MovieLens Recommendation System

A presentation by Jacinta Fiona

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Title:
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Introduction

The goal of a recommendation system is to expose people to items that they will like. It predicts the future preference of a set of items for a user, and recommends the top items from this set. The MovieLens recommendation system helps in suggesting the movies which a customer might be interested in considering their past rating history. Recommendation systems have a direct impact on profitability and customer satisfaction for most businesses today.

Problem Statement

To develop an effective movie recommendation system that leverages collaborative filtering and content-based filtering techniques based on user ratings and movie attributes. The goal is to provide personalized movie recommendations to users, addressing the cold start problem for new users and enhancing the user experience by suggesting movies tailored to their preferences and viewing history.

Main Objective

The main objective is to create a recommendation system that accurately suggests movies to users based on their historical ratings and preferences.

Specific Objectives

- To increase user engagement and satisfaction by delivering movie suggestions that align with the users' interests and preferences

- To implement thorough evaluation metrics to measure the performance of the recommendation system and optimize the algorithms for better accuracy and relevance of recommendations.

- To utilize movie attributes such as genre to enhance recommendations through content-based filtering, providing a broader range of suggestions.

- To develop strategies to mitigate the cold start problem by providing meaningful recommendations to new users who have not provided any ratings yet.

Histogram Plot Showing The Distribution Of Movie Ratings
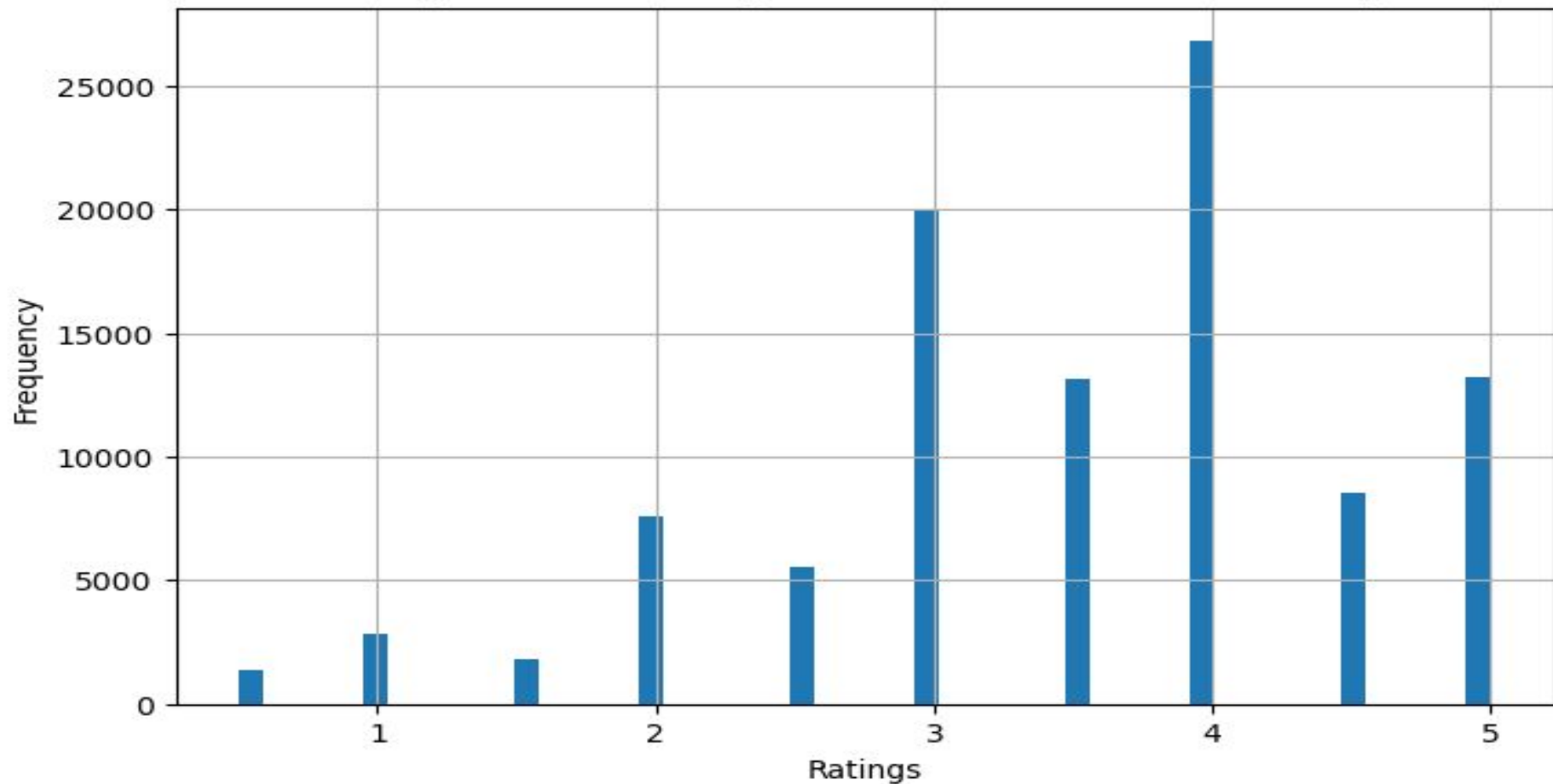
A scatter plot showing the number of users voting with respectie movies
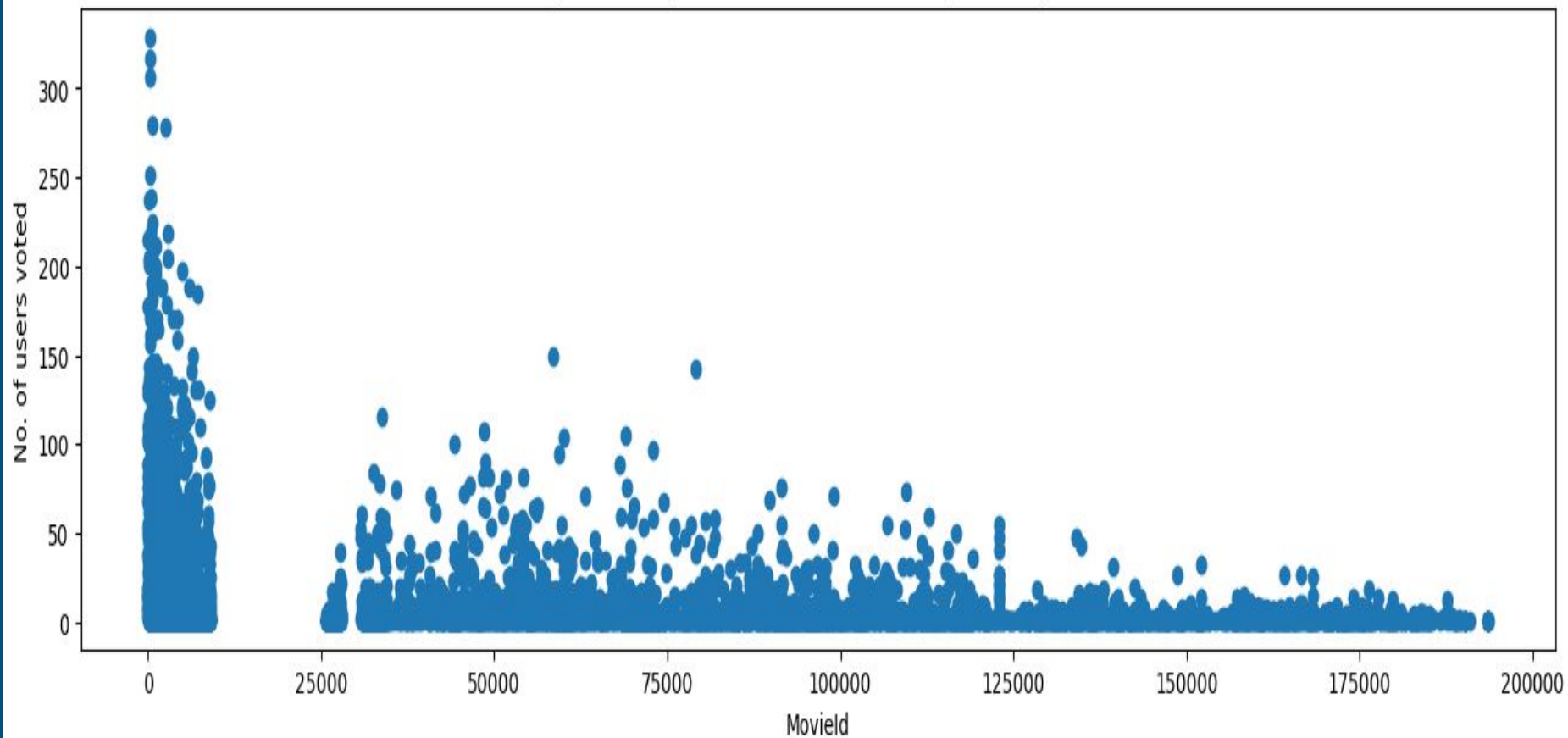
Conclusions

- The collaborative filtering and content-based filtering algorithms performed reasonably well based on the evaluation metrics such as RMSE for collaborative filtering and cosine similarity for content-based filtering.

- Collaborative filtering, using K-Nearest Neighbors, demonstrated good accuracy in predicting user ratings.

- User feedback and engagement indicated that the recommendations were relevant and aligned with their preferences.

- The approach of combining collaborative filtering and content-based filtering showed potential in addressing the limitations of individual methods.

Recommendations

- It is recommended that we explore advanced hybrid techniques like matrix factorization.

- We should implement real-time recommendation updates by utilizing streaming data and online learning techniques to adapt recommendations in real time as user behaviors change.

- We can enhance the recommendation system by incorporating implicit feedback such as user clicks, watch times, or search queries.

- We can incorporate explainability features that provide reasons behind each recommendation, enhancing user trust and engagement.