Movie Recommendation System

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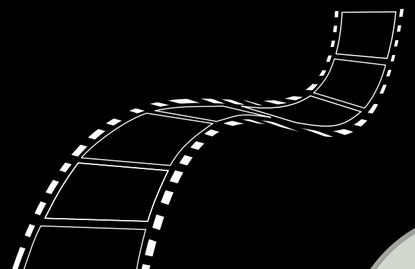
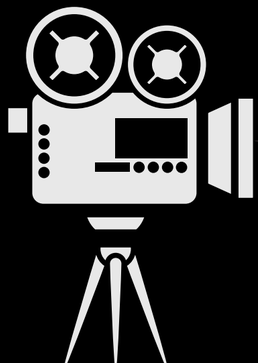
Introduction

Movie Recommendation system :

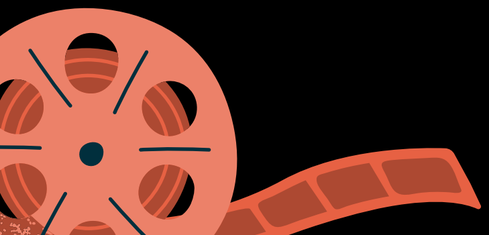
- Various OTT (over the top) platforms uses a recommendation system for its users making the interface user-oriented.
- Users spends a lot of time in finding what they might like because they have 1000s of options.
- Hence it is important to have such an algorithm which helps the users to find their interests.





Problem Statement

The project aims to assist the Users in finding content which he/she likes using concepts based on weighted mean, cosine similarity and singular value decomposition and hence reducing the time spent by the users to find appropriate content.



Existing body of work

- Currently, all the OTT platforms, google, youtube and all kinds of search engines use recommendation strategy to retain their users for maximum amount of time.

- Recommendations are given based on popularity, views, similar products, super affinity, etc.

- Netflix, “Netflix prize data,” Kaggle, 13-Nov-2019. [Online]. Available: https://www.kaggle.com/netflix-inc/netflix-prize-data. [Accessed: 30-Mar-2022].

APPROACH

IMPLEMENTED

1

DATA CLEANING

- To filter out movies with no average ratings and 0 vote count

2

WEIGHTED MEAN

- Set priorities to movies to give recommendations.

3

GENRE BASED FILTERING

- top movies chart according to genre.

YET TO BE DONE

4

CONTENT BASED FILTERING

- consider watch history, cast and crew,director,etc

5

COLLABORATIVE FILTERING

- similar users get similar recommendations.

6

HYBRID RECOMMENDER

- merging all 3 filtering methods to make a hybrid recommender.

Weighted mean

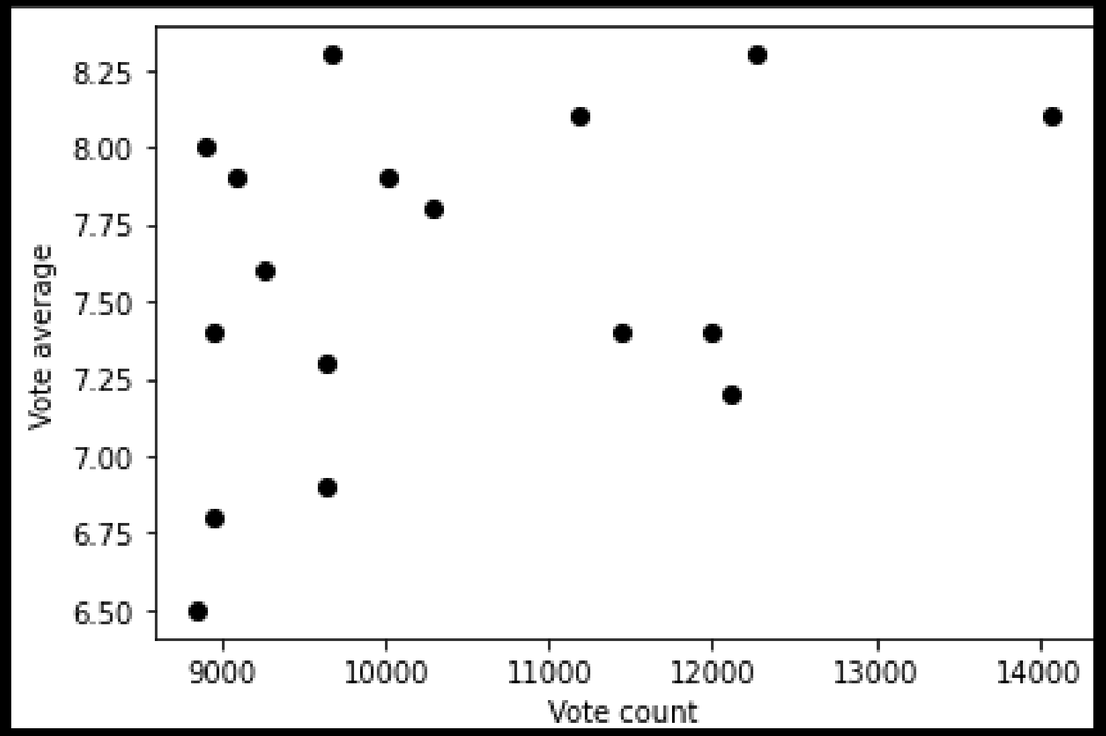
Weighted Rating (WR) = $(\frac{v}{v+m}.R) + (\frac{m}{v+m}.C)$

