EjercicioS9

May 15, 2020

1 Proyecto Final: Sesión 9

[1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import math

r_cols = ['user_id', 'movie_id', 'rating']
ratings = pd.read_csv("dataset_unido/u.data", sep='\t', names=r_cols,␣
 ↪usecols=range(3), encoding="ISO-8859-1")

m_cols = ['movie_id', 'title']
movies = pd.read_csv('dataset_unido/u.item', sep='|', names=m_cols,␣
 ↪usecols=range(2), encoding="ISO-8859-1")

# combinamos ambos datasets para tener el
ratings = pd.merge(movies, ratings)

# Pivotamos la tabla para que la matriz tenga : fila por usuario y columna por␣
 ↪pelicula
movieRatings = ratings.
 ↪pivot_table(index=['user_id'],columns=['title'],values='rating')
movieRatings.head(3)
```

[1]:
```
title    'Til There Was You (1997)  1-900 (1994)  101 Dalmatians (1996)  \
user_id
1                              NaN           NaN                    2.0
2                              NaN           NaN                    NaN
3                              NaN           NaN                    NaN

title    12 Angry Men (1957)  187 (1997)  2 Days in the Valley (1996)  \
user_id
1                        5.0         NaN                          NaN
2                        NaN         NaN                          NaN
3                        NaN         2.0                          NaN
```

```
title    20,000 Leagues Under the Sea (1954)  2001: A Space Odyssey (1968)  \
user_id
1                                        3.0                           4.0
2                                        NaN                           NaN
3                                        NaN                           NaN

title    3 Ninjas: High Noon At Mega Mountain (1998)  39 Steps, The (1935)  \
user_id
1                                                NaN                   NaN
2                                                1.0                   NaN
3                                                NaN                   NaN

title    …  Yankee Zulu (1994)  Year of the Horse (1997)  \
user_id  …
1        …                 NaN                       NaN
2        …                 NaN                       NaN
3        …                 NaN                       NaN

title    You So Crazy (1994)  Young Frankenstein (1974)  Young Guns (1988)  \
user_id
1                        NaN                        5.0                3.0
2                        NaN                        NaN                NaN
3                        NaN                        NaN                NaN

title    Young Guns II (1990)  Young Poisoner's Handbook, The (1995)  \
user_id
1                         NaN                                    NaN
2                         NaN                                    NaN
3                         NaN                                    NaN

title    Zeus and Roxanne (1997)  unknown  Á köldum klaka (Cold Fever) (1994)
user_id
1                            NaN      4.0                                 NaN
2                            NaN      NaN                                 NaN
3                            NaN      NaN                                 NaN

[3 rows x 1664 columns]
```

[2]:
```
df = movieRatings.fillna(0)
df.head(3)
```

[2]:
```
title    'Til There Was You (1997)  1-900 (1994)  101 Dalmatians (1996)  \
user_id
1                              0.0           0.0                    2.0
2                              0.0           0.0                    0.0
3                              0.0           0.0                    0.0
```

```
title    12 Angry Men (1957)  187 (1997)  2 Days in the Valley (1996)  \
user_id
1                       5.0         0.0                          0.0
2                       0.0         0.0                          0.0
3                       0.0         2.0                          0.0

title    20,000 Leagues Under the Sea (1954)  2001: A Space Odyssey (1968)  \
user_id
1                                        3.0                           4.0
2                                        0.0                           0.0
3                                        0.0                           0.0

title    3 Ninjas: High Noon At Mega Mountain (1998)  39 Steps, The (1935)  \
user_id
1                                                0.0                   0.0
2                                                1.0                   0.0
3                                                0.0                   0.0

title    …  Yankee Zulu (1994)  Year of the Horse (1997)  \
user_id  …
1        …                 0.0                        0.0
2        …                 0.0                        0.0
3        …                 0.0                        0.0

title    You So Crazy (1994)  Young Frankenstein (1974)  Young Guns (1988)  \
user_id
1                       0.0                        5.0                3.0
2                       0.0                        0.0                0.0
3                       0.0                        0.0                0.0

title    Young Guns II (1990)  Young Poisoner's Handbook, The (1995)  \
user_id
1                        0.0                                    0.0
2                        0.0                                    0.0
3                        0.0                                    0.0

title    Zeus and Roxanne (1997)  unknown  Á köldum klaka (Cold Fever) (1994)
user_id
1                            0.0      4.0                                 0.0
2                            0.0      0.0                                 0.0
3                            0.0      0.0                                 0.0

