Mood Based Movie Recommendation System

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Introduction

This project aims to develop a mood-based movie recommendation system that analyzes emotional cues to suggest movies tailored to the viewer's mood, simplifying the selection process and enhancing overall satisfaction.

Streaming platforms provide access to vast movie libraries, but the abundance of choices often leads to decision fatigue, making it difficult for users to find films that match their current mood. Traditional recommendation systems rely on viewing history and popularity but fail to consider the emotional context of the viewers. This gap limits personalization and the user experience.

Problem Statement

In the age of endless streaming options, users often face challenges in selecting movies that align with their current mood. The lack of systems that understand and cater to individual emotions makes it:

- Hard to decide on a movie due to overwhelming choices.
- Difficult to find movies that match their current emotional state.
- Time-consuming to search for suitable movies, reducing the overall enjoyment of the experience.

This highlights the need for a mood-based movie recommendation system that simplifies and personalizes the movie selection process.

Proposed Solution

- Our project, the mood-based movie recommendation system aims to personalize movie suggestions based on the emotional state of the user.
- By combining mood detection with collaborative filtering (user ratings), this hybrid system ensures more accurate and emotionally aligned recommendations.
- The system will use two primary components: content-based filtering (mood) and collaborative filtering (user ratings), with the results fused to provide an optimal movie list for the user.

Key Features and Approach

The system detects the user's mood based on explicit user input. The recognized moods include:

- Anger: Movies that offer catharsis or address themes of conflict.
- Disgust: Movies that either explore uncomfortable realities or are light-hearted to offer a sense of relief.
- Fear: Horror or thrillers, including psychological suspense.
- Joy: Comedies, feel-good movies, or uplifting dramas.
- Neutral: A balanced mix of genres based on other factors (e.g., user preferences or viewing history).
- Sadness: Dramatic or emotional movies with deep themes.
- Surprise: Movies with unexpected twists or unconventional narratives.

Key Features and Approach

- **Hybrid Approach:** The recommendation system uses a hybrid model, combining content-based filtering and collaborative filtering to generate a comprehensive list of movie recommendations.
- **Content-Based Filtering:** This component analyzes the user's mood and suggests movies that match the emotional tone. For example, if the user is feeling joyful, the system will recommend comedies or uplifting genres.
- **Collaborative Filtering:** This method considers the ratings of other users who have similar emotional states, viewing history, or mood preferences.

Key Features and Approach

- **User Feedback Loop:** The system includes an option for users to rate the recommended movies or provide feedback on how well the movie matched their mood. This feedback will be continuously fed into the system, allowing it to improve the recommendations over time.
- **Diversity in Recommendations:** The system will ensure diversity in movie recommendations by offering a mix of genres and emotional tones, avoiding repetitive suggestions, and introducing users to new movies that they might enjoy based on their mood.

Changes from Base Paper

- **Storage Solutions:** The base paper uses HDFS and Redis as storage solutions for data. In our project, we deploy basic CSV files to store the data needed for similarity checks.
- **Movie Knowledge Mapping:** The base paper incorporates movie knowledge mapping. However, in our project, we omit the use of movie knowledge mapping as it is not required for users.
- **Collaborative Filtering Approach:** The base paper uses user-based collaborative filtering. We are not implementing this approach initially due to lack of user data. It may be implemented in future iterations.
- **Similarity Calculation:** In the base paper, the similarity calculation is performed using Pearson's correlation. In our project, we utilize Cosine similarity for similarity calculation.

Advantages and Disadvantages

Advantages

- **Enhanced Recommendation Accuracy:** The hybrid algorithm achieves an accuracy rate of 81%.
- **User Satisfaction:** The hybrid system received high satisfaction ratings, with 68% of users rating it 5 out of 5.

Disadvantages

- **Data Sparsity Challenges:** Sparse user interaction matrices can still impact performance despite hybridization.
- **Scalability Issues:** Managing larger datasets or more complex user groups may challenge the current system.