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# MOVIE RECOMMENDATION SYSTEM

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Group 3

# Introduction

**100,000**

user ratings

**9,000**

rated movies

Movie recommendation systems are driven by machine learning algorithms to enhance user experiences by tailoring movie suggestions. By utilizing the MovieLens dataset, particularly the "small" subset with 100,000 user ratings, we aim for computational efficiency and effective proof-of-concept development.

# Business Understanding

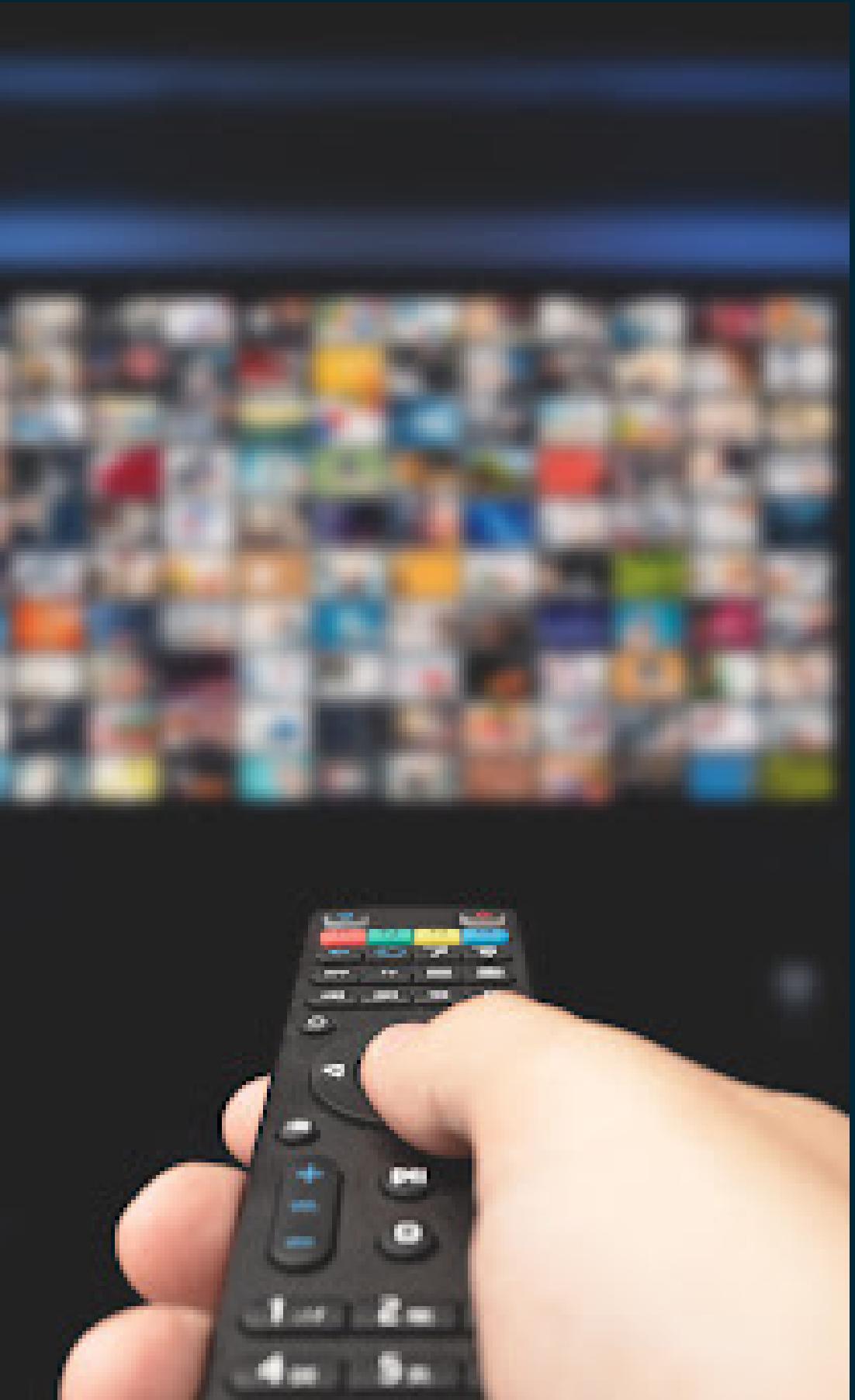
Data Source: MovieLens dataset - small subset.

- Key Stakeholders:
  - Users: Seek personalized movie suggestions.
  - Streaming Platform: Enhance user satisfaction and engagement.
  - Content Providers: Optimize content offerings based on user preferences.

