XMOVIES

BUILDING A COLLABORATIVE MOVIE RECOMMENDATION SYSTEM

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PROBLEM OVERVIEW

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PROBLEM OVERVIEW

Our leading video streaming platform faces challenges in delivering satisfying user experiences due to the current limitations of our recommendation system.

PROBLEM OVERVIEW

- User experience challenges due to limitations of the current recommendation system.
- Users struggle to discover movies aligned with their interests.
- Decreased user satisfaction and lower engagement.
- Negative impact on revenue generation.
- Inaccurate analysis of user preferences.
- Lack of personalized movie suggestions.

OBJECTIVES

02

GOALS AND OBJECTIVES

01 To build a movie recommendation system that provides top 5 movie recommendations to a user based on their ratings of other movies.

02 To enhance user satisfaction by providing accurate and personalized movie recommendations that align with each user's individual tastes and interests

03 Improve user retention by delivering a highly engaging and satisfying user experience through personalized recommendations.

SOLUTION PROCESS

03

Data Understanding

Dataset contains 100836 ratings and 3683 tag applications across 9742 movies

created by 610 users

Recommendation System

03

COLLABORATIVE FILTERING RECOMMENDATION SYSTEM

Collaborative Filtering:

is a popular approach in recommendation systems that leverages user behavior and item similarity to make personalized recommendations.

It assumes that users who have similar preferences in the past will have similar preferences in the future

MAKING RECOMMENDATIONS

•We provides an interactive way for a user to rate movies by randomly selecting movies from the dataframe and collecting their ratings.

•This action provides new user ratings

MAKING PREDICTIONS

•We apply the SVD-based recommendation systems to capture the movie ratings and provide personalized recommendations.

Recommendation system result

```
Rate the movie 'Time Bandits' (ID: 2968) on a scale of 1 to 5:
4
Rate the movie 'Hitchhiker's Guide to the Galaxy, The' (ID: 33004) on a scale of 1 to 5:
5
Rate the movie 'Monty Python's The Meaning of Life' (ID: 6807) on a scale of 1 to 5:
4
Rate the movie 'Sex and the City' (ID: 59725) on a scale of 1 to 5:
4
Rate the movie 'Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb' (ID: 750) on a scale of 1 to 5:
5
Computing the cosine similarity matrix...
Done computing similarity matrix.
Top 10 recommendations for the user in the 'Comedy' genre:
Lamerica
Lamerica
Heidi Fleiss: Hollywood Madam
Heidi Fleiss: Hollywood Madam
Awfully Big Adventure, An
Live Nude Girls
In the Realm of the Senses (Ai no corrida)
What Happened Was...
Thin Line Between Love and Hate, A
Denise Calls Up
```

Movie Ratings

Recommended movies based of Ratings

OTHER TECHNIQUES :

With a focus in allowing diversity and variety in the recommendation, the following methods can be applied:

- Ensemble methods
- Hybrid approach
- Matrix factorization(ALS ,NMF and PMF)

CONCLUSION

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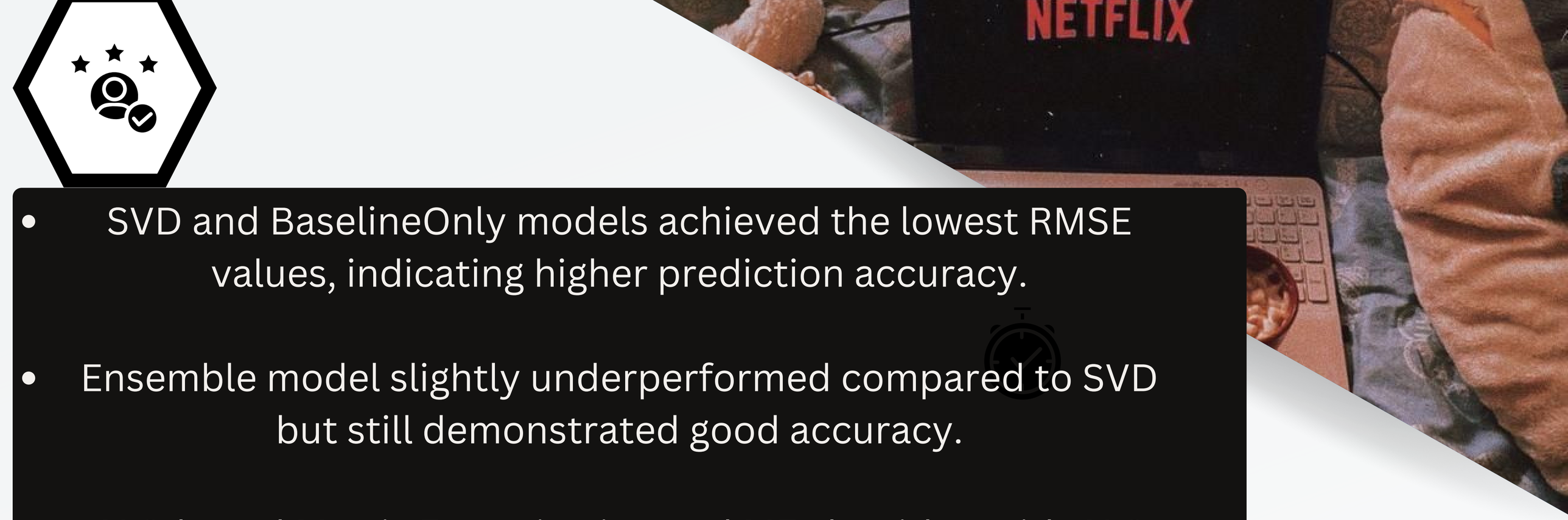

- SVD and BaselineOnly models achieved the lowest RMSE values, indicating higher prediction accuracy.
- Ensemble model slightly underperformed compared to SVD but still demonstrated good accuracy.
- ALS-based Matrix Factorization and MF algorithm with ALS had higher RMSE values, suggesting lower accuracy.
- Hybrid strategy showed higher RMSE value compared to SVD, indicating comparatively lower accuracy.

RECOMENDATIONS

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1. Compare SVD and BaselineOnly models based on metrics like coverage and diversity to make a final decision for the collaborative filtering recommendation system.

2. Apply the ensemble model, which performs well with slightly higher RMSE compared to SVD, to introduce diversity and variety in recommendations.

3.Further investigate and fine-tune the Hybrid strategy, combiningcollaborative filtering and content-based filtering, to enhance its performance despite having a higher RMSE than SVD.