IMDb watchlist web scraping

Goal to achieve

- Collect every item on my personal Imdb watchlist
- Put every relevant information in a dataframe
  - Title, Rating, Release year, Plot, Summary
- Handle missing items
- With the help of AI - do a sentiment analysis based on the short Plot and on the Summary
  - Sentiment_analyzer
  - ChatGPT - prompt
- Compare the results of the analysis

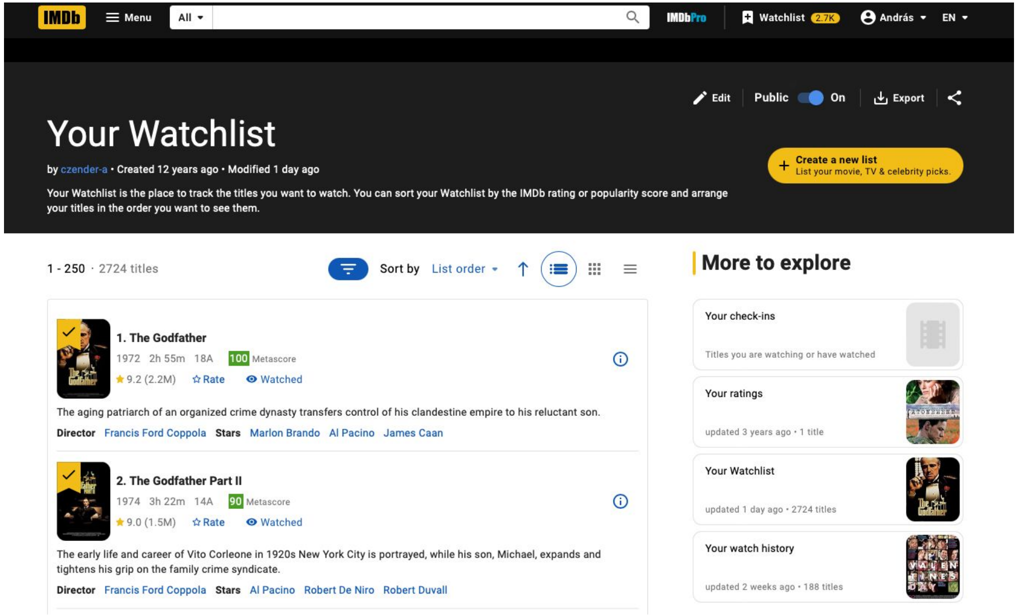
Data + difficulties

- The base of the data is my personal watchlist on IMDb
- The website alters the backend code from time to time that requires code modification on a regular basis
- I started the project in Google colab, however due to usage restrictions it had to be rebuilt in jupyter notebook
- Sentiment analysis - AI part of the project provides ambiguous results

Tools / programs / libraries used

- Google colab
- Jupyter notebook
- Pandas
- Seaborn
- Selenium
- Pytorch
- Sentiment_analyzer that creates a Hugging Face transformers pipeline using the DistilBERT model fine-tuned for sentiment classification (positive/negative)
- ChatGPT - upload the basic information as a csv file and create a prompt to analyze the dataset

Basic information



Your Watchlist

by czender-a • Created 12 years ago • Modified 1 day ago

Your Watchlist is the place to track the titles you want to watch. You can sort your Watchlist by the IMDb rating or popularity score and arrange your titles in the order you want to see them.

1 - 250 · 2724 titles

1. The Godfather
1972 2h 55m 18A 100 Metascore
★ 9.2 (2.2M)

The aging patriarch of an organized crime dynasty transfers control of his clandestine empire to his reluctant son.

Director Francis Ford Coppola **Stars** Marlon Brando Al Pacino James Caan

2. The Godfather Part II
1974 3h 22m 14A 90 Metascore
★ 9.0 (1.5M)

The early life and career of Vito Corleone in 1920s New York City is portrayed, while his son, Michael, expands and tightens his grip on the family crime syndicate.

