In [1]:
```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import plotly.express as px
import seaborn as sns
```

Load Dataset

In [16]:
```python
df=pd.read_csv("c:/project/spotify.csv")
df.drop("Unnamed: 0",axis=1,inplace=True)
df.head(2)
```

data cleaning

In [22]:
```python
df.isna().sum()
df.shape
```

Out[22]:
```
(2017, 16)
```

In [25]:
```python
df.columns
len(df.columns)
df.describe()
```

Out[25]:

	acousticness	danceability	duration_ms	energy	instrumentalness	key	liveness	loudness	mode	speechiness	tempo	time_signature	valenc
count	2017.000000	2017.000000	2.017000e+03	2017.000000	2017.000000	2017.000000	2017.000000	2017.000000	2017.000000	2017.000000	2017.000000	2017.000000	2017.00000
mean	0.187590	0.618422	2.463062e+05	0.681577	0.133286	5.342588	0.190844	-7.085624	0.612295	0.092664	121.603272	3.968270	0.49681
std	0.259989	0.161029	8.198181e+04	0.210273	0.273162	3.648240	0.155453	3.761684	0.487347	0.089931	26.685604	0.255853	0.24719
min	0.000003	0.122000	1.604200e+04	0.014800	0.000000	0.000000	0.018800	-33.097000	0.000000	0.023100	47.859000	1.000000	0.03480
25%	0.009630	0.514000	2.000150e+05	0.563000	0.000000	2.000000	0.092300	-8.394000	0.000000	0.037500	100.189000	4.000000	0.29500
50%	0.063300	0.631000	2.292610e+05	0.715000	0.000076	6.000000	0.127000	-6.248000	1.000000	0.054900	121.427000	4.000000	0.49200
75%	0.265000	0.738000	2.703330e+05	0.846000	0.054000	9.000000	0.247000	-4.746000	1.000000	0.108000	137.849000	4.000000	0.69100
max	0.995000	0.984000	1.004627e+06	0.998000	0.976000	11.000000	0.969000	-0.307000	1.000000	0.816000	219.331000	5.000000	0.99200

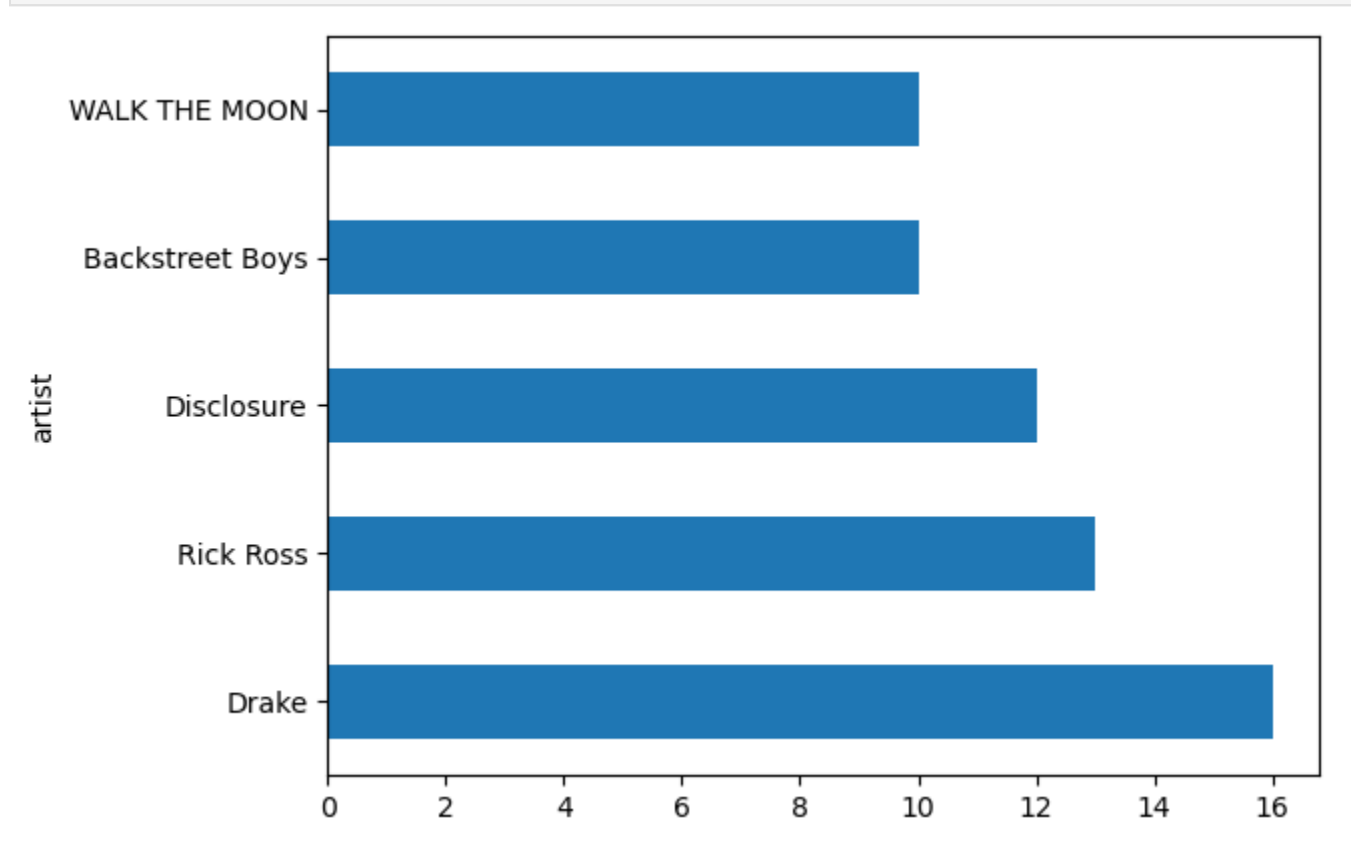
Data Analysis

Top 5 Popular Artits

In [29]:
```python
top_five_artits=df.groupby("artist").count().sort_values(by="song_title",ascending=False)["song_title"][:5]
top_five_artits
```

Out[29]:
```
artist
Drake              16
Rick Ross          13
Disclosure         12
Backstreet Boys    10
WALK THE MOON      10
Name: song_title, dtype: int64
```

