

Movie Recommendation System

1. Introduction

- Helps users find movies they'll love based on their interests and past ratings.
- Uses **Content-Based Filtering** and **Collaborative Filtering** for recommendations.
- Implements a **Hybrid Model** combining both approaches for better accuracy.

2. Content-Based Filtering

- Uses movie descriptions (genres, keywords, cast, crew) to find similar movies.
- Converts text data into numerical form using **count vectorization**
- Calculates similarity between movies using **Cosine Similarity**.

Steps:

- Data cleaning & preprocessing (removing missing values, duplicates).
- Extracting important features (genres, keywords, cast, etc.).
- Creating a "tag" for each movie combining all key features.
- Applying **Stemming** to unify similar words
- Recommending movies based on similarity scores

3. Collaborative Filtering

- Analyzes user behavior and ratings to find similar users and recommend movies.
- Uses **Matrix Factorization (SVD - Singular Value Decomposition)** to predict ratings.
- Trains on a dataset of user-movie ratings to identify patterns.

Steps:

- Builds a **User-Item Rating Matrix**.
- Fills missing values using the **global average rating**.
- Uses **SVD model** to train and predict ratings
- Finds top-rated movies for a specific user.

4. Hybrid Recommendation System

- Combines **Content-Based Filtering** and **Collaborative Filtering** for better accuracy.
- Uses **Fuzzy Matching** to improve movie title recognition.
- Balances recommendations: **content-based**, **collaborative**.

Steps:

- Finds the closest matching movie title using **Fuzzy Matching**.-
- Retrieves similar movies from **Content-Based Filtering**.
- Suggests highly-rated movies from **Collaborative Filtering**.
- Merges both lists, ensuring no duplicates.

5. Final Output:



Hybrid Movie Recommendation System

Enter User ID

1

— +

Enter a Movie Title

The Dark Knight

Get Recommendations

Recommended Movies:

1. Batman
2. Batman Begins
3. Talladega Nights: The Ballad of Ricky Bobby (2006)
4. Zombieland (2009)
5. The Dark Knight
6. Kill Bill: Vol. 1 (2003)
7. Batman Returns
8. Shawshank Redemption, The (1994)
9. Collateral (2004)
10. Departed, The (2006)

6 Conclusion

- Our **Movie Recommendation System** helps users discover new movies they'll love.
- It combines **Content-Based Filtering** (similar movies) and **Collaborative Filtering** (similar users).
- The **Hybrid Model** improves accuracy by balancing both methods.
- **Fuzzy Matching** ensures better title recognition for user input.
- **Personalized recommendations** make movie discovery fun and effortless!
- A simple input of **User ID & Movie Title** generates **tailored suggestions**.
- This system enhances the **user experience** by making recommendations smarter and more relevant.