[3 rows x 1664 columns]
```

1.1 Diagrama de barras

Diagrama de barras simple, en este caso puntuaciones de una sola película.

[3]:
```python
# Diagrama de barras

# create a figure and axis
fig, ax = plt.subplots()
# count the occurrence of each class
data = movieRatings['101 Dalmatians (1996)'].value_counts()
# get x and y data
points = data.index
frequency = data.values
# create bar chart
ax.bar(points, frequency)
# set title and labels
ax.set_title('101 Dalmatians (1996), Scores')
ax.set_xlabel('Rating')
ax.set_ylabel('Frecuency')
```

[3]:
```
Text(0, 0.5, 'Frecuency')
```

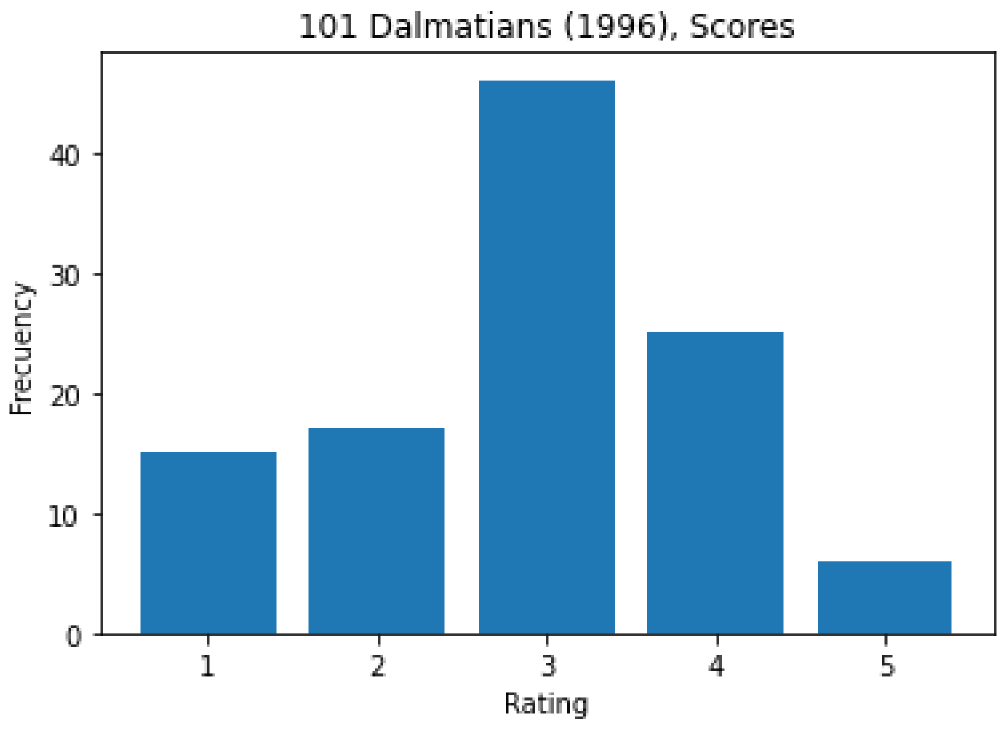
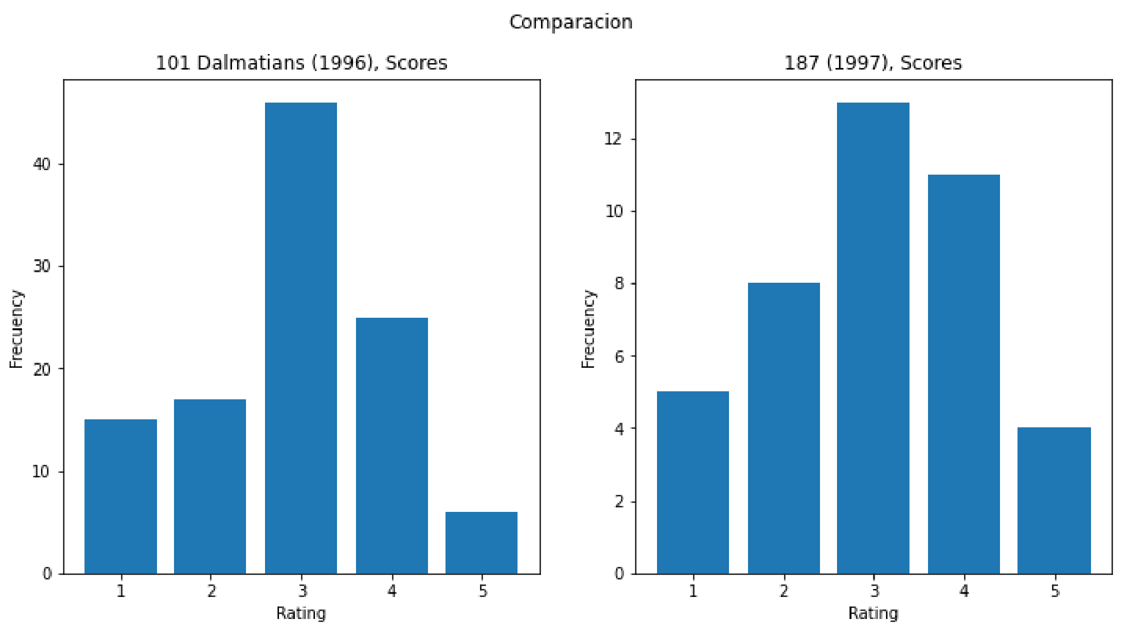


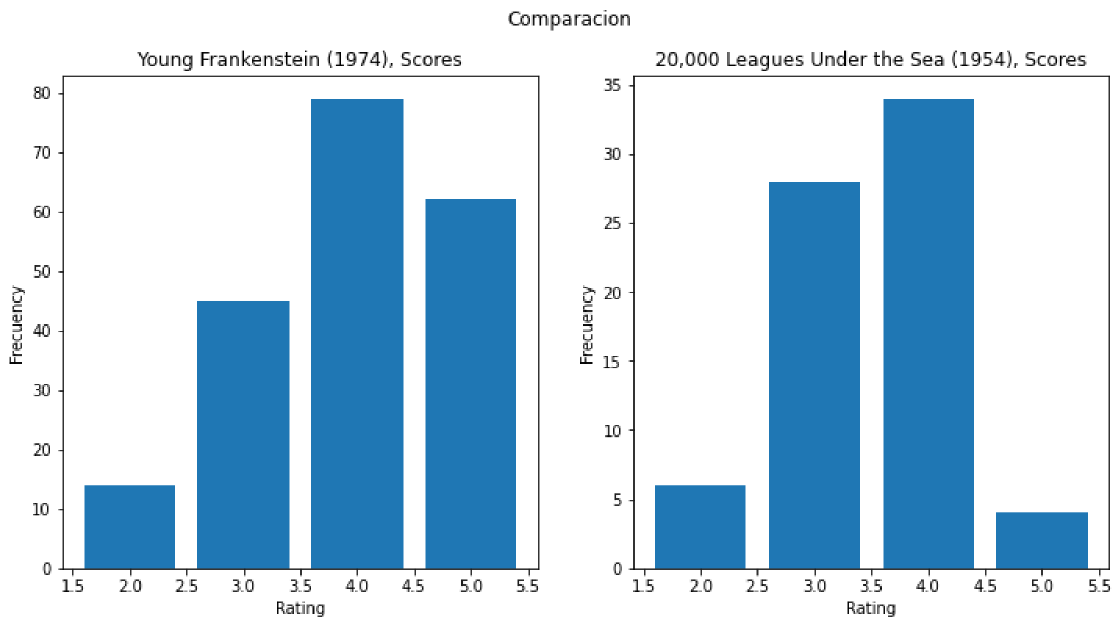
Diagrama de barras múltiple. Creamos una función que compara las puntuaciones de dos películas

[4]:
```
def comparacion_puntuaciones(title1, title2):
    # create a figure and axis
    fig, axs = plt.subplots(1, 2, figsize=[12.0, 5.8])

