

INTELLIGENT MOVIE RECOMMENDATIONS WITH NEURAL NETWORKS AND NLP

Sub-title: Enhancing Personalized Movie Suggestions

PRESENTATION BY :DSF-PT-07:GROUP 12

Problem Statement

The Challenge:

- Overwhelming number of movies leads to choice paralysis.
- Traditional recommendation systems fall short in personalization.

Project Goal:

- Develop a recommendation system that delivers highly personalized movie suggestions using advanced machine learning techniques.

Overview

Objective:

- Leverage neural networks for collaborative filtering and Natural Language Processing (NLP) for content analysis.
- Address user dissatisfaction with generic movie recommendations by providing more tailored suggestions.

Value to Stakeholders:

Product: Flick Pickle Engine


- Improved user experience and engagement through personalized recommendations.
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Data Understanding

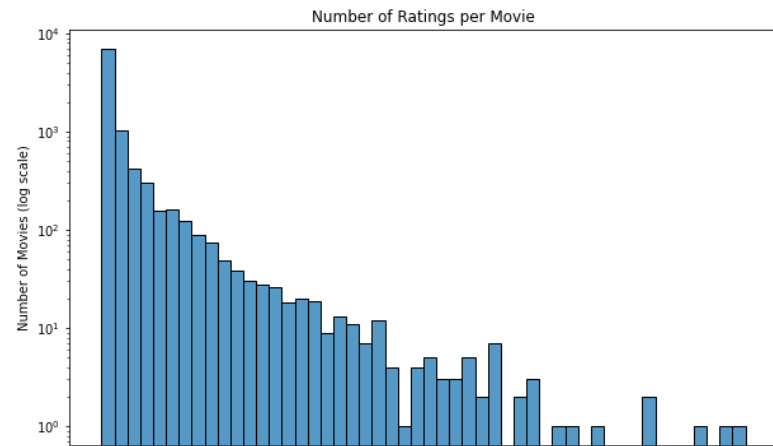
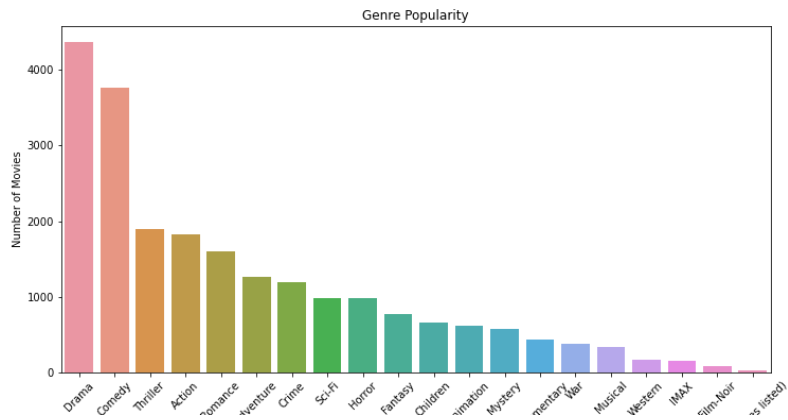
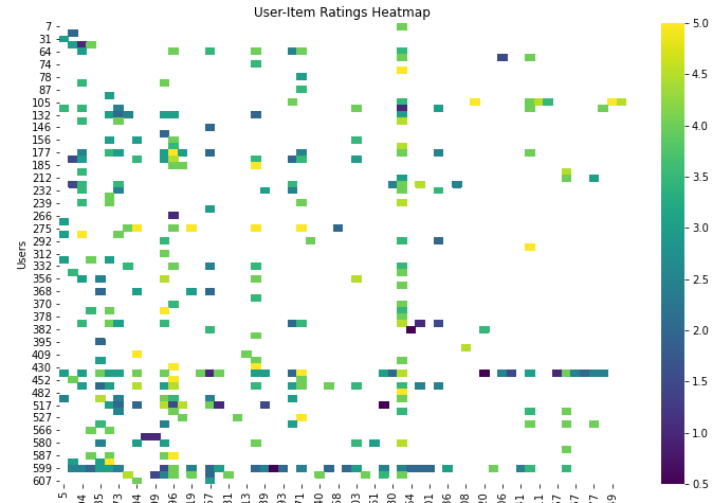
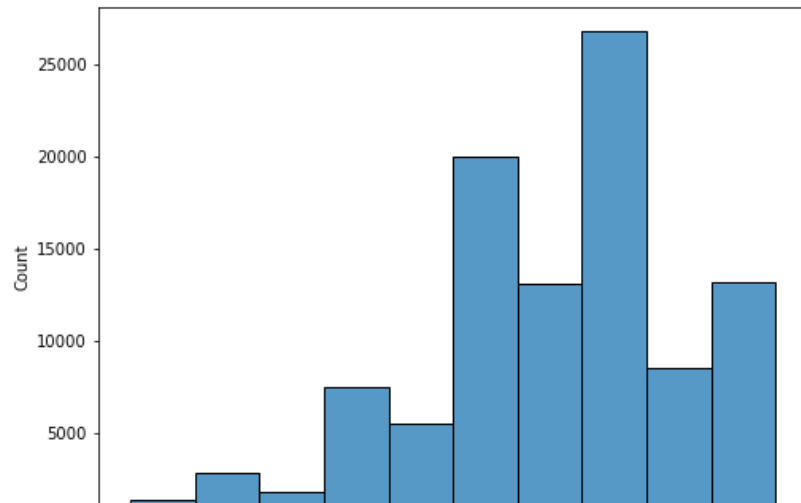
- Dataset Used: MovieLens 20M Dataset
 - 25 million ratings, 20 million user-generated tags.
 - Rich movie metadata (title, genre, tags).