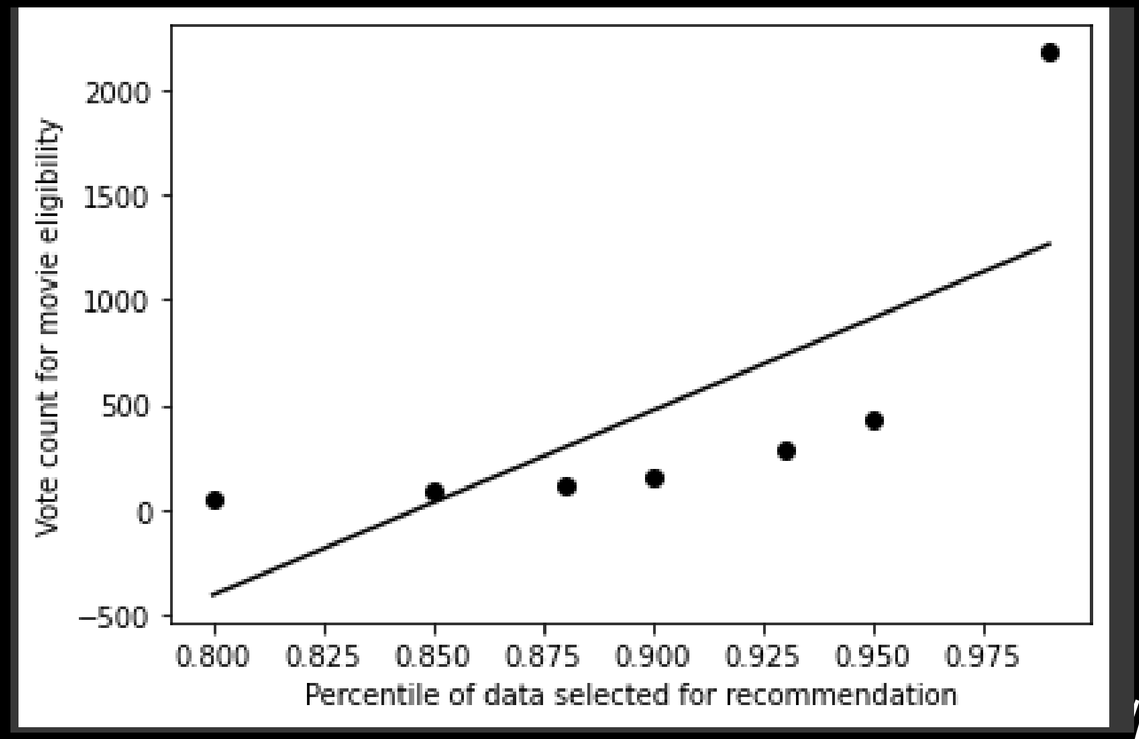
where,

- v is the number of votes for the movie
- m is the minimum votes required to be listed in the chart
- R is the average rating of the movie
- C is the mean vote across the whole report

- Create one paramter "weghted rating" which considers all 4 parameters above for a movie.
- Does not give personalized recommendations.