    # count the occurrence of each class
    data = movieRatings[title1].value_counts()
    # get x and y data
    points = data.index
    frequency = data.values
    # create bar chart
    axs[0].bar(points, frequency)
    # set title and labels
    axs[0].set_title('{}, Scores'.format(title1))
    axs[0].set_xlabel('Rating')
    axs[0].set_ylabel('Frecuency')

    # count the occurrence of each class
    data = movieRatings[title2].value_counts()
    # get x and y data
    points = data.index
    frequency = data.values
    # create bar chart
    axs[1].bar(points, frequency)
    # set title and labels
    axs[1].set_title('{}, Scores'.format(title2))
    axs[1].set_xlabel('Rating')
    axs[1].set_ylabel('Frecuency')

    fig.suptitle('Comparacion')
    plt.show()
```

[5]:
```
comparacion_puntuaciones(title1 = '101 Dalmatians (1996)', title2 = '187␣
↪(1997)')
```



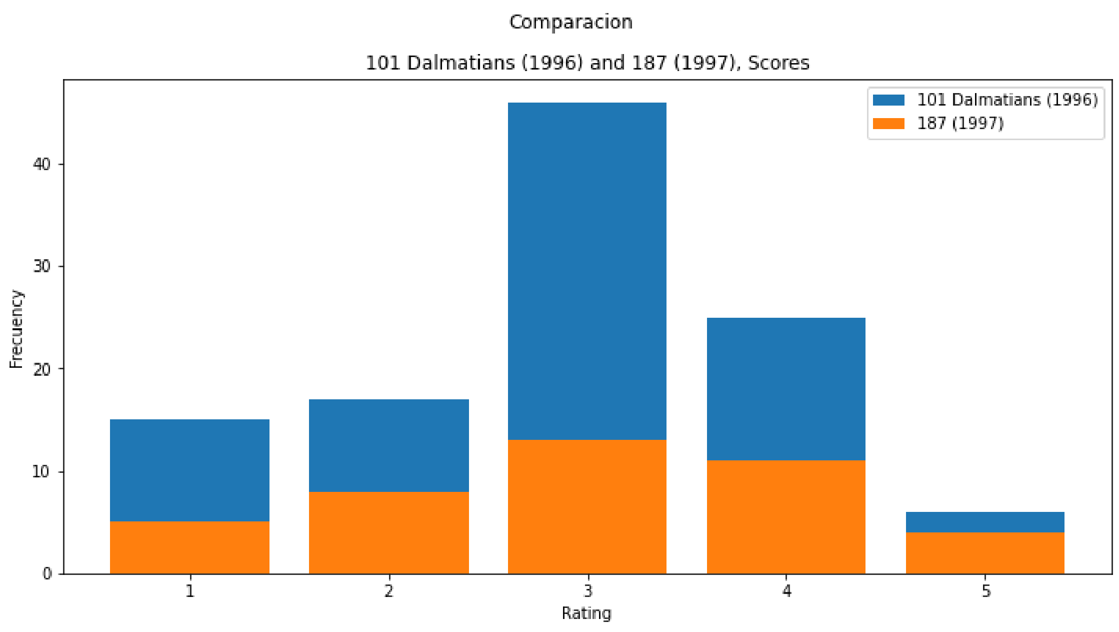
```
[6]: comparacion_puntuaciones(title1 = 'Young Frankenstein (1974)', title2 = '20,000␣
     ↪Leagues Under the Sea (1954)')
```



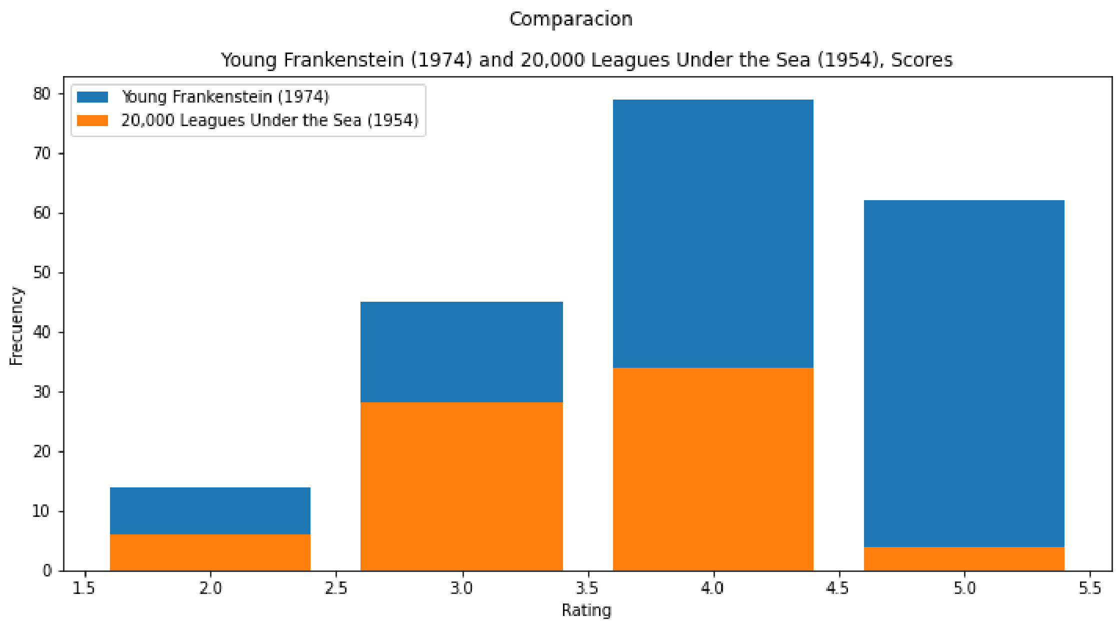
Podemos solaparlos en uno solo para una mejor comparación:

[7]:
```python
def comparacion_puntuaciones_en_uno(title1, title2):
    # create a figure and axis
    fig, axs = plt.subplots(1, 1, figsize=[12.0, 5.8])