This system caters to diverse user needs in the digital entertainment landscape.

# Problem Statement

- Viusasa, a Kenyan streaming platform, acknowledges the significance of improving user engagement.
- To accomplish this objective, the company aims to implement a personalized movie recommendation system utilizing machine learning techniques, specifically collaborative and content-based filtering.
- The focus is on analyzing user ratings and preferences to develop a robust recommendation system that delivers accurate and enticing movie suggestions.



# Objectives

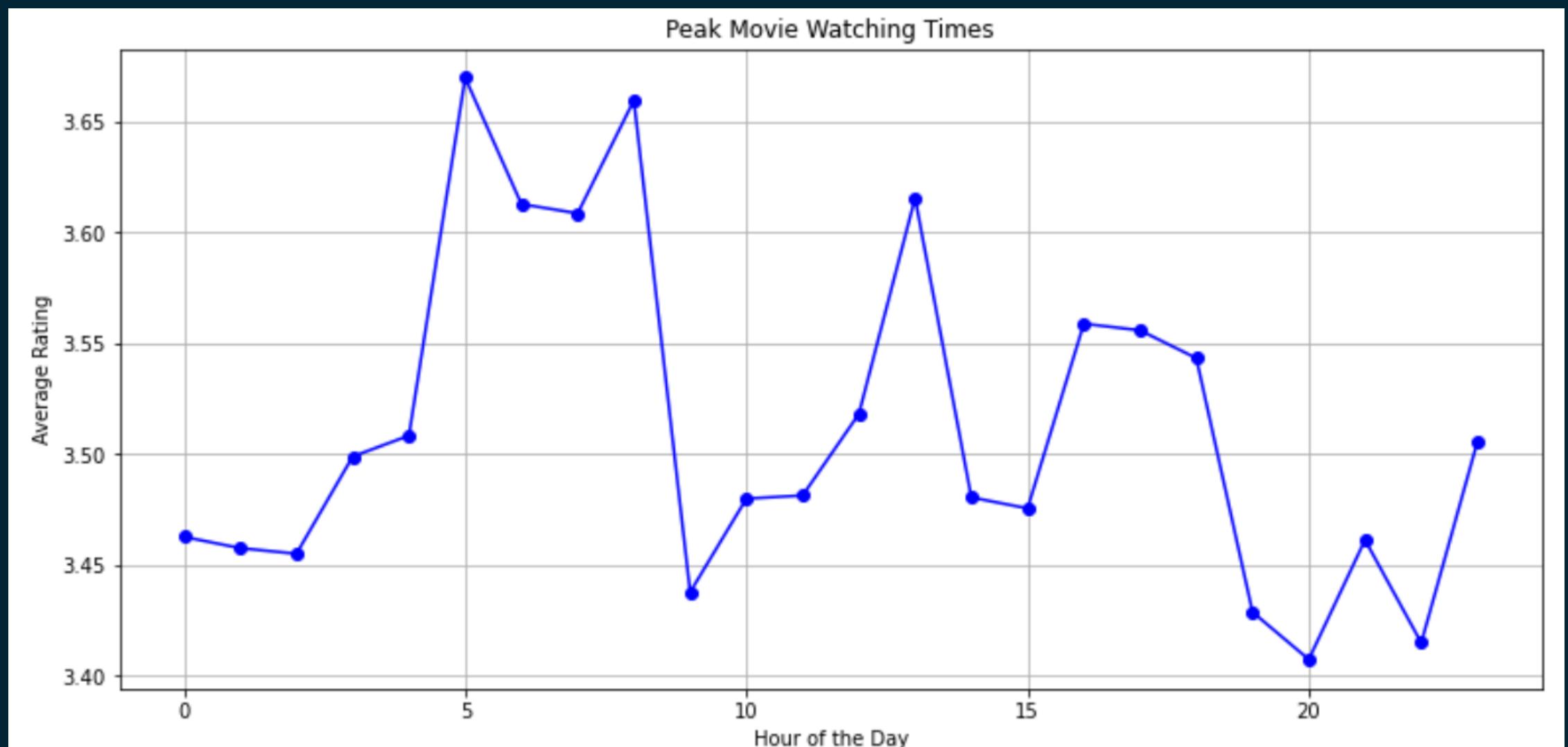
## Main Objective:

To develop and implement a movie recommendation system that leverages filtering techniques to provide personalized top 5 movie recommendations for users.

