

A photograph of a person sitting on a dark couch, watching television. They are holding a remote control in their right hand and a bowl of popcorn in their left lap. The TV screen shows a person's face, possibly a movie or TV show. The overall atmosphere is casual and relaxed.

RECOMMENDER SYSTEM

on MovieLens Dataset

Yesim Cebeci

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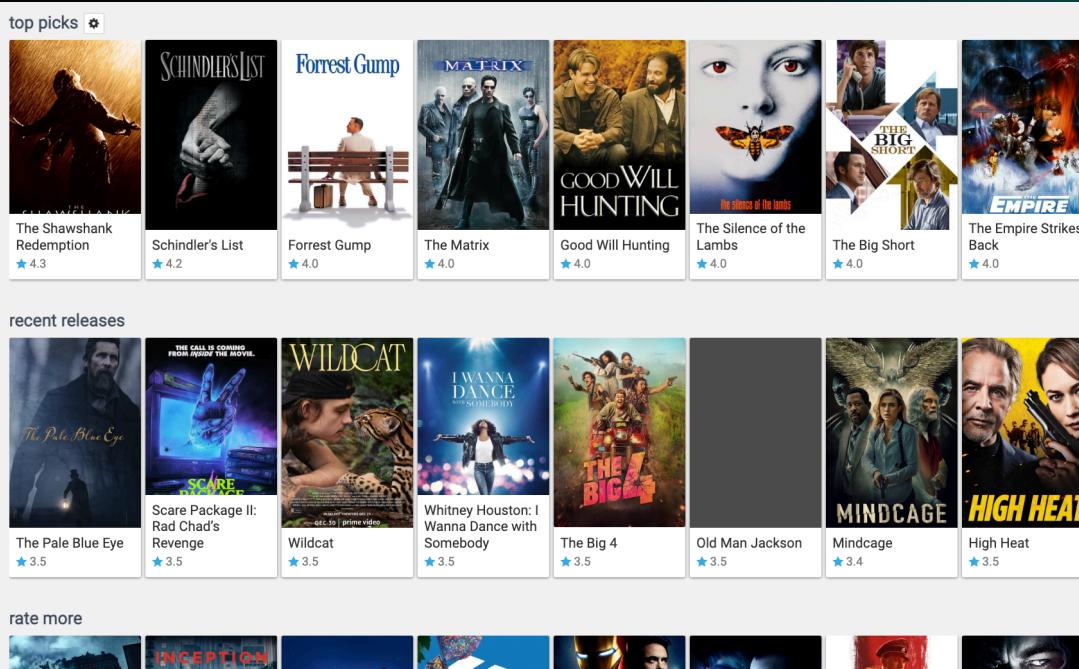
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ABOUT THE MOVIELENS

MovieLens is a website that helps users find movies that they will like.

It uses ratings given by the user to build a custom taste profile of that particular user and then utilizes that information to recommend other movies for the user to watch.



01

Business Understanding

MovieLens wants to improve its movie recommendation system that is located on users' homepages. The goal is to use users movie ratings and recommend other movies.