    # count the occurrence of each class
    data = movieRatings[title1].value_counts()
    # get x and y data
    points = data.index
    frequency = data.values
    # create bar chart
    axs.bar(points, frequency, label='{}'.format(title1))
    # set title and labels
    axs.set_title('{} and {}, Scores'.format(title1, title2))
    axs.set_xlabel('Rating')
    axs.set_ylabel('Frecuency')

    # count the occurrence of each class
    data = movieRatings[title2].value_counts()
    # get x and y data
    points = data.index
    frequency = data.values
    # create bar chart
    axs.bar(points, frequency, label='{}'.format(title2))
    # set title and labels
    axs.legend()

    fig.suptitle('Comparacion')
    plt.show()
```

[8]:
```python
comparacion_puntuaciones_en_uno(title1 = '101 Dalmatians (1996)', title2 = '187␣
↪(1997)')
```



```
[56]: comparacion_puntuaciones_en_uno(title1 = 'Young Frankenstein (1974)', title2 =␣
      ↪'20,000 Leagues Under the Sea (1954)')
```

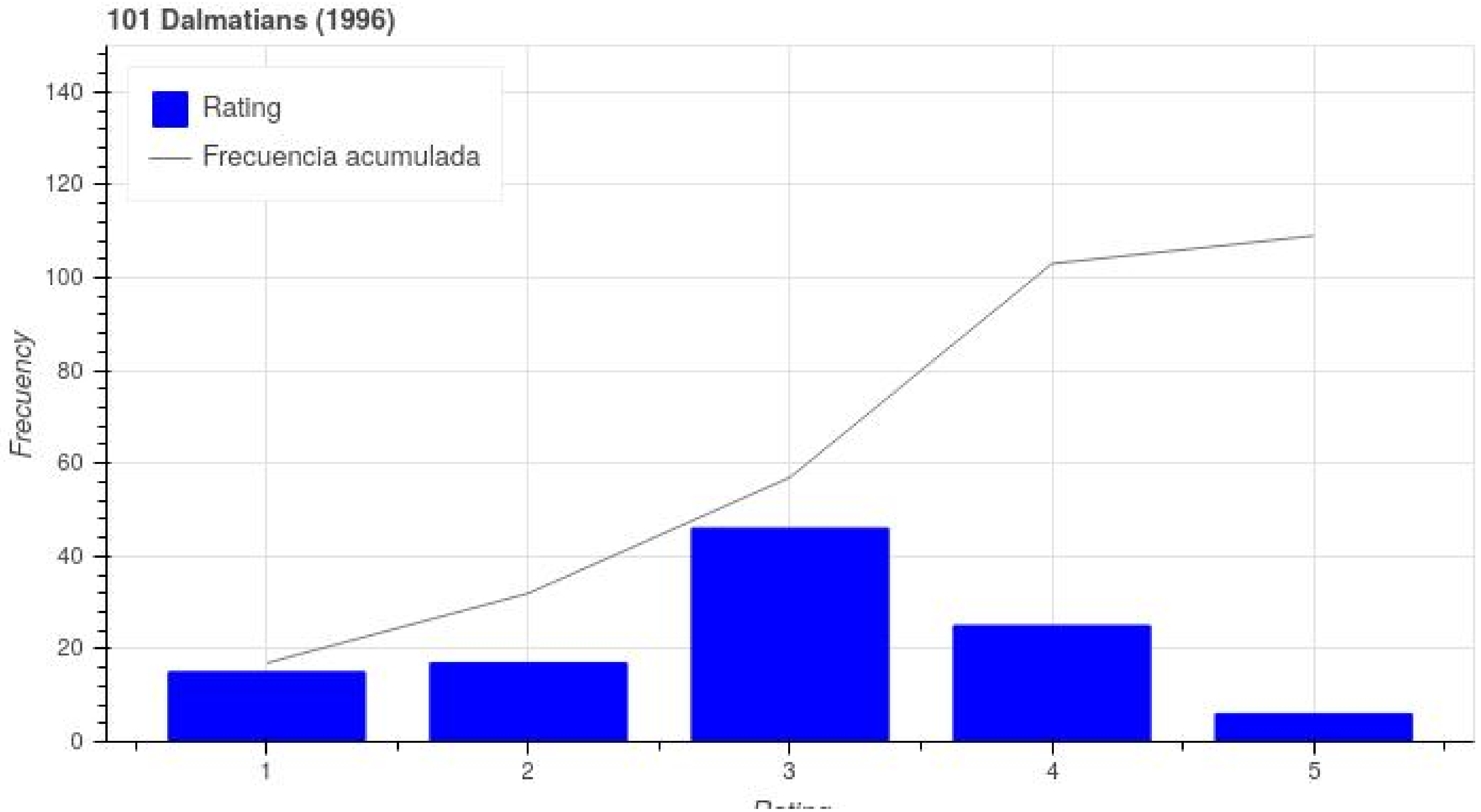


1.2 Usamos Bokeh

Representamos un gráfico de barras junto a su función de acumulación.

```
[91]: # Bokeh libraries
from bokeh.io import output_notebook
from bokeh.plotting import figure, show

# My word count data
day_num = np.linspace(1, 5, 5)
data = movieRatings['101 Dalmatians (1996)'].value_counts()
acumulativo = []
for i in data.index:
    acumulativo.append(data.values[int(i-1)])

# Output the visualization directly in the notebook
output_notebook()

# Create a figure with a datetime type x-axis
fig = figure(title='101 Dalmatians (1996)',
             plot_height=400, plot_width=700,
             x_axis_label='Rating', y_axis_label='Frecuency',
             x_minor_ticks=2, y_range=(0, 150),
             toolbar_location=None)

# The daily words will be represented as vertical bars (columns)
fig.vbar(x=data.index, bottom=0, top=data.values,
         color='blue', width=0.75,
         legend_label='Rating')

# The cumulative sum will be a trend line
fig.line(x=np.arange(1, 6), y=np.cumsum(acumulativo),
         color='gray', line_width=1,
         legend_label='Frecuencia acumulada')

# Put the legend in the upper left corner
fig.legend.location = 'top_left'

# Let's check it out
show(fig)
```

BokehJS 2.0.2 successfully loaded.


101 Dalmatians (1996)
Rating
Frecuencia acumulada
Frecuency