In [32]:
```python
top_five_artits.plot.barh()
plt.show()
```



Top 5 loudest Tracks

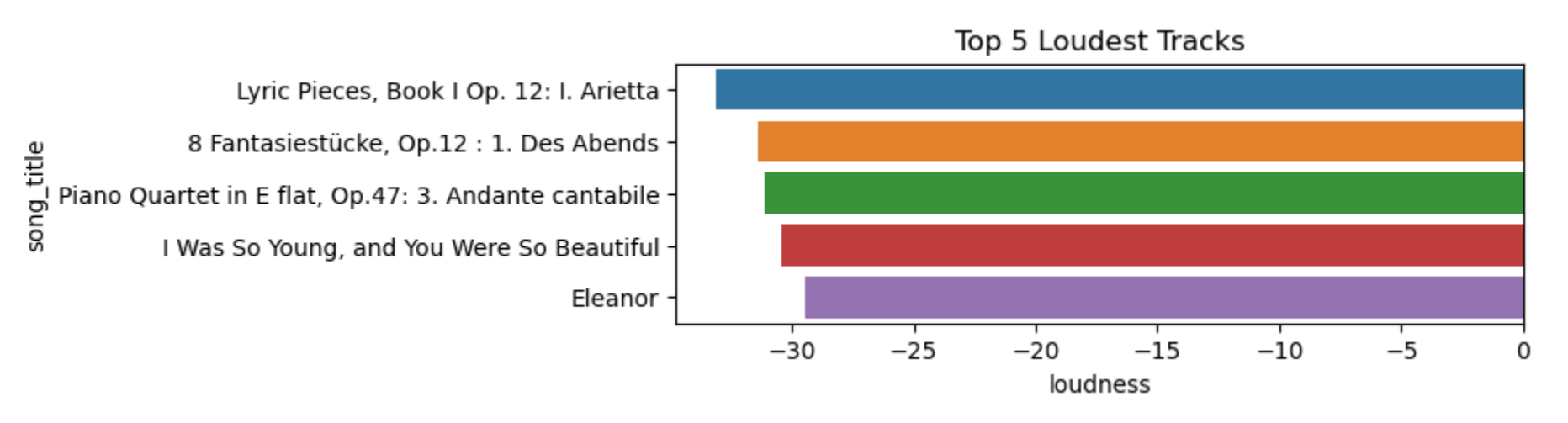
In [45]:
```python
top_five_loudest_tracks=df[["loudness","song_title"]].sort_values(by="loudness",ascending=True)[:5]
top_five_loudest_tracks
```

Out[45]:

	loudness	song_title
1594	-33.097	Lyric Pieces, Book I Op. 12: I. Arietta
1596	-31.367	8 Fantasiestücke, Op.12 : 1. Des Abends
1598	-31.082	Piano Quartet in E flat, Op.47: 3. Andante can...
1531	-30.447	I Was So Young, and You Were So Beautiful
1549	-29.460	Eleanor

In [46]:
```python
plt.figure(figsize=(6.5,2))
sns.barplot(x="loudness",y="song_title",data=top_five_loudest_tracks)
plt.title("Top 5 Loudest Tracks")
```

Out[46]:
```
Text(0.5, 1.0, 'Top 5 Loudest Tracks')
```



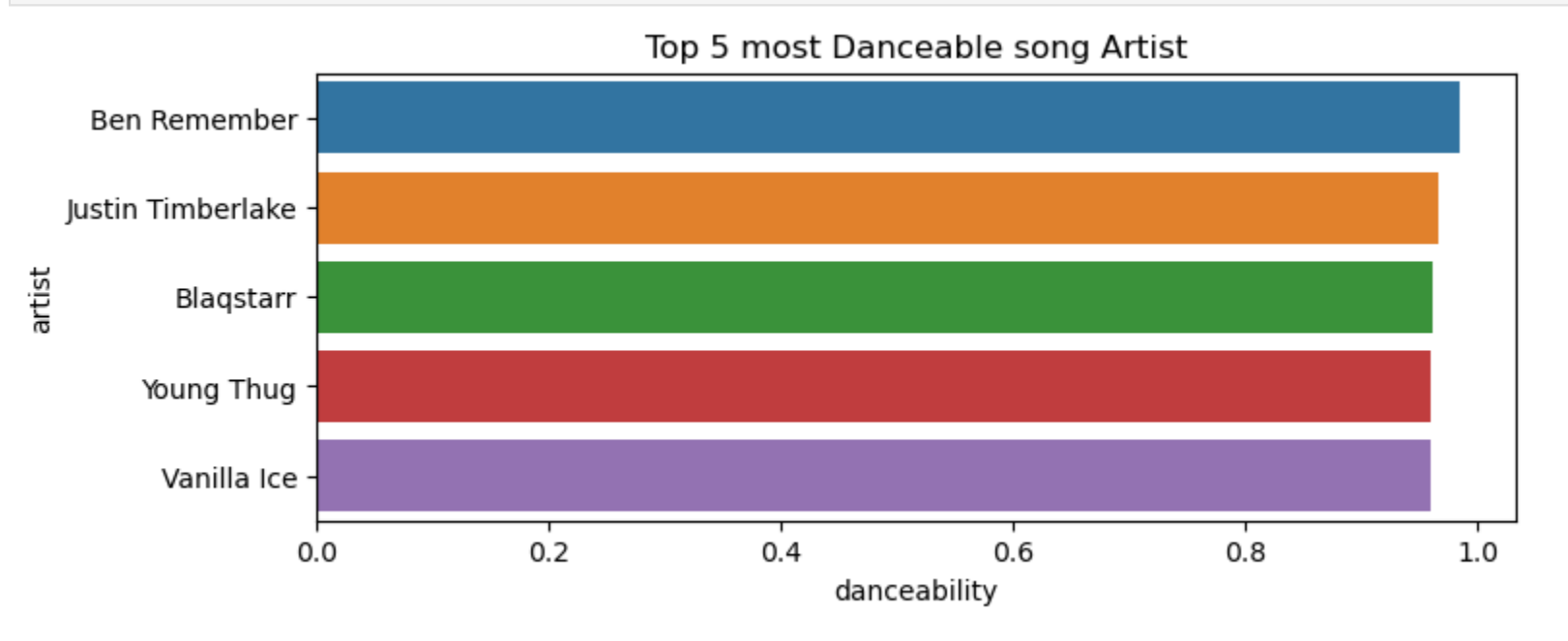
Artist with the most danceabilty songs

In [49]:
```python
top_five_Artist_danceable_song=df[["danceability","song_title","artist"]].sort_values(by="danceability",ascending=False)[:5]
top_five_Artist_danceable_song
```

Out[49]:

	danceability	song_title	artist
1433	0.984	Flashwind - Radio Edit	Ben Remember
1901	0.967	SexyBack	Justin Timberlake
604	0.962	Check Me Out Like	Blaqstarr
32	0.959	Best Friend	Young Thug
1957	0.959	Ice Ice Baby	Vanilla Ice

In [53]:
```python
plt.figure(figsize=(8,3))
sns.barplot(x="danceability",y="artist",data=top_five_Artist_danceable_song)
plt.title("Top 5 most Danceable song Artist")
plt.show()
```



Top 10 instrumentalness Tracks

In [54]:
```python
df.head(2)
```

Out[54]:

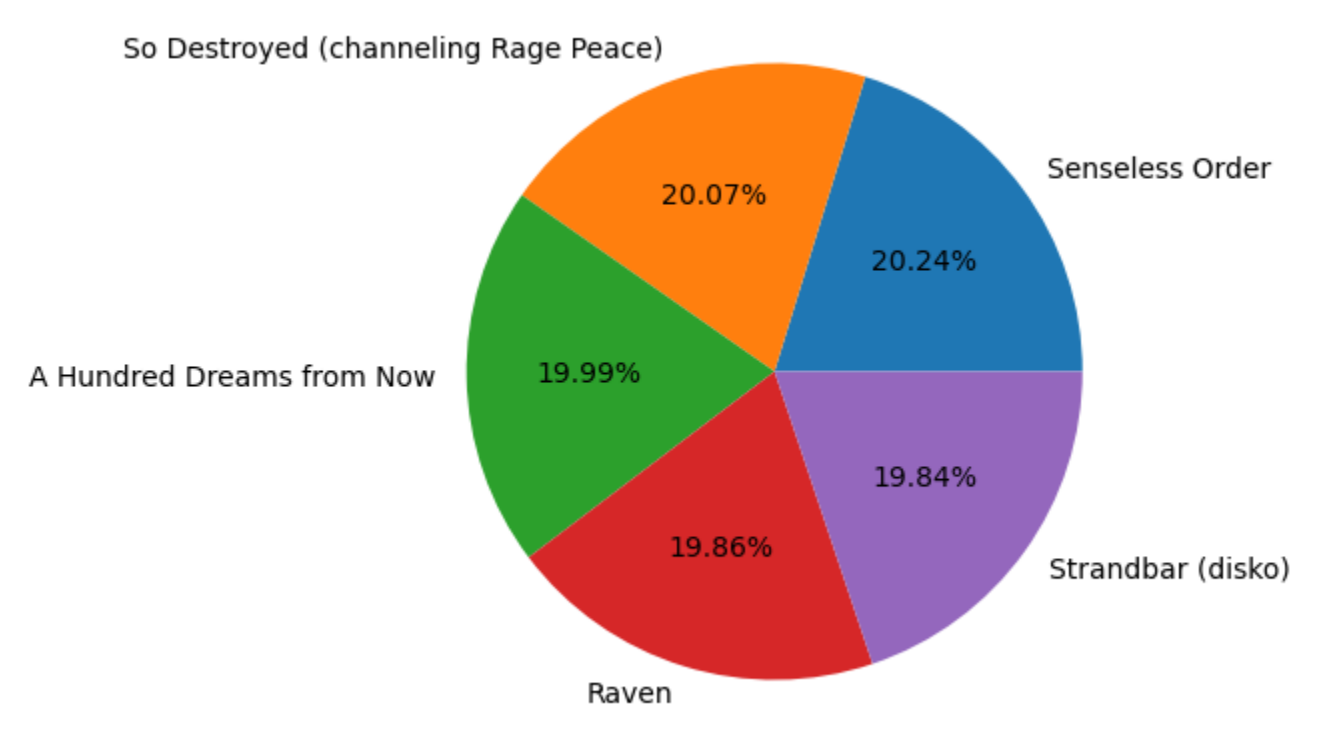
	acousticness	danceability	duration_ms	energy	instrumentalness	key	liveness	loudness	mode	speechiness	tempo	time_signature	valence	target	song_title	artist
0	0.0102	0.833	204600	0.434	0.02190	2	0.165	-8.795	1	0.4310	150.062	4.0	0.286	1	Mask Off	Future
1	0.1990	0.743	326933	0.359	0.00611	1	0.137	-10.401	1	0.0794	160.083	4.0	0.588	1	Redbone	Childish Gambino

In [75]:
```python
top_5_instrumentalness_tracks=df[["instrumentalness","song_title","artist"]].sort_values(by="instrumentalness",ascending=False)[:5]
top_5_instrumentalness_tracks
```

Out[75]:

	instrumentalness	song_title	artist
1313	0.976	Senseless Order	Signs of the Swarm
271	0.968	So Destroyed (channeling Rage Peace)	Prince Rama
1575	0.964	A Hundred Dreams from Now	Ray Bryant
1619	0.958	Raven	John Dahlbäck
725	0.957	Strandbar (disko)	Todd Terje

In [79]:
```python
plt.figure(figsize=(12,5))
plt.pie(x="instrumentalness",data=top_5_instrumentalness_tracks,autopct="%1.2f%%",labels=top_5_instrumentalness_tracks.song_title)
plt.show()
```



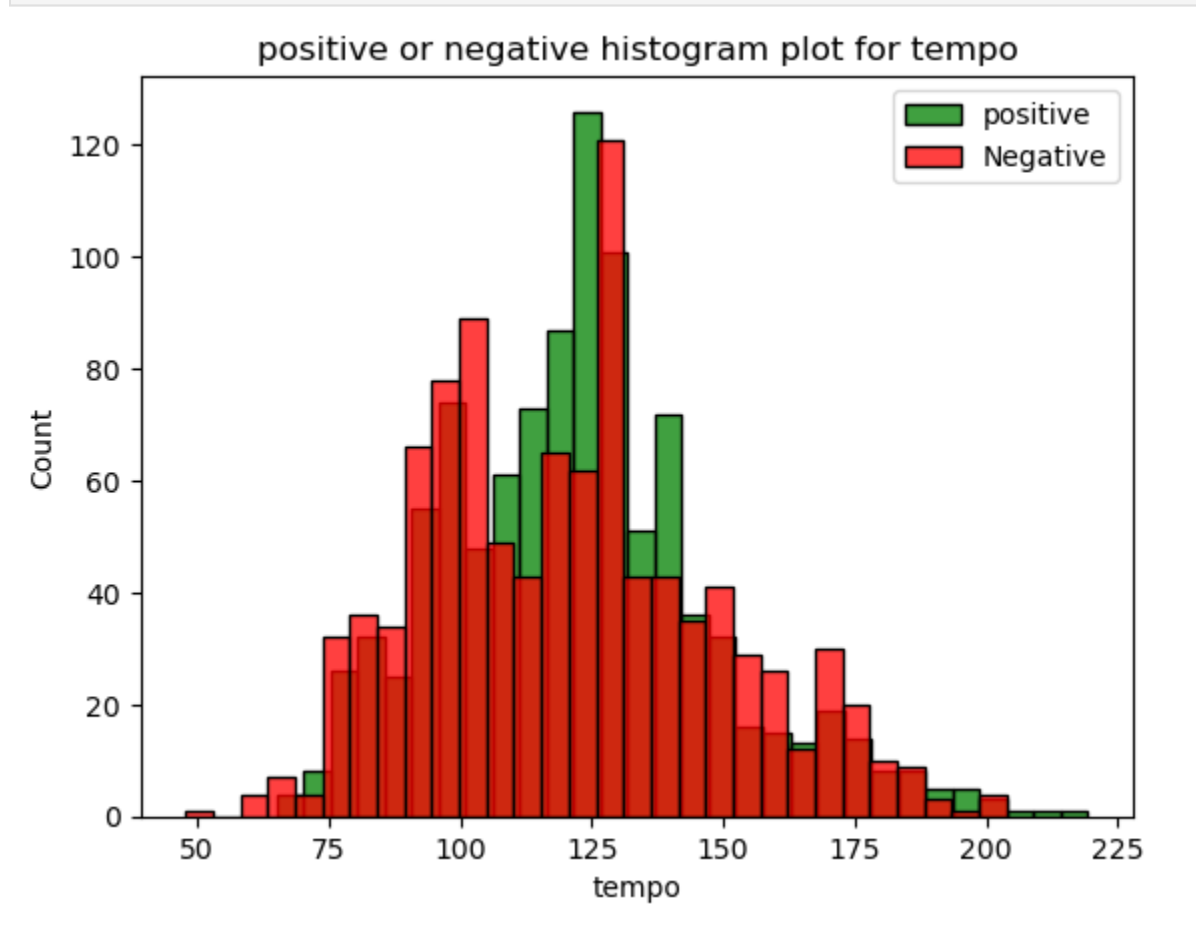
multiple feature plot

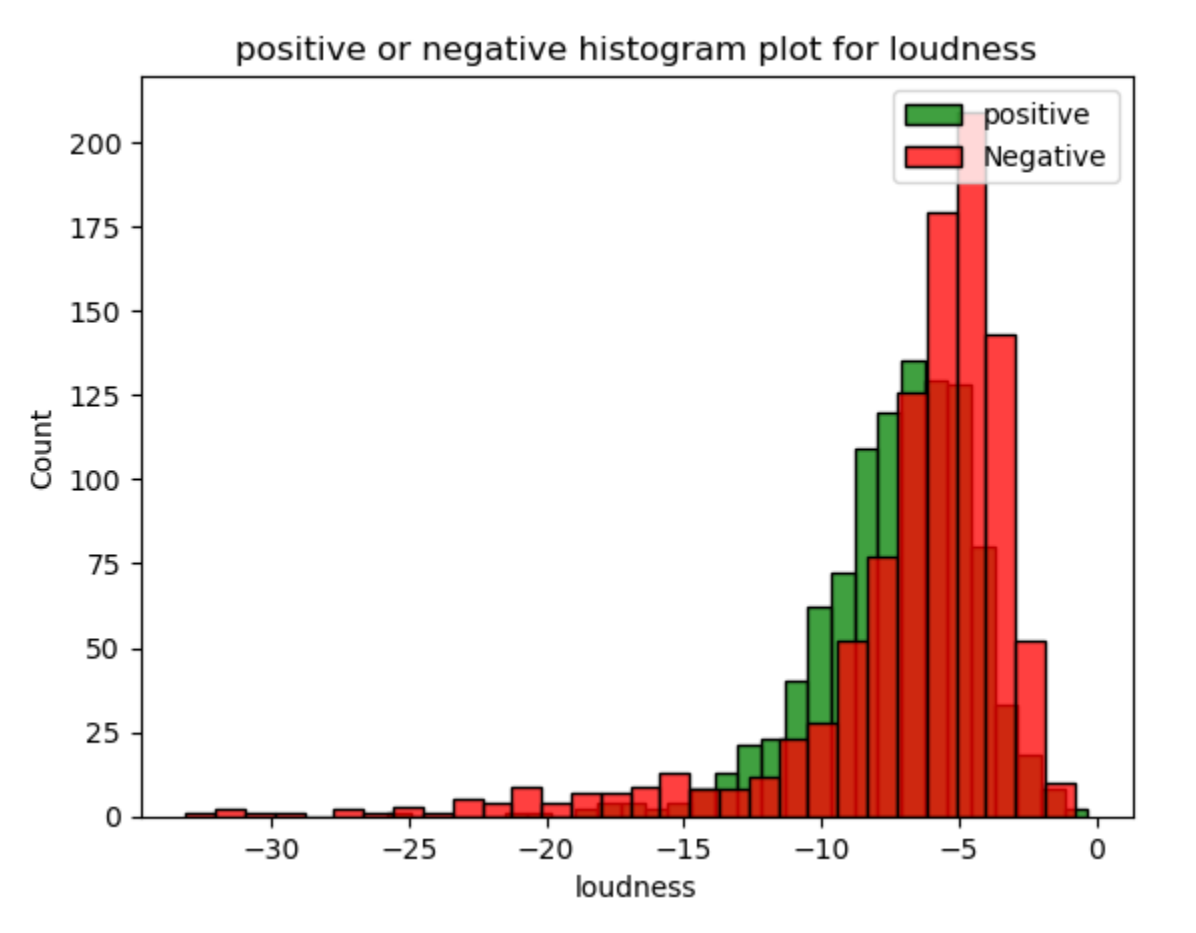
In [80]:
```python
df.columns
```

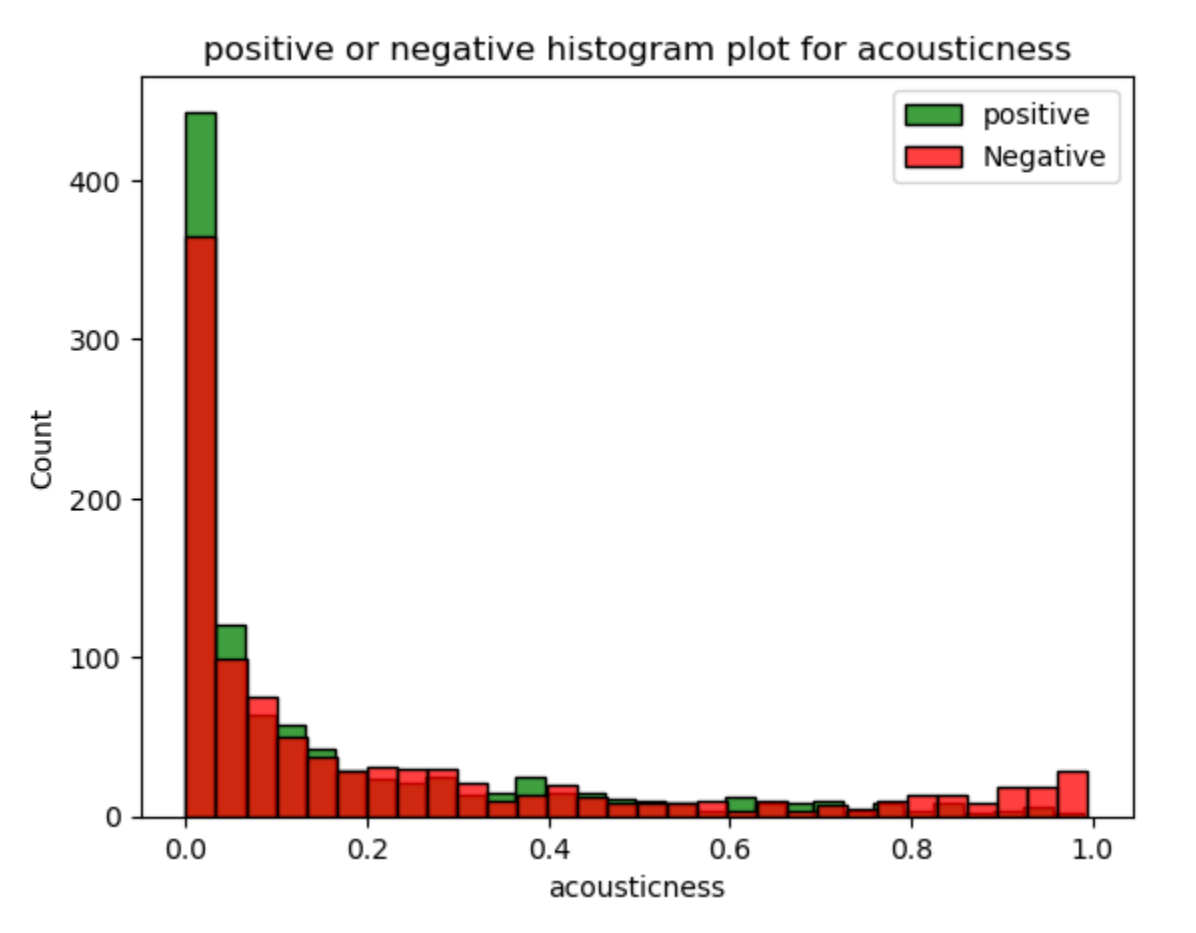
Out[80]:
```
Index(['acousticness', 'danceability', 'duration_ms', 'energy',
       'instrumentalness', 'key', 'liveness', 'loudness', 'mode',
       'speechiness', 'tempo', 'time_signature', 'valence', 'target',
       'song_title', 'artist'],
      dtype='object')
```

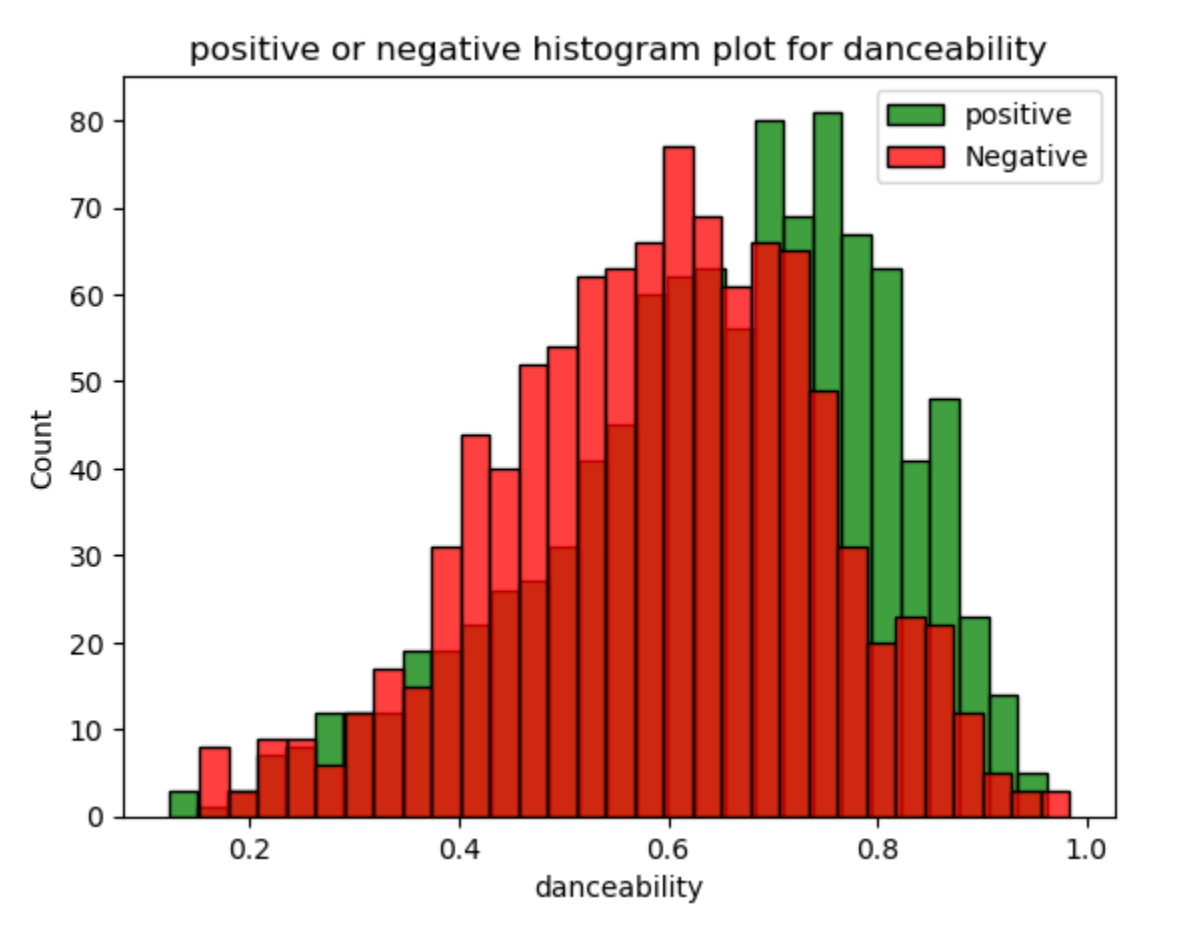
In [83]:
```python
intrested_feature_column=['tempo','loudness','acousticness','danceability','duration_ms','energy','instrumentalness','liveness','speechiness','valen
```