Weighted mean





- In the first plotted graph,data is filtering at 0.95 th percentile of the movies present in the data set containing 17 movies.
- In the second graph, we are fitting a linear regression to the percentile and vote count graph.

Initial Results

- **Genre based movie recommendation**
- **Output for genre: ROMANCE**

```
build_chart('Romance').head(5)
```

	title	year	vote_count	vote_average	popularity	wr
10309	Dilwale Dulhania Le Jayenge	1995	661	9	34.457024	8.565285
351	Forrest Gump	1994	8147	8	48.307194	7.971357
876	Vertigo	1958	1162	8	18.20822	7.811667
40251	Your Name.	2016	1030	8	34.461252	7.789489
883	Some Like It Hot	1959	835	8	11.845107	7.745154

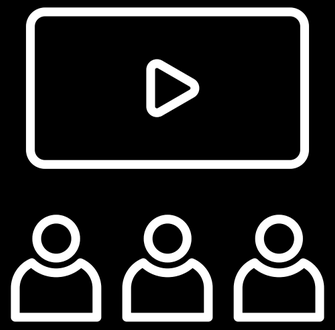
Initial Results

Output for genre: ACTION

```
build_chart('Action').head(5)
```

	title	year	vote_count	vote_average	popularity	wr
15480	Inception	2010	14075	8	29.108149	7.955099
12481	The Dark Knight	2008	12269	8	123.167259	7.948610
4863	The Lord of the Rings: The Fellowship of the Ring	2001	8892	8	32.070725	7.929579
7000	The Lord of the Rings: The Return of the King	2003	8226	8	29.324358	7.924031
5814	The Lord of the Rings: The Two Towers	2002	7641	8	29.423537	7.918382

INFERENCE : The movies are recommended based on one parameter - weighted rating. Higher weighted rating suggests more priority to a movie.

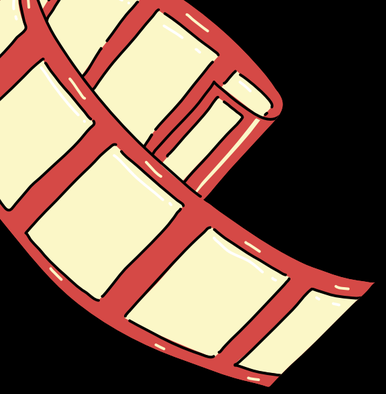


Contribution of each member

Yashvi Navadia : Implemented weighted mean and explored various functions in python used in the coding part, coding in Simple recommender system.

Kashish Jivani : Reading various articles on the topics which have ML models to solve the problem, coding in Simple recommender system.

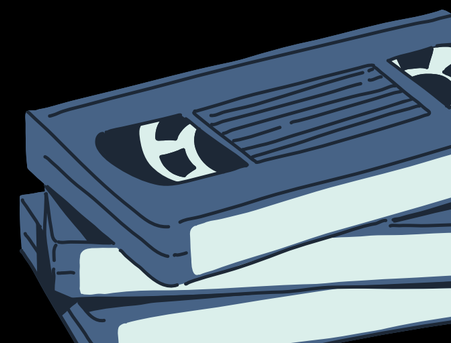
Neel Popat : Handled and gathered the datasets, figuring out the cosine similarity, coding in Content based filtering.



FUTURE WORKS

Application and Implementation :

- Content based filtering
- Collaborative based filtering
- Hybrid Recommendation System



References

- C. Z. Omega and Hendry, "Movie Recommendation System using Weighted Average Approach," 2021 2nd International Conference on Innovative and Creative Information Technology (ICITech), 2021, pp. 105-109, doi: 10.1109/ICITech50181.2021.9590147.
- S. Agrawal and P. Jain, "An improved approach for movie recommendation system," 2017 International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 2017, pp. 336-342, doi: 10.1109/I-SMAC.2017.8058367.
- C. M. Wu, D. Garg and U. Bhandary, "Movie Recommendation System Using Collaborative Filtering," 2018 IEEE 9th International Conference on Software Engineering and Service Science (ICSESS), 2018, pp. 11-15, doi: 10.1109/ICSESS.2018.8663822.

Thank you