This may save the user time when deciding which movie they would like to watch

Data Understanding

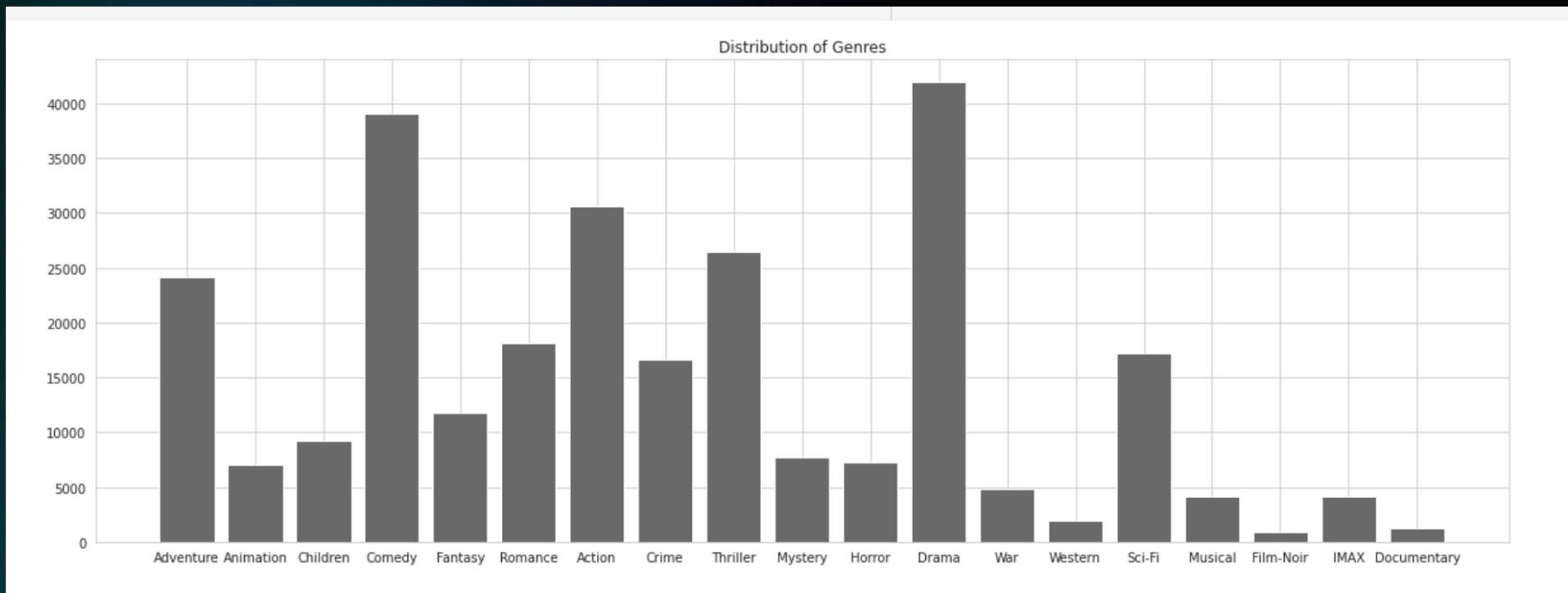
This dataset provide by MovieLens website (<https://grouplens.org/datasets/movielens/latest/>)