## Specific Objective:

- To clean and preprocess the MovieLens datasets to ensure it is suitable for building a recommendation system.
- To understand the distribution of movie ratings, explore user behavior, and identify patterns in the datasets.
- To investigate and compare collaborative filtering techniques for building the recommendation system, such as Singular Value Decomposition (SVD), user-based and item-based.
- To implement and evaluate the performance of the collaborative filtering model using appropriate metrics such as RSME and MSE.

# Average Hourly Rating



- The ratings seem to peak at 5am and hit their lowest point at 8pm.
- This observation may imply that movies receive more positive ratings during the early morning hours, and possibly less favorable ratings in the evening.

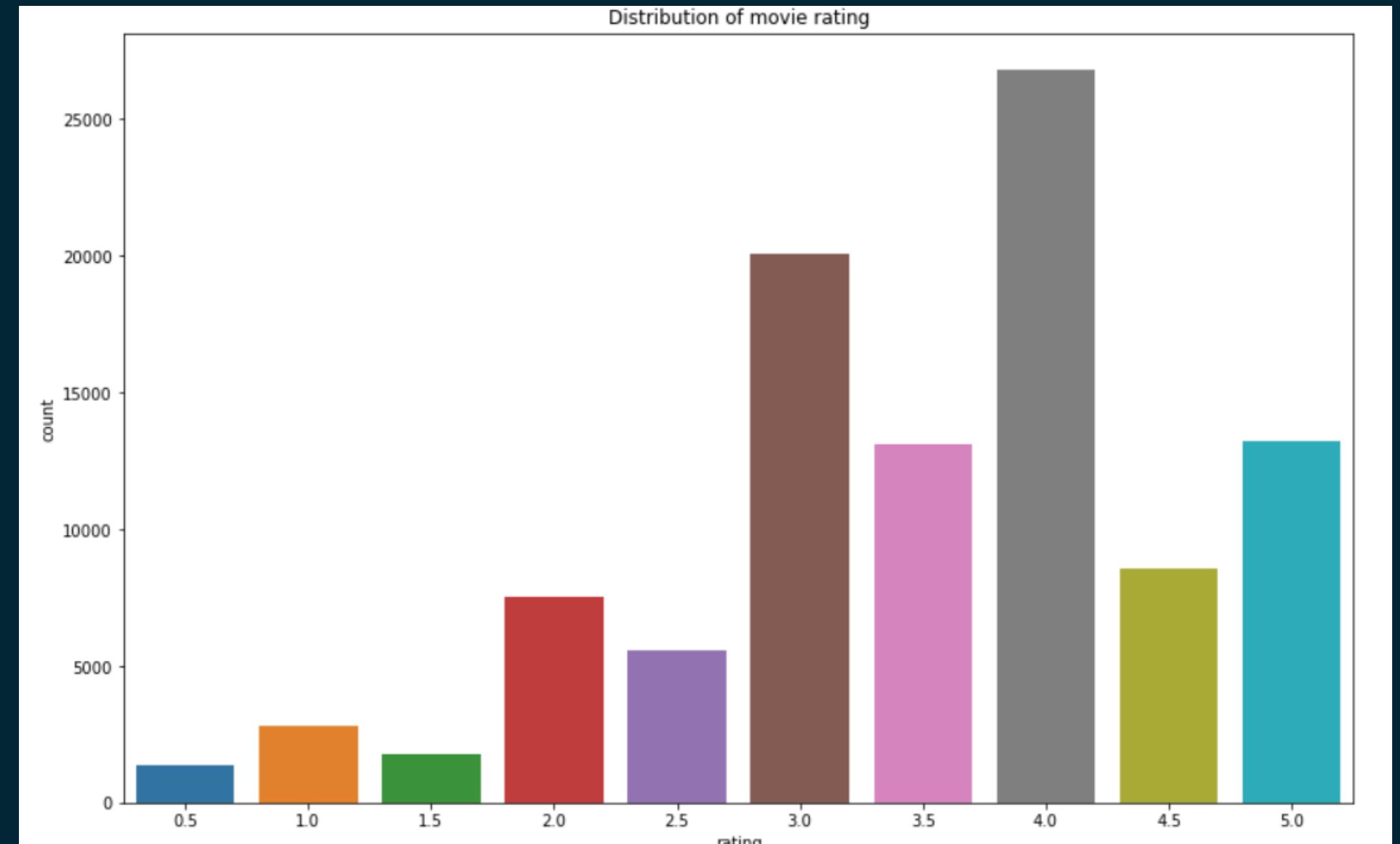
# Ratings/Month

- The bar chart indicates that the month of May has the highest count of ratings.
- This suggests that users are more active in providing ratings during the month of May compared to other months.