Key Data Components

- Ratings: User ratings on movies (1 to 5 scale).
 - Movies: Metadata such as title, genre, and tags.
 - Users: User profiles based on past ratings.
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Data Preparation

- Data Cleaning: Removing duplicates and handling missing values.
- Feature Engineering:
 - Clustering user-generated tags using NLP to reduce complexity.
 - Transforming user and movie data into matrices for collaborative filtering.
- Preprocessing:
 - Genres and tags transformed into numerical features for modeling.



Modeling

- Collaborative Filtering:
 - User-based filtering: Recommendations based on similar user preferences.
 - Item-based filtering: Recommendations based on similar movies.
- Hybrid Model:
 - Incorporates both collaborative and content-based features.
 - Tackles the cold-start problem for new users or movies.
- NLP for Tag Clustering:
 - Clusters related tags to simplify content-based filtering.

Evaluation

- **Evaluation Metrics:**

- RMSE (Root Mean Square Error): Measures accuracy in predicting user ratings.
- MAE (Mean Absolute Error): Provides another accuracy measure.

- **Additional Considerations**

- Future inclusion of NDCG and F1-score for ranking quality.





Results & Value

- **Key Results**

- Successfully personalized recommendations.
- Hybrid model improved performance by integrating user and content-based data.

- **Value to Stakeholders**

- Users spend less time searching and more time enjoying relevant content.
 - Higher engagement and satisfaction with the platform.
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Future Work



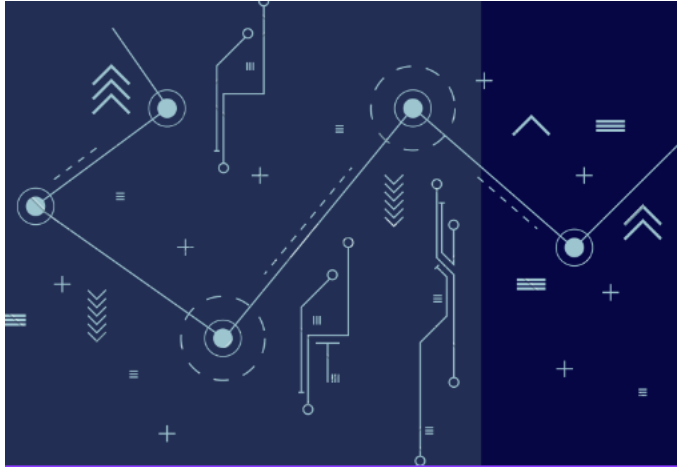
Implement reinforcement learning for adaptive recommendations.



Introduce user controls for more personalized movie suggestions.



Explore A/B testing to validate different recommendation strategies.



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THANK YOU



Q&A