)
Hearthstone
HomeDepot
LeagueOfLegends
MaddenNFL
Microsoft
NBA2K
Nvidia
Overwatch
PlayStation5(PS5)
PlayerUnknownsBattlegrounds(PUBG)
RedDeadRedemption(RDR)
TomClancysGhostRecon
TomClancysRainbowSix
Verizon
WorldOfCraft
Xbox(Xseries)
johnson&johnson
Topic

[ ]: