Movie Recommendation System

1. Introduction

The Movie Recommendation System project aims to suggest movies to users based on their preferences or past behavior. Recommendation engines are widely used by streaming platforms like Netflix and Amazon Prime to enhance user experience by suggesting relevant content.

2. Abstract

In this project, we utilized the MovieLens dataset to build a collaborative filtering-based recommendation system. We used user-item interaction data (ratings) to predict how a user might rate unseen movies. By creating a user-movie matrix and calculating correlations or similarities, the system is able to recommend top movies to a user.

3. Tools and Technologies Used

- Python
- Jupyter Notebook
- Pandas, NumPy
- Scikit-learn
- Streamlit
- MovieLens 100k Dataset

4. Methodology

1. Downloaded and loaded the MovieLens 100k dataset (movies.csv and ratings.csv).
2. Merged the two datasets to associate movie titles with user ratings.
3. Created a user-movie rating matrix using pivot tables.
4. Applied collaborative filtering using correlation or cosine similarity.
5. Built a recommendation function that suggests similar movies based on a selected movie.
6. Designed a Streamlit UI for users to select a movie and view recommendations.

5. Results

The system successfully recommended movies to users based on collaborative filtering. The Streamlit web interface made it interactive and easy to use, allowing users to choose a movie and receive suggestions instantly.

6. Conclusion

This project demonstrates how user behavior and historical data can be used to build a practical recommendation engine. It enhances decision-making and user engagement, and lays the foundation for more advanced systems using deep learning or hybrid approaches.

7. Future Enhancements

- Integrate content-based filtering (genres, descriptions) - Support user login and personalized recommendations
- Apply matrix factorization techniques or deep learning models
- Deploy the system online with a backend database

8. Student Info

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