DEPARTMENT OF MATHEMATICS(UIS)

PROJECT PROPOSAL

1.Title: Movie Recommendation System using Machine Learning

2. Project Scope: -

In the modern entertainment industry, personalized content recommendation is crucial for improving user experience and engagement. Various streaming platforms like Netflix, Amazon Prime, and Disney+ use proprietary recommendation models tailored to their available content. However, these models are limited to their specific libraries and may not generalize across multiple platforms.

The goal of this project is to develop a platform-independent Movie Recommendation System that leverages K-Nearest Neighbors (KNN) to provide users with personalized movie suggestions based on their preferences. Unlike existing OTT-specific models, this system is designed to work with any dataset containing user interactions with movies, making it adaptable to real-world scenarios where data is continuously updated.

This project serves as a practical application of Machine Learning (ML) principles that I have learned throughout my coursework. It focuses on key aspects of data preprocessing, feature engineering, model training, and evaluation. Through this project, I aim to enhance my understanding of real-world ML implementation and improve my problem-solving skills in recommendation systems.

Key Features of the Project:

- User-Based Collaborative Filtering: Recommends movies based on user preferences and similarity to other users.
- Item-Based Collaborative Filtering: Suggests movies similar to those a user has previously liked.
- Scalability and Adaptability: Can be updated with the latest movie data, making it dynamic and not restricted to a specific platform.
- Evaluation Metrics: Performance assessment using RMSE (Root Mean Square Error) and precision-recall analysis to measure recommendation accuracy.

3. Requirements: -

- Hardware Requirements
  1. Laptop/PC with at least 8GB RAM and i5 Processor (or equivalent)
  2. GPU (if available, for optimization)
  3. Storage capacity of at least 50GB for dataset handling

- Software Requirements

1. 1. Python (Jupyter Notebook/Google Colab/VS Code)
2. Libraries: NumPy, Pandas, Scikit-Learn, SciPy, Matplotlib, Seaborn
3. Database (optional): SQLite or PostgreSQL (for storing movie-user interactions)

STUDENTS DETAILS

Name	UID	Signature
Mohammad Umar	22BNM20076	

APPROVAL AND AUTHORITY TO PROCEED

We approve the project as described above, and authorize the team to proceed.

Name	Title	Signature (With Date)