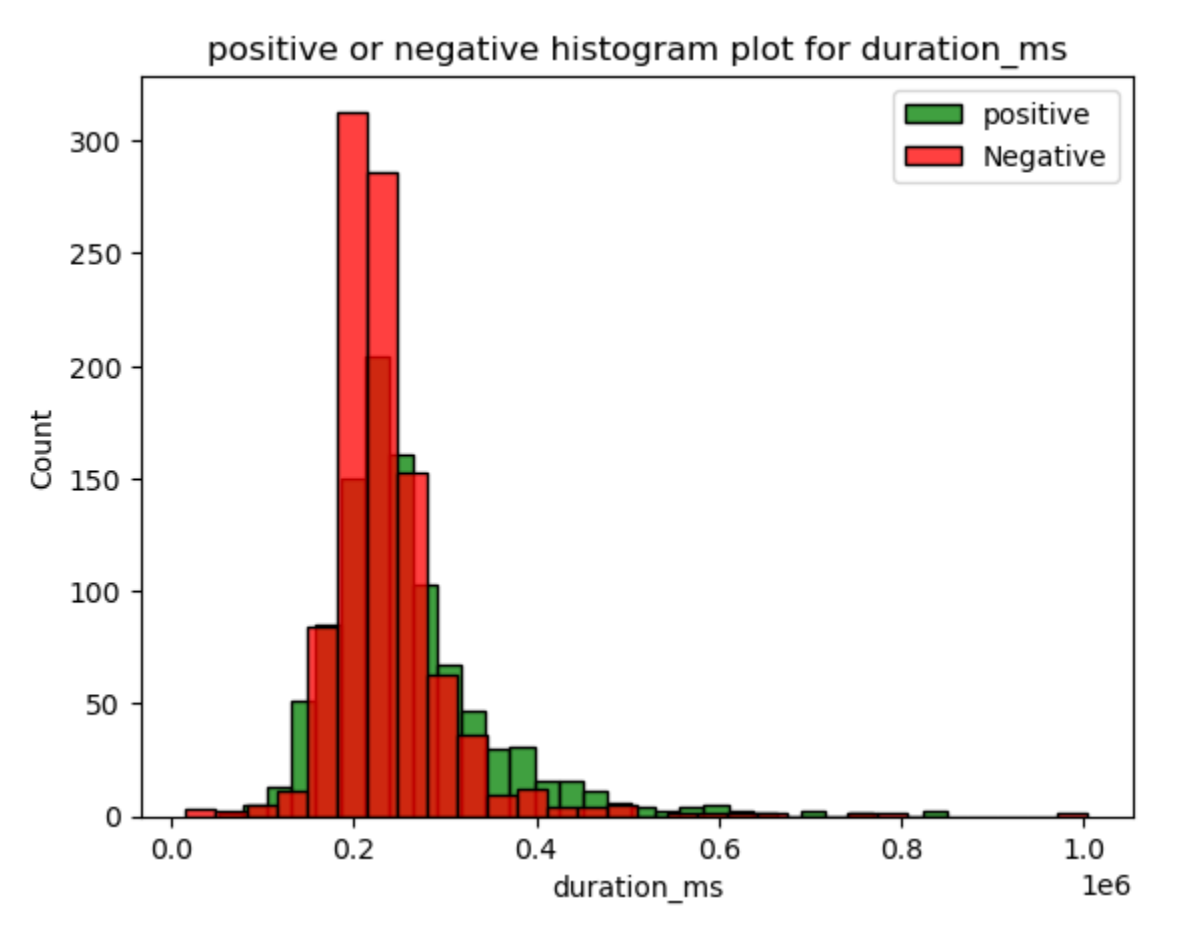
In [89]:
```python
for feature_col in intrested_feature_column:
    pos_data=df[df["target"]==1][feature_col]
    neg_data=df[df["target"]==0][feature_col]
    sns.histplot(pos_data,bins=30,label="positive",color="green")
    sns.histplot(neg_data,bins=30,label="Negative",color="red")
    plt.legend(loc="upper right")
    plt.title(f"positive or negative histogram plot for {feature_col}")
    plt.show()
```

