NETFLIX MOVIE RECOMMENDATION

Data Preparation

Data Loading and Exploration: The project begins by loading a dataset containing customer ratings. Exploratory Data Analysis (EDA) is performed to check for missing values, understand the distribution of ratings, and visualize relationships between different variables in the dataset.

Data Cleaning: The dataset is cleaned by handling missing values and ensuring the data is in the correct format for analysis. This step is crucial for preparing the data for modeling.

Feature Engineering

Feature Selection and Encoding: The features in the dataset are processed to select the most relevant ones for the recommendation system. This may include encoding categorical variables and creating new features to improve model performance.

Model Building

SVD-based Collaborative Filtering Model: A recommendation model is developed using Singular Value Decomposition (SVD), a matrix factorization technique. The SVD method is employed to reduce the dimensionality of the user-item interaction matrix, capturing latent factors that influence user preferences and making accurate predictions for unseen content.

Model Evaluation

Model Performance: The SVD-based recommendation model's performance is evaluated using metrics such as Mean Squared Error (MSE) and Root Mean Squared Error (RMSE). The model achieved an average RMSE of approximately 21.05, which suggests the typical error between predicted and actual ratings.

Visualization

User-Item Interaction: The notebook includes visualizations of the user-item interaction matrix, showing the distribution of ratings and helping to understand patterns in the data.

Results

Model Metrics:

- **RMSE: ~21.05 (A lower value indicates better model performance)**

Conclusion

The SVD-based collaborative filtering model demonstrates strong predictive performance, effectively capturing user preferences and providing personalized content recommendations. The model's ability to predict user ratings suggests its potential to enhance user satisfaction on streaming platforms like Netflix.