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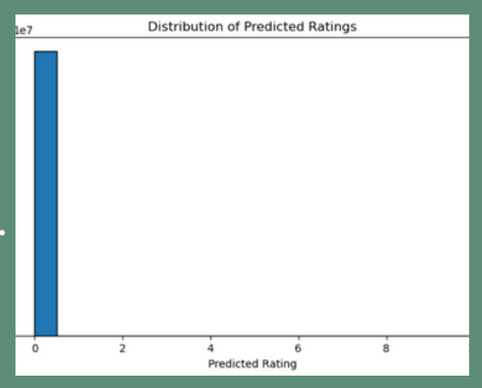
# Applying Data Mining Techniques For Netflix video recommendation system using collaborative filtering

## Background and Problem Issues

**1)Overwhelming Content Choices**
**Users face difficulty selecting a movie or show due to the vast number of options available on Netflix.**
**2)Time-Consuming Search Process**
**Finding suitable content that matches personal preferences takes too long, reducing user satisfaction.**

## Dataset

- Dataset: 9957 rows × 9 columns.
- Features: Rating, Title, genre.
- Target: Rating

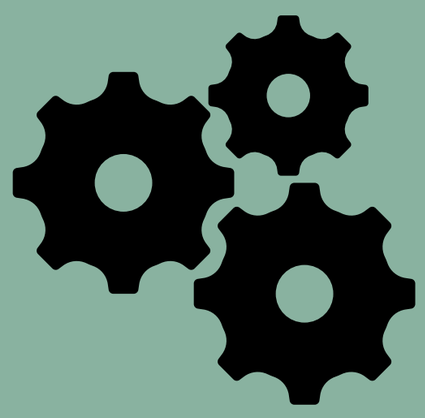



## Methodology

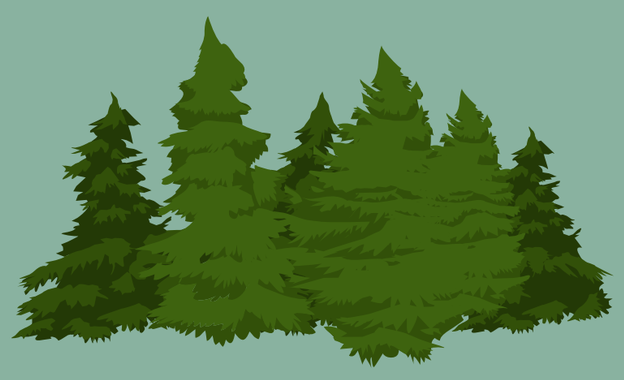
### 1. Load Data

### 2. Exploratory Data Analysis

### 3. Preprocessing



### 4. collaborative filtering



### 5.Tuning

### 6. Evaluation and Analysis

# Experiments and Results

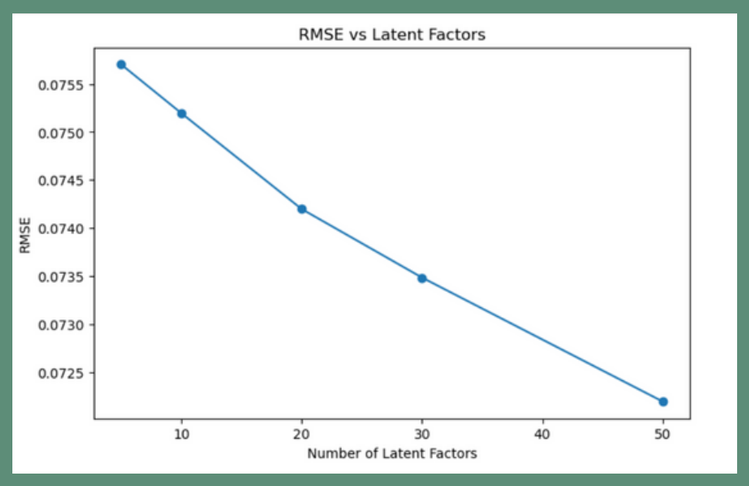
## Baseline Results

RMSE: 0.07419910075285181

```
# 📌 Step 11: Evaluate model (RMSE on train set)
mse = mean_squared_error(train_matrix_np.flatten(), reconstructed_matrix.flatten())
rmse = np.sqrt(mse)
print("Training RMSE:", rmse)
```

```
Training RMSE: 0.07419910075285181
```

## Tuning Results




## CONCLUSION:

**Conclusion:**

**The Netflix Movie Recommendation System, based on collaborative filtering, addresses the major challenges faced by users in navigating overwhelming content choices and reducing the time spent searching for suitable movies. By analyzing user interactions such as ratings, viewing history, and preferences, the system is able to generate personalized recommendations that align closely with individual tastes. This not only enhances user satisfaction but also improves engagement and retention for Netflix. Collaborative filtering, therefore, proves to be a powerful method in delivering accurate, diverse, and enjoyable content suggestions, demonstrating how machine learning and data-driven approaches can significantly enhance user experience in digital entertainment platforms.**