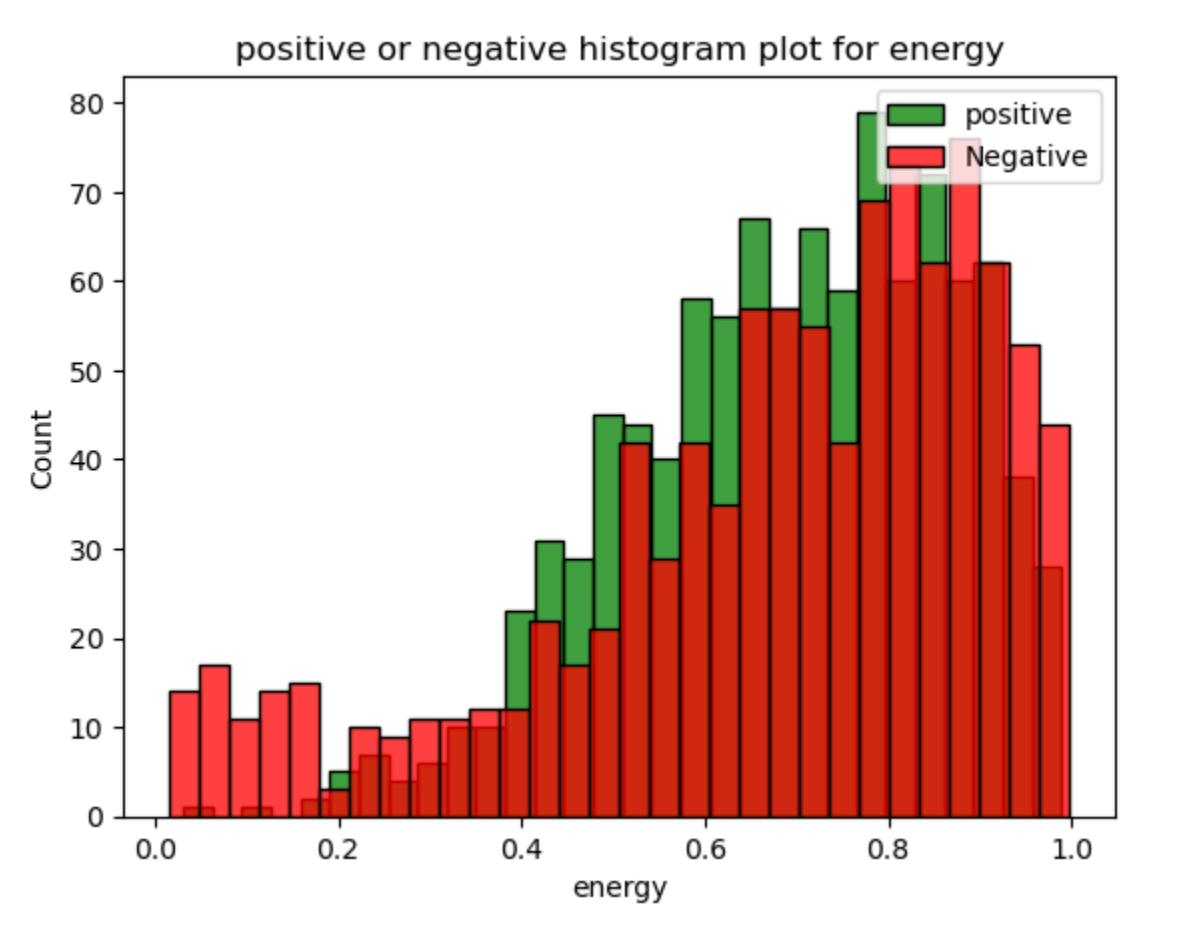


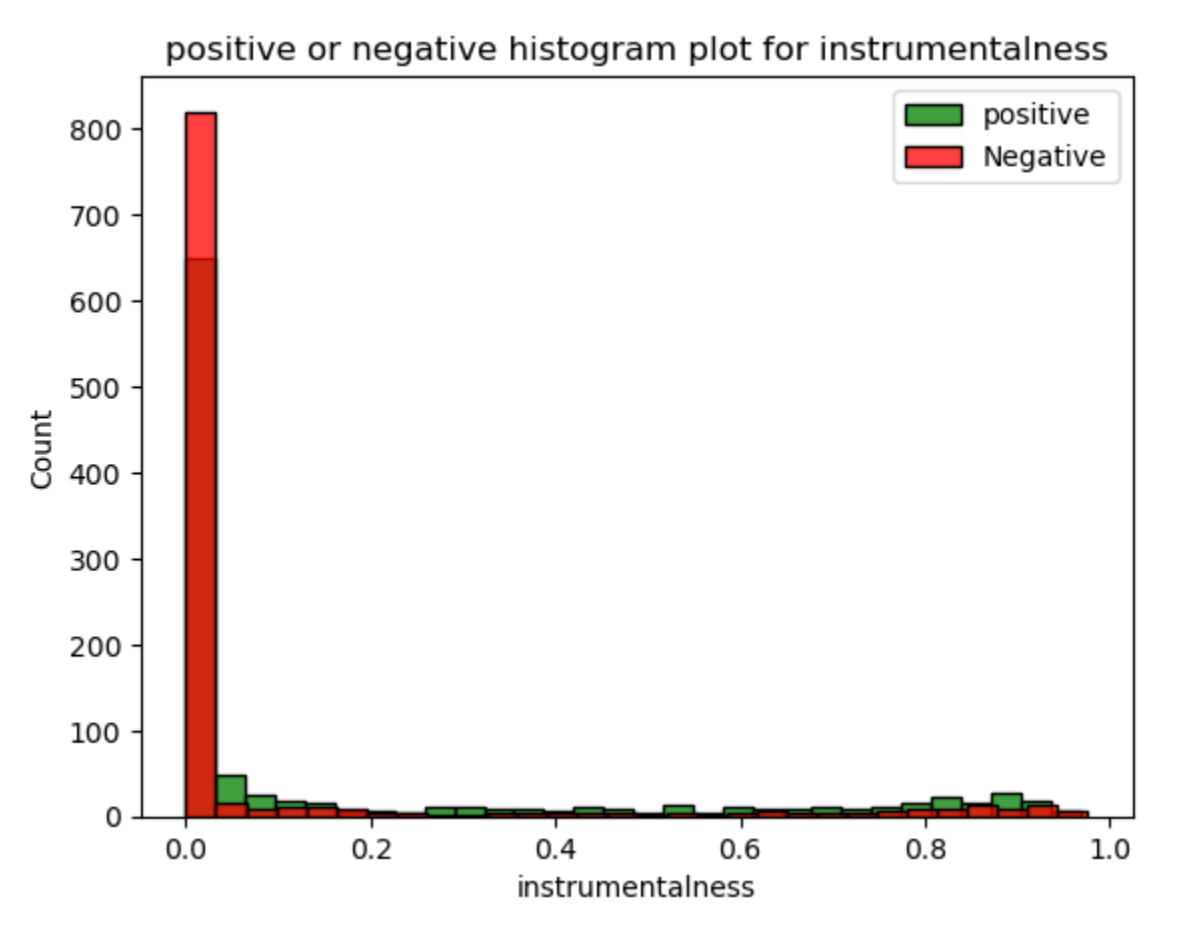


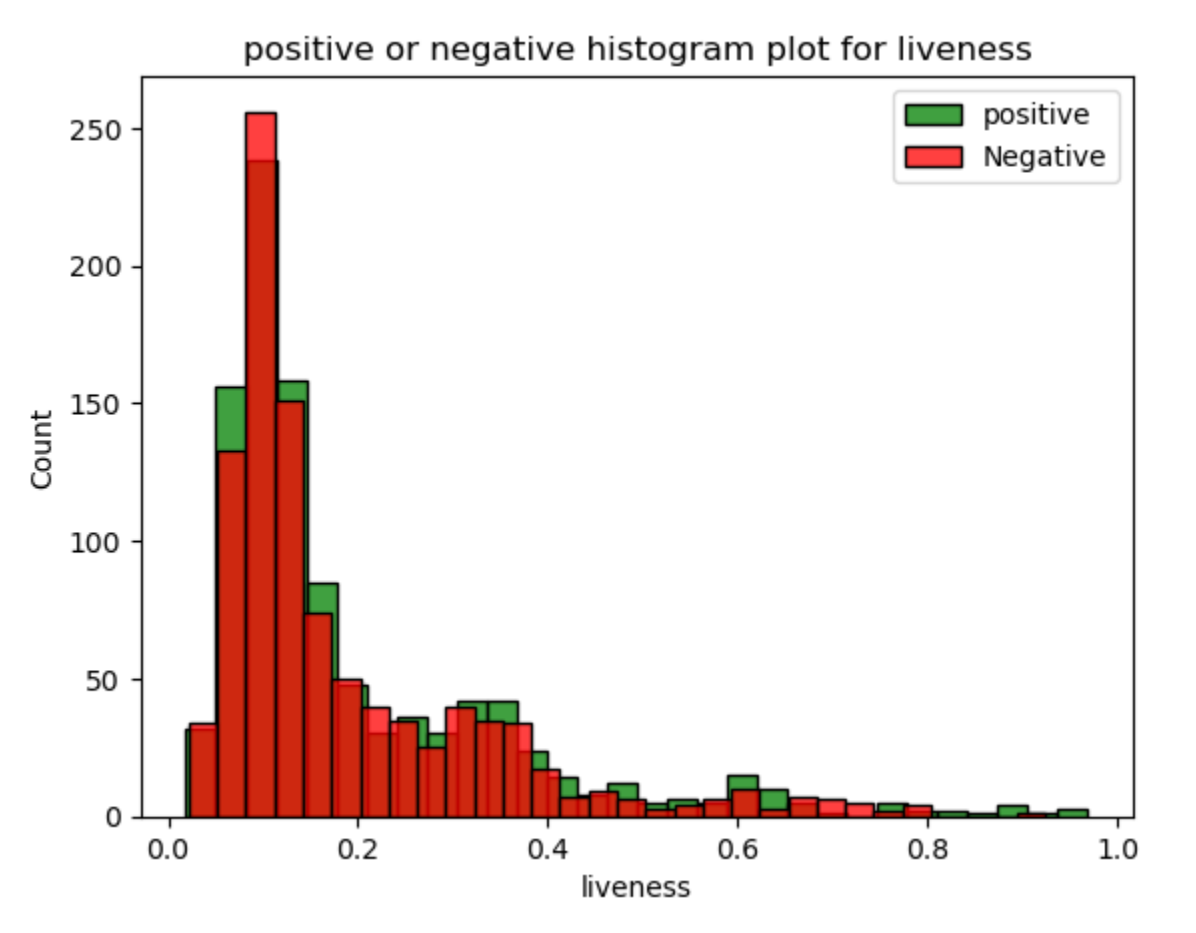


