



# **Movie Recommendation System using Machine Learning**

*Submitted in the partial fulfillment for the award of the degree*

*of*

**BACHELOR OF SCIENCE**

*IN*

**B.Sc. CSM (Computer Science , Statistics and Mathematics)**

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# Outline

- Project Identification
- Need for the project
- Objectives of the work
- Conceptual Design and Methodology



# Project Identification

## Project Title & Introduction

- **Title:** Movie Recommendation System
- **Introduction:**
  - A recommendation system that suggests movies based on user preferences.
  - Unlike OTT-specific models, this system is platform-independent and adapts to new data updates.
  - Implements advanced ML techniques for personalized recommendations.

# Need for the Project

## Why is it important ?

- Users have accounts on multiple streaming platforms but get recommendations limited to each platform.
- No unified system for recommending movies across different OTTs.
- Helps users discover movies from different sources without bias towards a single platform.
- Demonstrates practical ML implementation, reinforcing key learning in recommendation systems.

# Objectives of the Work

## Main Objective

- Build a **platform-independent recommendation system** using ML models.
- Improve recommendation accuracy by optimizing similarity measures and algorithms.
- Ensure adaptability to new data for up-to-date recommendations.

## Sub-Objectives

- **Data Handling:** Process and clean large-scale movie datasets.
- **Model Selection:** Experiment with collaborative filtering, content-based, and hybrid models.
- **Performance Evaluation:** Measure accuracy using RMSE, precision, recall, and A/B testing.
- **Scalability:** Ensure the system can handle growing data and user base

# Innovation & Uniqueness

- Unlike Netflix or Prime Video, this model is platform-independent.
- Works with dynamic data updates to stay relevant.
- Uses user-item interactions to improve predictions over time

# **Conceptual Design and Methodology**

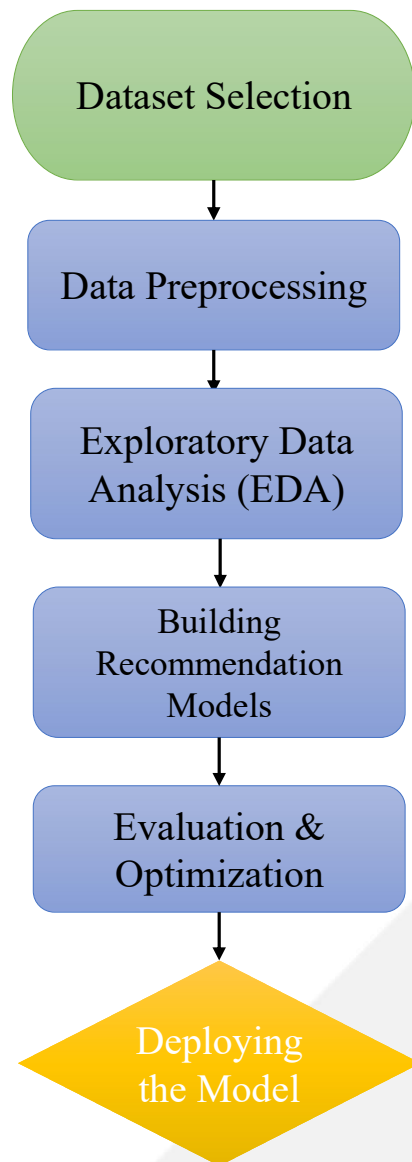
## **System Architecture:**

- User provides ratings or interactions.
- Data is preprocessed, cleaned, and transformed into a user-item matrix.
- KNN-based collaborative filtering or matrix factorization models predict unseen ratings.
- Final recommendations are presented to the user



# Methodology Steps

- Dataset Selection (MovieLens 20M dataset)
- Data Preprocessing (Cleaning, handling missing values, encoding)
- Exploratory Data Analysis (EDA)
- Building Recommendation Models (Collaborative filtering, KNN, Matrix Factorization)
- Evaluation & Optimization
- Deploying the Model (Future Scope)





## Tools & Technologies Used

- Programming Language: Python
- Libraries: Pandas, NumPy, Scikit-Learn, Surprise
- Dataset: MovieLens 20M
- Models: KNN, Collaborative Filtering, Matrix Factorization