- It contains 100836 ratings,
- 9742 movies
- And data were created by 610 users

03

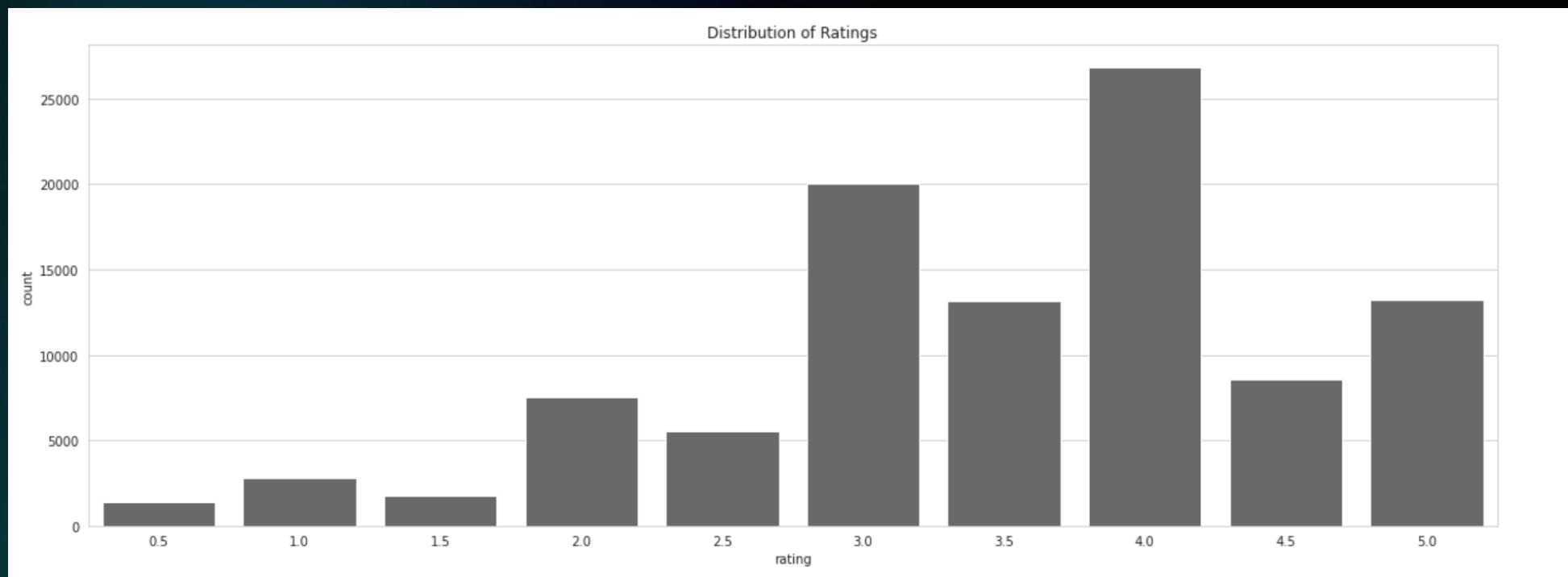


Data Analysis



03

Data Analysis





Recommendations based on Popularity to a New User

	title	mean_rating
	Shawshank Redemption, The (1994)	4.429022
	Fight Club (1999)	4.272936
	Usual Suspects, The (1995)	4.237745
	Star Wars: Episode IV - A New Hope (1977)	4.231076
	Schindler's List (1993)	4.225000
	Star Wars: Episode V - The Empire Strikes Back...	4.215640
	Pulp Fiction (1994)	4.197068
	Matrix, The (1999)	4.192446
	Forrest Gump (1994)	4.164134
	Silence of the Lambs, The (1991)	4.161290

- These are the most popular movies which can be recommended to a new user.
- Movies are sorted by both the number of ratings and their average rating in our dataset.

04



Recommendations based on Genres to a New User

```
recommendations_based_on_genres('Pulp Fiction (1994)')
```

	title	genres
	Fargo (1996)	Comedy Crime Drama Thriller
	Freeway (1996)	Comedy Crime Drama Thriller
3	Man Bites Dog (C'est arrivé près de chez vous)...	Comedy Crime Drama Thriller
5	Beautiful Creatures (2000)	Comedy Crime Drama Thriller
9	Confessions of a Dangerous Mind (2002)	Comedy Crime Drama Thriller
3	Party Monster (2003)	Comedy Crime Drama Thriller
5	In Bruges (2008)	Comedy Crime Drama Thriller
9	Informant!, The (2009)	Comedy Crime Drama Thriller
3	Leaves of Grass (2009)	Comedy Crime Drama Thriller
	Money Train (1995)	Action Comedy Crime Drama Thriller

- These are the movies which can be recommended based on given movie titles genres to a new user.
- Movies are sorted by the similarity scores

04



Item-Based Collaborative Filtering to Existing User

similarity('Edward Scissorhands (1990)')				
	title	genre	similarity	rated_movie
	Hamlet (1996)	Crime Drama Romance	0.880000	25
	Man of the House (1995)	Comedy	0.804984	45
	Billy Elliot (2000)	Drama	0.800000	218
Dark Portals: The Chronicles of Vidocq (Vidocq)		Action Crime Fantasy	0.800000	87
	Bend It Like Beckham (2002)	Comedy Drama Romance	0.800000	67
	Dogma (1999)	Adventure Comedy Fantasy	0.800000	59
	Amistad (1997)	Drama Mystery	0.800000	57
Butterfly (La lengua de las mariposas) (1999)		Drama	0.800000	55
	Wing Commander (1999)	Action Sci-Fi	0.800000	47
	Song of the South (1946)	Adventure Animation Children Musical	0.800000	42

- The main idea behind item based collaborative filtering is to use other users' preferences and taste to recommend new items to a user.



Collaborative Filtering Model Based on User Ratings

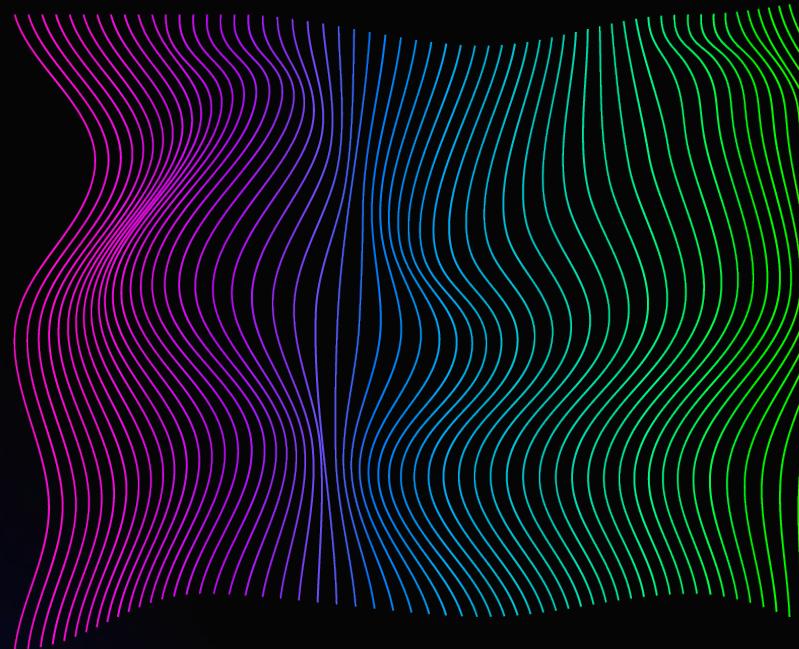
title	genres
Shawshank Redemption, The (1994)	Crime Drama
Pulp Fiction (1994)	Comedy Crime Drama Thriller
Silence of the Lambs, The (1991)	Crime Horror Thriller
Star Wars: Episode V - The Empire Strikes Back...	Action Adventure Sci-Fi
Usual Suspects, The (1995)	Crime Mystery Thriller
Memento (2000)	Mystery Thriller
Princess Bride, The (1987)	Action Adventure Comedy Fantasy Romance
One Flew Over the Cuckoo's Nest (1975)	Drama
Eternal Sunshine of the Spotless Mind (2004)	Drama Romance Sci-Fi
American History X (1998)	Crime Drama

- This model recommends those movies that haven't been watched by this user and were loved by other users with similar taste.



Conclusion

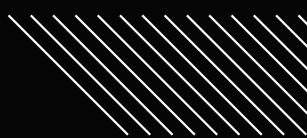
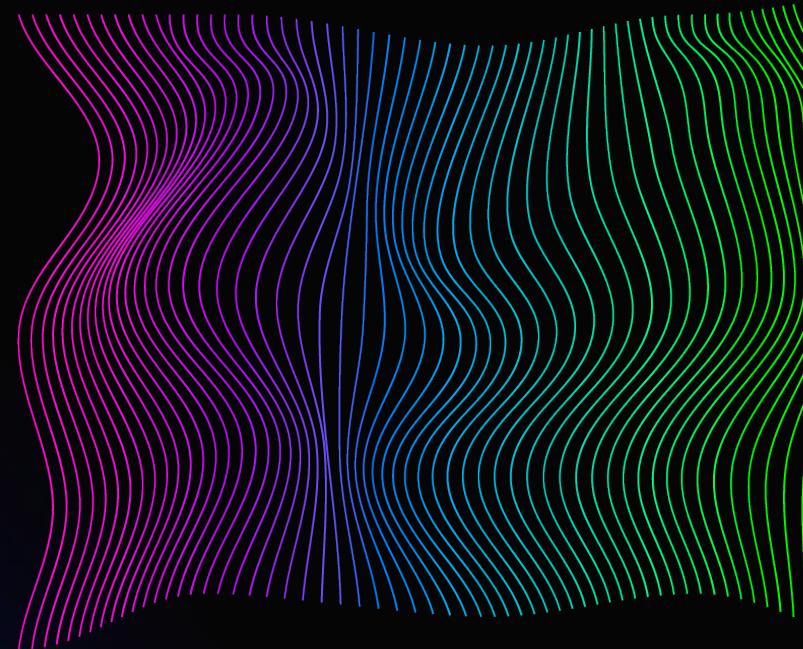
- I analyzed a variety of movie recommendation systems on MovieLens database.
- First I provided general recommendations based on movie popularity and genre
- Then progressed some collaborative filtering based on movie similarity
- And last,I built an machine learning model and predict ratings on movies that havent been watched then recommended 10 movies to user upon predicted ratings.





Future Work

- There is a lot of potential to do but in the future, deep learning based recommender system can be built to enhance the performance and provide better recommendations to user.
- And also I can scrape more data from internet and make use of directors or cast dataset to recommend movies to new users upon actors or directors



THANKS

Do you have any questions?

ysm.cebeci@gmail.com



<https://www.linkedin.com/in/yesim-cebeci/>