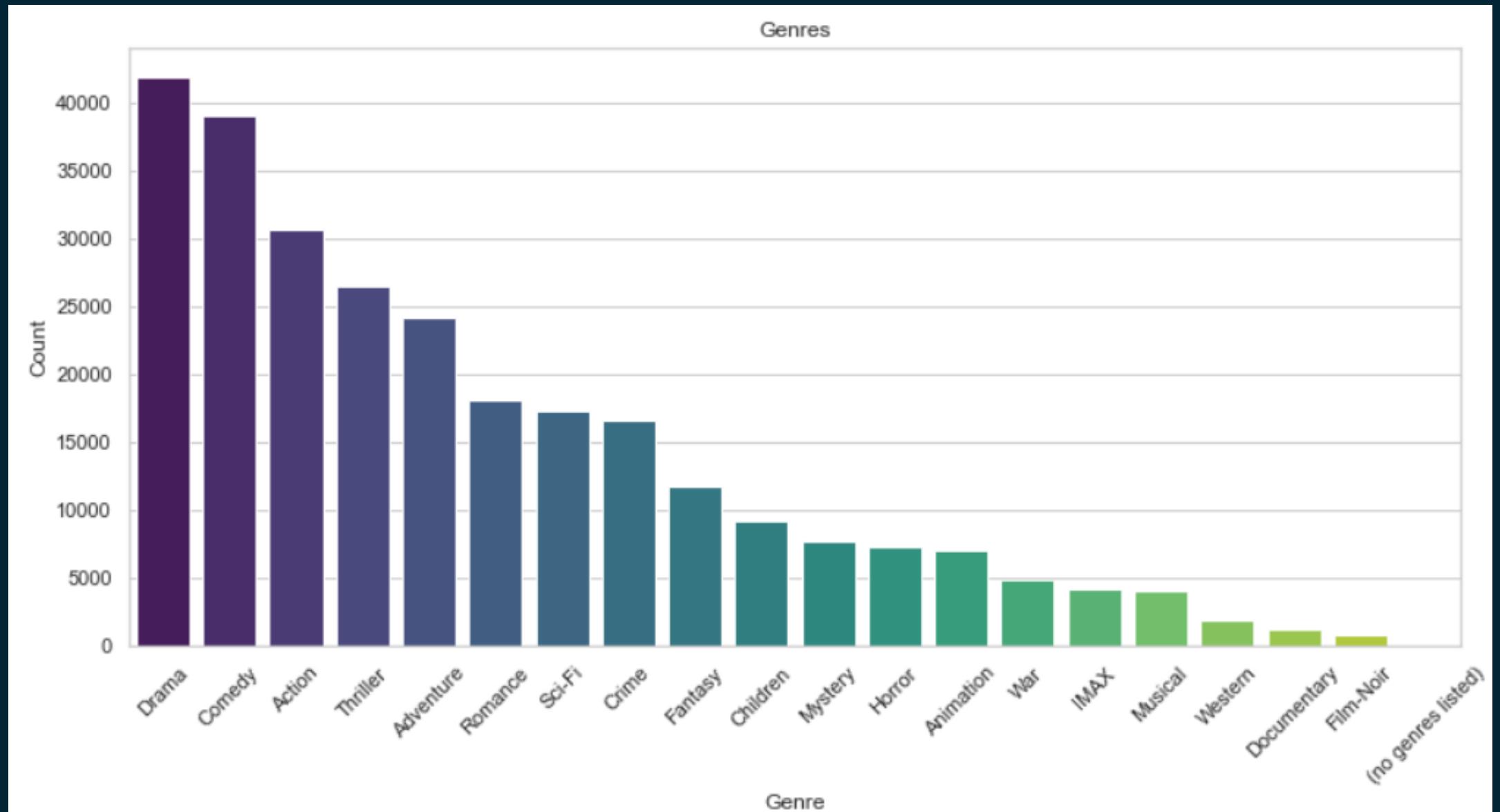


# Movie Ratings Distribution

- Most have a rating of 4.0 and the least being 0.5.
- This could suggest that a majority of users generally enjoy the movies, as they tend to give higher ratings.

