■ Project Report on Movie Recommendation System

1. Introduction

In the era of digital entertainment, online movie platforms have gained immense popularity. However, with thousands of movies available, users often struggle to find the right movie that matches their taste. To address this issue, a Movie Recommendation System has been developed using Python and Streamlit. The system suggests movies similar to the one selected by the user, improving user experience and saving time.

2. Objective

The main objective of this project is to design a content-based movie recommendation system that provides top 5 similar movie suggestions based on the selected movie. The recommendations are generated using Natural Language Processing (NLP) and Cosine Similarity techniques applied on movie genre data.

3. Tools and Technologies Used

Python, Pandas, Scikit-learn, Streamlit, and a CSV dataset containing movie titles and genres were used for development.

4. Methodology

Step 1: Data Collection – The dataset 'movies.csv' containing movie titles and genres is used. Step 2: Data Preprocessing – Missing values are handled and text converted to lowercase. Step 3: Feature Extraction – Using CountVectorizer, genres are converted into numerical vectors. Step 4: Similarity Computation – Cosine similarity is computed between movies. Step 5: Recommendation Logic – The system retrieves the top 5 most similar movies.

5. System Design

The system consists of two main components: Backend Logic (Python-based) and Frontend Interface (Streamlit-based). Users interact through a dropdown to select a movie and view recommendations.

6. Working Principle

1. User selects a movie. 2. System calculates similarity scores. 3. Displays top 5 recommended movies.

7. Output Example

If the user selects 'Avatar', the system may recommend: Guardians of the Galaxy, Star Wars, Avengers, Interstellar, and The Matrix.

8. Advantages

• Simple and efficient. • Accurate recommendations. • Easy to deploy using Streamlit.

9. Future Enhancements

• Add user ratings for hybrid recommendation. • Show movie posters and trailers. • Support collaborative filtering.

10. Conclusion

The Movie Recommendation System demonstrates how machine learning and NLP can enhance entertainment platforms. It is lightweight, accurate, and scalable for real-world use.

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Technology Used: Python, Streamlit, Scikit-learn