Director Francis Ford Coppola **Stars** Al Pacino Robert De Niro Robert Duvall

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updated 3 years ago • 1 title

Your Watchlist
updated 1 day ago • 2724 titles

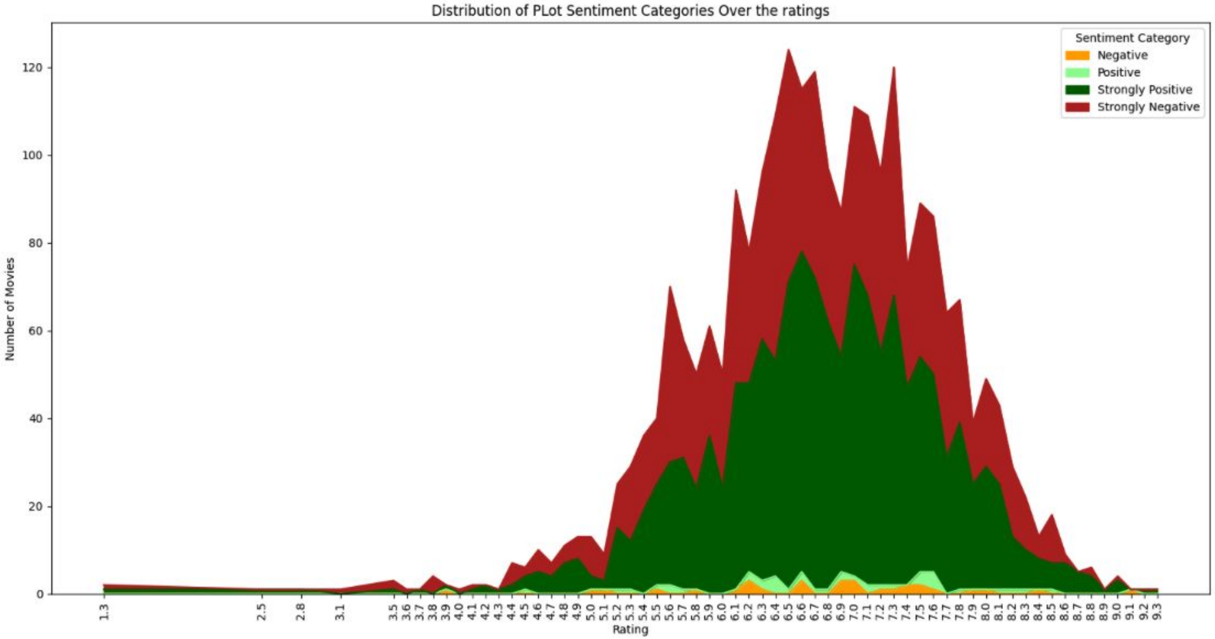
Your watch history
updated 2 weeks ago • 188 titles

- Website - Watchlist
- The basic list contains 2723 items → **2491** items were used for the analysis
  - 221 items were removed during the cleaning process due to missing year
  - 5 items were removed during the cleaning process due to missing plot (2 were removed in the previous step)
  - 12 items were removed during the cleaning process(3 were removed in the previous steps)

Results / 1

Plot-based Sentiment Categories

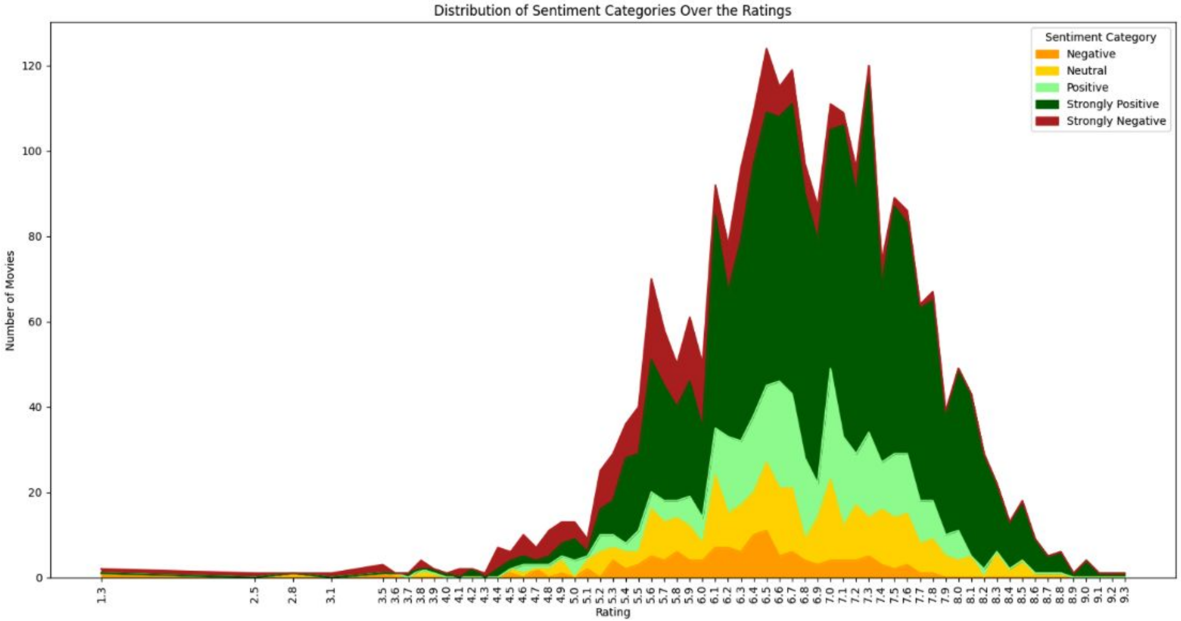
- Strongly Negative → **1,056 movies**
- Negative → **30 movies**
- Neutral → *(not detected)*
- Positive → **39 movies**
- Strongly Positive → **1,366 movies**



Results / 2

Summary-based Sentiment Categories

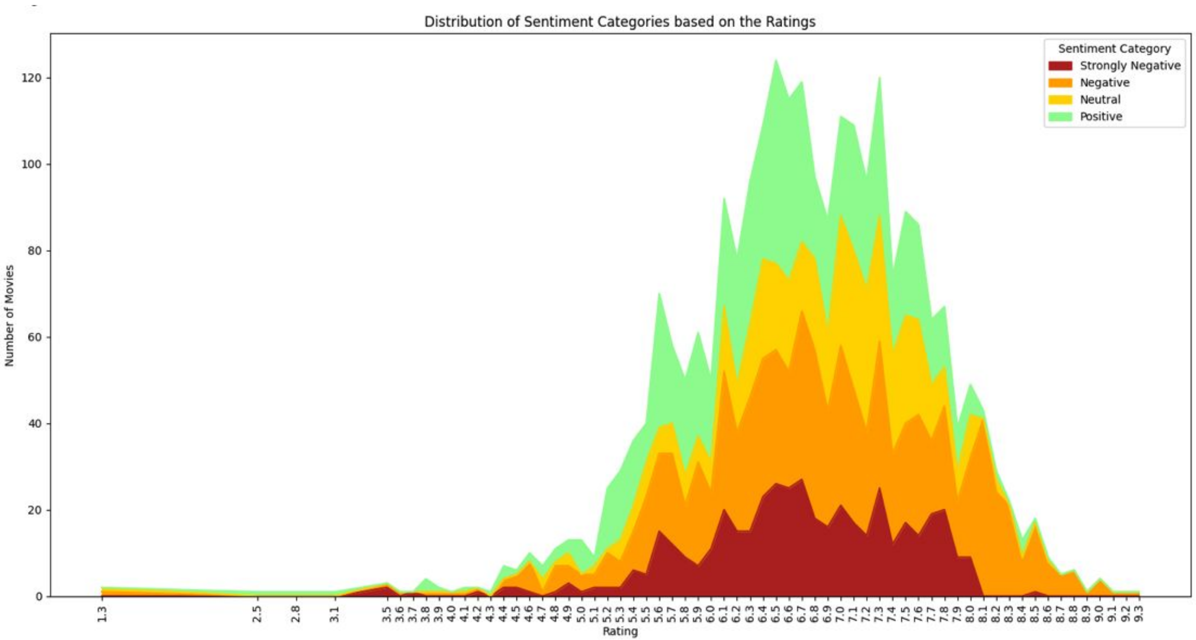
- Strongly Negative → **281 movies**
- Negative → **126 movies**
- Neutral → **308 movies**
- Positive → **357 movies**
- Strongly Positive → **1,419 movies**



Results / 3

Chat GPT results Emotional categories

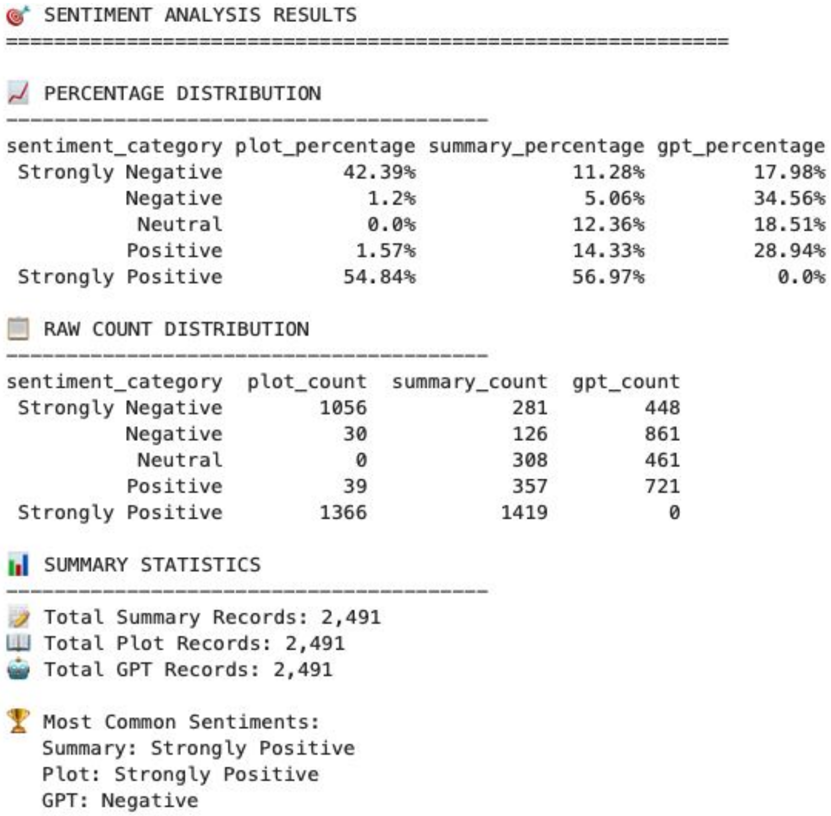
- Strongly Negative → **448 movies**
- Negative → **861 movies**
- Neutral → **461 movies**
- Positive → **721 movies**



Summary

- ChatGPT was working with the Plot only

- According to the sentiment analyzer
  - 43.59% of the movies are Negative
  - 56.41% of the movies are Positive
- According to ChatGPT the distribution is more even
  - 52.54% of the movies are Negative
  - 28.94% of the movies are Positive



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🎯 SENTIMENT ANALYSIS RESULTS
================================================================

📈 PERCENTAGE DISTRIBUTION
----------------------------------------
sentiment_category plot_percentage summary_percentage gpt_percentage
 Strongly Negative          42.39%             11.28%         17.98%
          Negative           1.2%               5.06%         34.56%
           Neutral           0.0%              12.36%         18.51%
          Positive           1.57%             14.33%         28.94%
 Strongly Positive          54.84%             56.97%          0.0%

📋 RAW COUNT DISTRIBUTION
----------------------------------------
sentiment_category  plot_count  summary_count  gpt_count
 Strongly Negative        1056            281        448
          Negative          30            126        861
           Neutral           0            308        461
          Positive          39            357        721
 Strongly Positive        1366           1419          0

📊 SUMMARY STATISTICS
----------------------------------------
📝 Total Summary Records: 2,491
📖 Total Plot Records: 2,491
🤖 Total GPT Records: 2,491

🏆 Most Common Sentiments:
   Summary: Strongly Positive
   Plot: Strongly Positive
   GPT: Negative
```

Lessons learned / next steps

- Reduce duplicates during web scraping
- Handle the missing year items (a series has a start and end date)
- Other alternatives to sentiment analysis ⟶ chatGPT / claude
- Re-run the analysis multiple times to compare the results
- Revise the scraping code to make it more efficient
- Use the IMDb API for more efficiency