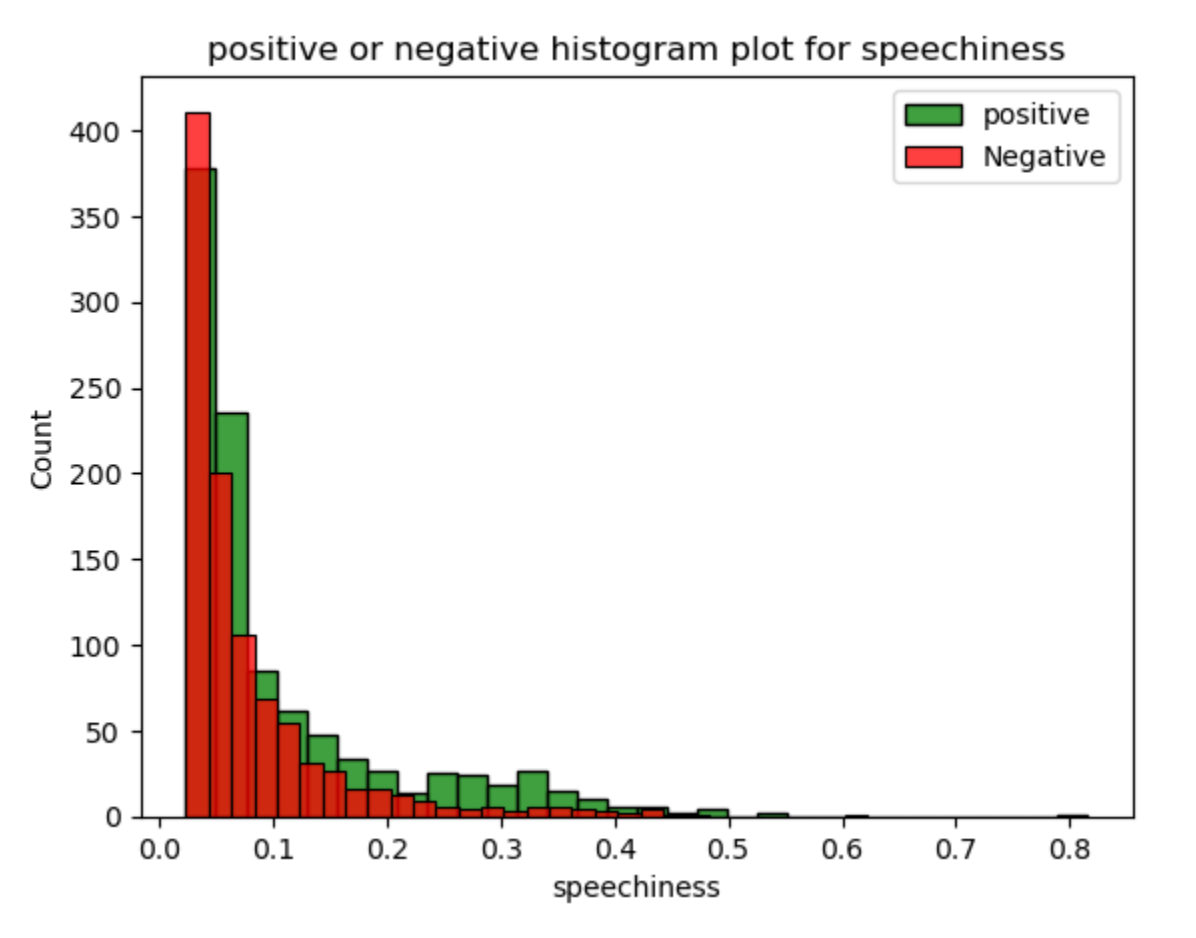


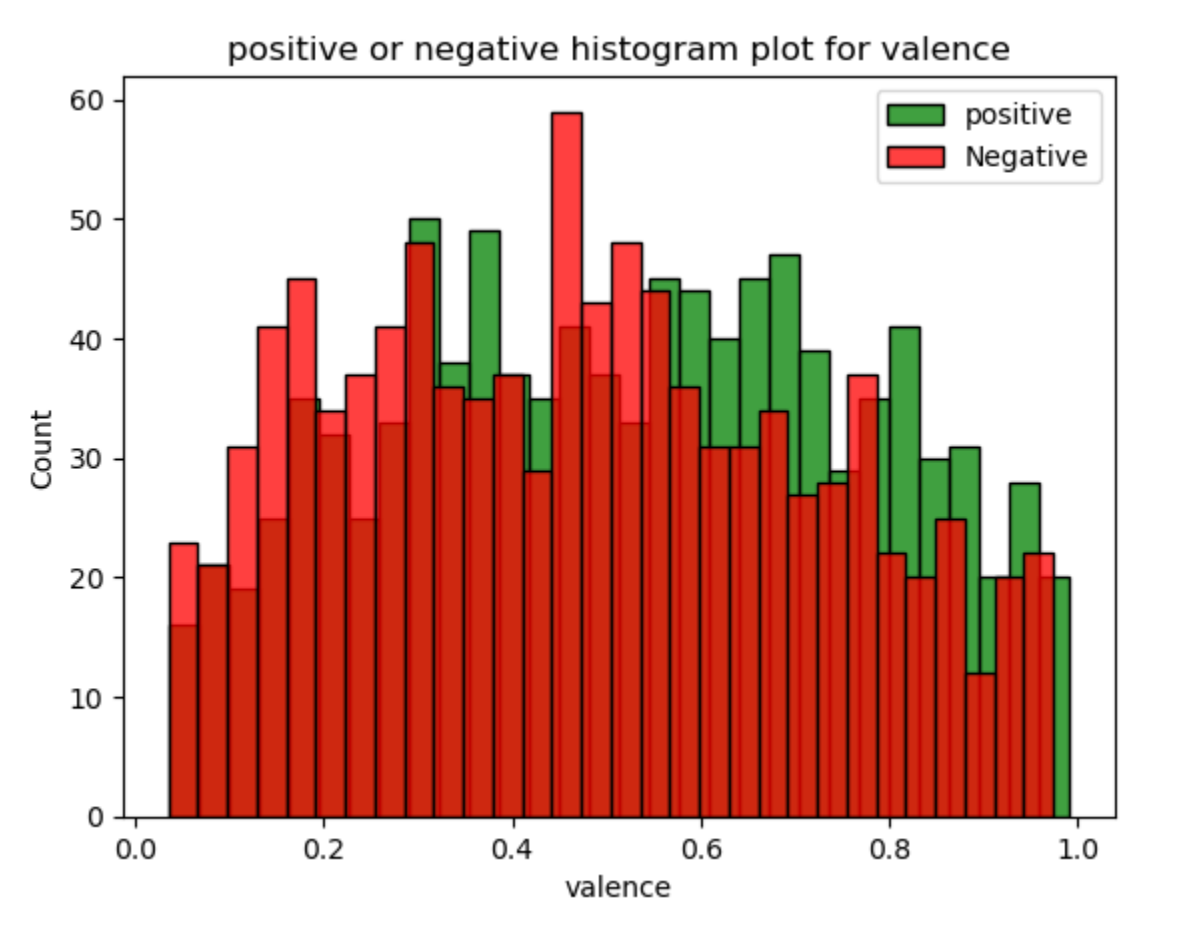












In [ ]: