movie-recommendation-system

June 11, 2024

[26]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

[12]:
```
# Import necessary libraries
from google.colab import drive

# Mount your Google Drive
drive.mount('/content/drive')

# Specify the path to your dataset within your Google Drive
data_path = '/content/drive/My Drive/Movie Recommendation/movies.csv'
data_path1 = '/content/drive/My Drive/Movie Recommendation/tags.csv'
data_path2 = '/content/drive/My Drive/Movie Recommendation/links.csv'
data_path3 = '/content/drive/My Drive/Movie Recommendation/ratings.csv'

# Read the dataset using pandas
movie_data = pd.read_csv(data_path)
tags_data = pd.read_csv(data_path1)
links_data = pd.read_csv(data_path2)
ratings_data = pd.read_csv(data_path3)
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call
drive.mount("/content/drive", force_remount=True).
```

[10]:
```
movie_data.head()
```

[10]:

	movieId	title	genres
0	1	Toy Story (1995)	Adventure|Animation|Children|Comedy|Fantasy
1	2	Jumanji (1995)	Adventure|Children|Fantasy
2	3	Grumpier Old Men (1995)	
3	4	Waiting to Exhale (1995)	
4	5	Father of the Bride Part II (1995)	

```
2                              Comedy|Romance
3                        Comedy|Drama|Romance
4                                     Comedy
```

[13]:
```
tags_data.head()
```

[13]:
```
   userId  movieId              tag   timestamp
0       2    60756            funny  1445714994
1       2    60756  Highly quotable  1445714996
2       2    60756     will ferrell  1445714992
3       2    89774     Boxing story  1445715207
4       2    89774              MMA  1445715200
```

[14]:
```
links_data.head()
```

[14]:
```
   movieId  imdbId   tmdbId
0        1  114709    862.0
1        2  113497   8844.0
2        3  113228  15602.0
3        4  114885  31357.0
4        5  113041  11862.0
```

[15]:
```
ratings_data.head()
```

[15]:
```
   userId  movieId  rating  timestamp
0       1        1     4.0  964982703
1       1        3     4.0  964981247
2       1        6     4.0  964982224
3       1       47     5.0  964983815
4       1       50     5.0  964982931
```

[16]:
```
df = pd.merge(movie_data, tags_data, on='movieId')
df.head()
```

[16]:
```
   movieId            title                                        genres  \
0        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy
1        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy
2        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy
3        2    Jumanji (1995)                   Adventure|Children|Fantasy
4        2    Jumanji (1995)                   Adventure|Children|Fantasy

   userId              tag   timestamp
0     336            pixar  1139045764
1     474            pixar  1137206825
2     567              fun  1525286013
3      62          fantasy  1528843929
4      62  magic board game  1528843932
```

[43]:
```
df = pd.merge(movie_data, ratings_data, on='movieId')
df.head()
```

[43]:
```
   movieId             title                                       genres  \
0        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy
1        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy
2        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy
3        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy
4        1  Toy Story (1995)  Adventure|Animation|Children|Comedy|Fantasy

   userId  rating   timestamp
0       1     4.0   964982703
1       5     4.0   847434962
2       7     4.5  1106635946
3      15     2.5  1510577970
4      17     4.5  1305696483
```

[44]:
```
df1.groupby('title')['rating'].mean().sort_values(ascending=False).head()
```

[44]:
```
title
Come and See (Idi i smotri) (1985)     5.0
Lady Jane (1986)                       5.0
Woman Under the Influence, A (1974)    5.0
Into the Woods (1991)                  5.0
Two Family House (2000)                5.0
Name: rating, dtype: float64
```

[45]:
```
df1.groupby('title')['rating'].count().sort_values(ascending=False).head()
```

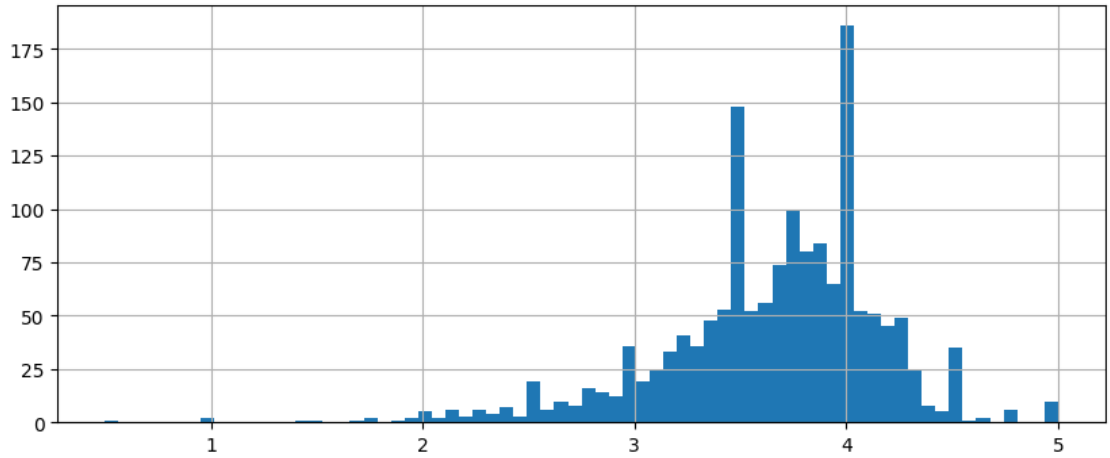
[45]:
```
title
Pulp Fiction (1994)                                                 55567
Fight Club (1999)                                                   11772
Star Wars: Episode IV - A New Hope (1977)                            6526
Léon: The Professional (a.k.a. The Professional) (Léon) (1994)       4655
2001: A Space Odyssey (1968)                                         4469
Name: rating, dtype: int64
```

[46]:
```
ratings = pd.DataFrame(df1.groupby('title')['rating'].mean())
ratings.head()
```

[46]:
```
                                    rating
title
(500) Days of Summer (2009)       3.666667
…And Justice for All (1979)       3.166667
10 Cloverfield Lane (2016)        3.678571
10 Things I Hate About You (1999) 3.527778
101 Dalmatians (1996)             3.074468
```

[47]:
```
plt.figure(figsize=(10,4))
ratings['rating'].hist(bins=70)
```

[47]:
```
<Axes: >
```



[59]:
```
moviemat = df.pivot_table(index='userId', columns='title', values='rating')
moviemat.head()
```

[59]:
```
title   '71 (2014)  'Hellboy': The Seeds of Creation (2004)  \
userId
1              NaN                                     NaN
2              NaN                                     NaN
3              NaN                                     NaN
4              NaN                                     NaN
5              NaN                                     NaN

title   'Round Midnight (1986)  'Salem's Lot (2004)  \
userId
1                          NaN                 NaN
2                          NaN                 NaN
3                          NaN                 NaN
4                          NaN                 NaN
5                          NaN                 NaN

title   'Til There Was You (1997)  'Tis the Season for Love (2015)  \
userId
1                             NaN                              NaN
2                             NaN                              NaN
3                             NaN                              NaN
4                             NaN                              NaN
5                             NaN                              NaN
```

```
title   'burbs, The (1989)  'night Mother (1986)  (500) Days of Summer (2009)  \
userId
1                      NaN                   NaN                          NaN
2                      NaN                   NaN                          NaN
3                      NaN                   NaN                          NaN
4                      NaN                   NaN                          NaN
5                      NaN                   NaN                          NaN

title   *batteries not included (1987)  …  Zulu (2013)  [REC] (2007)  \
userId                                  …
1                                  NaN  …          NaN           NaN
2                                  NaN  …          NaN           NaN
3                                  NaN  …          NaN           NaN
4                                  NaN  …          NaN           NaN
5                                  NaN  …          NaN           NaN

title   [REC]² (2009)  [REC]³ 3 Génesis (2012)  \
userId
1                 NaN                      NaN
2                 NaN                      NaN
3                 NaN                      NaN
4                 NaN                      NaN
5                 NaN                      NaN

title   anohana: The Flower We Saw That Day - The Movie (2013)  \
userId
1                                                         NaN
2                                                         NaN
3                                                         NaN
4                                                         NaN
5                                                         NaN

title   eXistenZ (1999)  xXx (2002)  xXx: State of the Union (2005)  \
userId
1                   NaN         NaN                             NaN
2                   NaN         NaN                             NaN
3                   NaN         NaN                             NaN
4                   NaN         NaN                             NaN
5                   NaN         NaN                             NaN

title   ¡Three Amigos! (1986)  À nous la liberté (Freedom for Us) (1931)
userId
1                         4.0                                        NaN
2                         NaN                                        NaN
3                         NaN                                        NaN
4                         NaN                                        NaN
```

```
5                          NaN                                          NaN

[5 rows x 9719 columns]
```

[58]:
```
ratings.sort_values('rating', ascending=False).head(10)
```

[58]:
```
                                                    rating
title
Come and See (Idi i smotri) (1985)                     5.0
Lady Jane (1986)                                       5.0
Woman Under the Influence, A (1974)                    5.0
Into the Woods (1991)                                  5.0
Two Family House (2000)                                5.0
Crossing Delancey (1988)                               5.0
Match Factory Girl, The (Tulitikkutehtaan tyttö…     5.0
Who Killed Chea Vichea? (2010)                         5.0
More (1998)                                            5.0
Going Places (Valseuses, Les) (1974)                   5.0
```

[64]:
```
similar_to_500_days_summer  = moviemat.corrwith(moviemat['(500) Days of Summer␣
↪(2009)'])
similar_to_500_days_summer.head()
```

```
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2889:
RuntimeWarning: Degrees of freedom <= 0 for slice
  c = cov(x, y, rowvar, dtype=dtype)
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2748:
RuntimeWarning: divide by zero encountered in divide
  c *= np.true_divide(1, fact)
```

[64]:
```
title
'71 (2014)                                 NaN
'Hellboy': The Seeds of Creation (2004)    NaN
'Round Midnight (1986)                     NaN
'Salem's Lot (2004)                        NaN
'Til There Was You (1997)                  NaN
dtype: float64
```

[66]:
```
corr_500_days = pd.DataFrame(similar_to_500_days_summer,columns=␣
↪['Correlation'])
corr_500_days.dropna(inplace=True)
corr_500_days.head()
```

[66]:
```
                                Correlation
title
'burbs, The (1989)                 0.997176
(500) Days of Summer (2009)        1.000000
```

```
*batteries not included (1987)        0.944911
10 Cloverfield Lane (2016)            0.383713
10 Things I Hate About You (1999)     0.344985
```

[69]:
```
corr_500_days.sort_values('Correlation', ascending=False).head(10)
```

[69]:
```
                                                    Correlation
title
Red Rock West (1992)                                        1.0
Think Like a Man (2012)                                     1.0
Batman: The Dark Knight Returns, Part 1 (2012)              1.0
Nightmare on Elm Street, A (1984)                           1.0
Crush, The (1993)                                           1.0
The Shape of Water (2017)                                   1.0
The Spectacular Now (2013)                                  1.0
Fabulous Baker Boys, The (1989)                             1.0
Newsies (1992)                                              1.0
Revenge of the Nerds II: Nerds in Paradise (1987)           1.0
```

[70]:
```
similar_to_fight_club = moviemat.corrwith(moviemat['Fight Club (1999)'])
similar_to_fight_club.head()
```

```
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2889:
RuntimeWarning: Degrees of freedom <= 0 for slice
  c = cov(x, y, rowvar, dtype=dtype)
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2748:
RuntimeWarning: divide by zero encountered in divide
  c *= np.true_divide(1, fact)
```

[70]:
```
title
'71 (2014)                                  NaN
'Hellboy': The Seeds of Creation (2004)     NaN
'Round Midnight (1986)                      NaN
'Salem's Lot (2004)                         NaN
'Til There Was You (1997)                   NaN
dtype: float64
```

[75]:
```
fight_club = pd.DataFrame(similar_to_fight_club,columns= ['Correlation'])
fight_club.dropna(inplace=True)
fight_club.head().sort_values('Correlation', ascending=False)
```

[75]:
```
                                Correlation
title
…And Justice for All (1979)       1.000000
10 Cent Pistol (2015)             1.000000
*batteries not included (1987)    0.426401
(500) Days of Summer (2009)      -0.044359
```

```
'burbs, The (1989)                -0.374498
```

[81]:
```
import pandas as pd


def get_similar_movies(movie_name, moviemat, top_n=10):
    try:

        similar_to_movie = moviemat.corrwith(moviemat[movie_name])


        corr_movie = pd.DataFrame(similar_to_movie, columns=['Correlation'])


        corr_movie.dropna(inplace=True)


        top_similar_movies = corr_movie.sort_values('Correlation',␣
 ↪ascending=False).head(top_n)

        return top_similar_movies
    except KeyError:
        return f"Movie '{movie_name}' not found in the dataset."


user_movie = input("Enter the movie name: ")


top_similar_movies = get_similar_movies(user_movie, moviemat, top_n=10)
print(top_similar_movies)
```

```
Enter the movie name: Avatar (2009)

/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2889:
RuntimeWarning: Degrees of freedom <= 0 for slice
  c = cov(x, y, rowvar, dtype=dtype)
/usr/local/lib/python3.10/dist-packages/numpy/lib/function_base.py:2748:
RuntimeWarning: divide by zero encountered in divide
  c *= np.true_divide(1, fact)
                                    Correlation
title
Jezebel (1938)                              1.0
Derailed (2005)                             1.0
Bernie (2011)                               1.0
Berlin Calling (2008)                       1.0
Samouraï, Le (Godson, The) (1967)           1.0
Benny & Joon (1993)                         1.0
```

SLC Punk! (1998)	1.0
Lost in Austen (2008)	1.0
Tin Man (2007)	1.0
Lord of the Flies (1963)	1.0