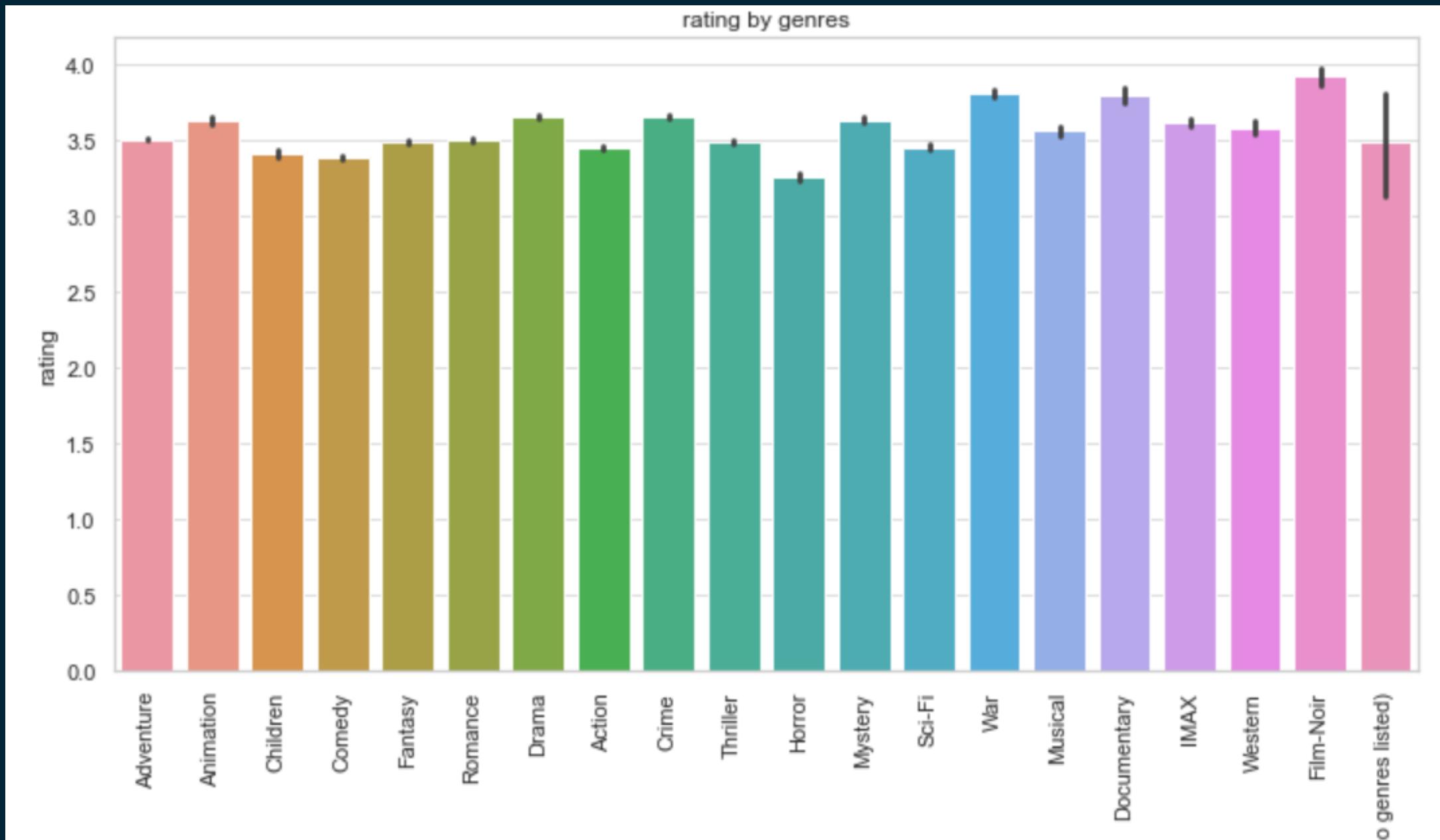


# Count Distribution of Genres



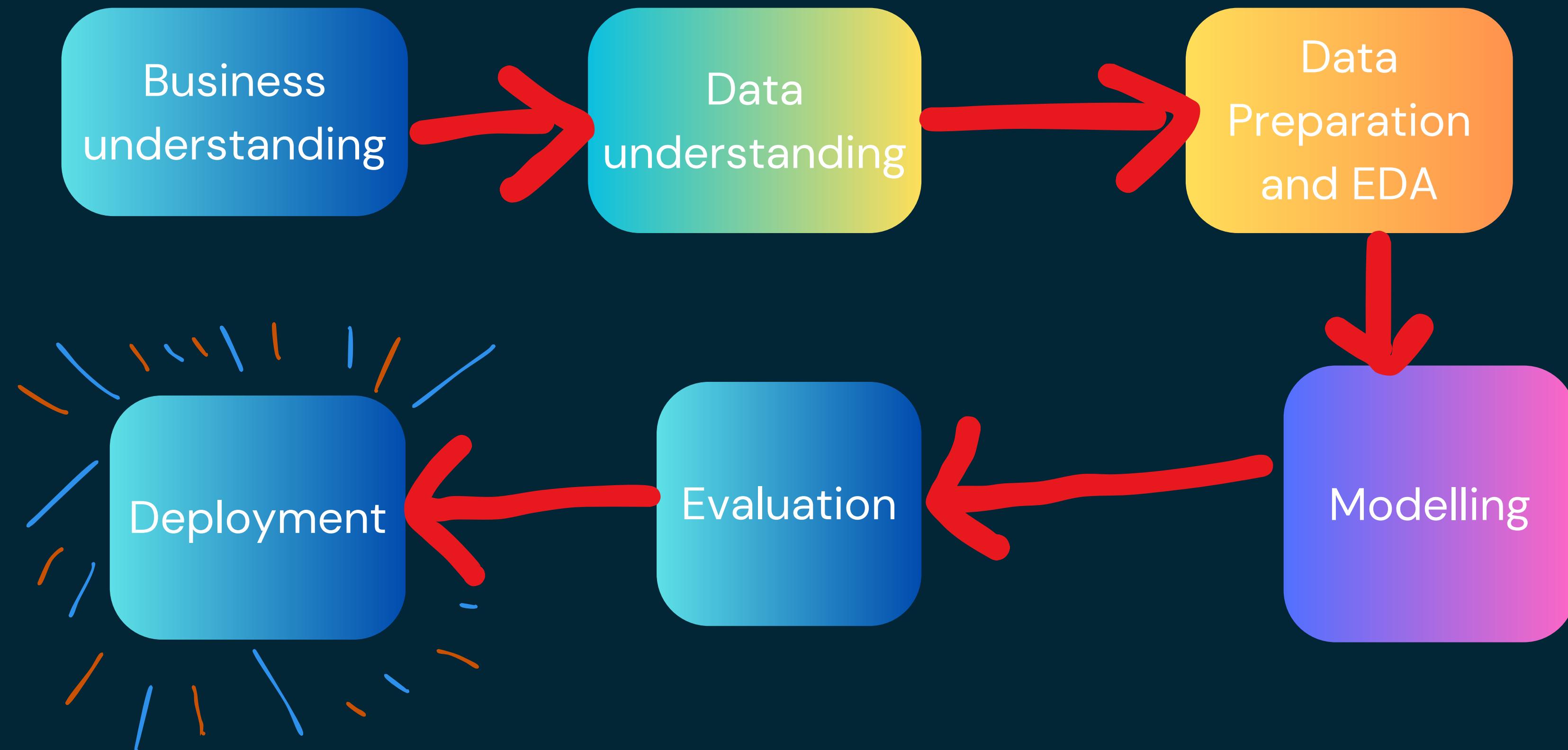
- Drama has the highest value count, while film-Noir has the least value count.
- Viewers frequently engage with a substantial number of movies in the Drama category.
- Movies in the Film-Noir genre are less frequently interacted with by viewers.

# Distribution of Genres and their Average Ratings



- Most genres have an average rating of about 3.5
- Film-Noir stands out as the highest-rated genre, while Horror ranks as the least favored genre.

# Methodology



# Results



The model  
has an RMSE  
score of  
**“0.8688”**

SVD was our best  
MODEL.

# Conclusion



The performance evaluation of various filtering models led to the selection of SVD for its superior performance.

By integrating user ratings, the system delivers personalized suggestions and adapts to changing user preferences, offering the top 5 movie recommendations based on the analysis.

# Recommendations

- Viusasa can boost user engagement by developing a user-friendly web application, improving accessibility to the collaborative filtering recommendation system. This initiative aims to provide a more interactive and seamless user experience.
- Viusasa should explore advanced recommendation models such as neural collaborative filtering (NCF) and recurrent neural networks (RNNs).



# Next Steps



To enhance user satisfaction, Viusasa should implement a real-time recommendation system.

This entails ongoing model updates driven by new user ratings and interactions, guaranteeing the provision of current and pertinent movie suggestions.

This approach is poised to significantly elevate user engagement on the platform.



Thank you for  
Listening