Movie recommendations

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# Business Understanding

## Introduction:

This project aims to develop a personalized movie recommendation system using a dataset that includes movie information, user ratings, and interactions. The recommendation system will employ content-based and collaborative filtering techniques to suggest movies to users based on their preferences and past interactions. It will also incorporate modules for movie and user profiling to analyse movie attributes and user preferences, respectively. The system will be evaluated and optimized to enhance its accuracy. By leveraging movie metadata, user ratings, and collaborative filtering algorithms, the recommendation system aims to provide personalized movie recommendations to enhance the user's movie-watching experience.

* 1. Overview of TMDB:

The project utilizes the TMDB database, which is a comprehensive source of movie information. It includes details such as movie titles, release dates, genres, cast and crew information, and credits. By combining this dataset with other relevant data, valuable insights can be gained, and various analyses related to the movie industry can be performed.

* 1. Problem Statement:

The movie industry is vast and constantly evolving, with numerous movies and sequels being released each year. This abundance of content makes it challenging for users to navigate and find movies that align with their preferences. To improve the user experience, a recommendation system is needed to provide personalized movie recommendations based on user preferences and similarities with other users. The goal is to enhance user satisfaction, increase engagement, and ultimately drive user retention on the platform.

* 1. General Objectives:

The main objectives of this project are as follows:

* Develop a recommendation system that leverages user data and movie information to provide personalized movie recommendations.
* Incorporate user preferences, including movie genres, ratings, and historical interactions, to generate relevant and engaging recommendations.
* Implement different recommendation techniques, such as collaborative filtering and content-based filtering, to ensure a diverse and accurate set of movie recommendations.
* Utilize movie attributes, user ratings, and user interactions to develop a movie recommendation system that suggests movies based on individual preferences and past interactions.

# Data Understanding:

The dataset used for this project contains various columns that provide valuable information about movies. Some of the columns and their descriptions include:

* id: Unique identifier for each movie
* title: Title of the movie
* cast: List of actors/actresses in the movie
* crew: List of crew members involved in the movie
* budget: Budget of the movie
* genres: List of genres associated with the movie
* homepage: Website URL of the movie
* keywords: List of keywords associated with the movie
* original\_language: Original language of the movie
* original\_title: Original title of the movie
* production\_companies: List of production companies involved in the movie
* production\_countries: List of countries where the movie was produced
* release\_date: Release date of the movie
* revenue: Revenue generated by the movie
* runtime: Duration of the movie in minutes
* spoken languages: List of languages spoken in the movie
* status: Current status of the movie (e.g., Released, Post Production)
* tagline: Tagline or slogan of the movie
* vote\_average: Average vote rating for the movie
* vote\_count: Number of votes received by the movie
* tags: List of tags associated with the movie

The data will be utilized to build recommendation systems based on movie attributes, user ratings, and the interactions between users and movies. By analyzing this data, the system will generate personalized movie recommendations tailored to individual user preferences and the size of the business.

## Project Success Criteria:

The desired success criteria for the recommendation system will be evaluated using the Root Mean Square Error (RMSE) value. The lower the RMSE, the better the system's performance in providing accurate movie recommendations.

## Assessing the Situation:

The resources required for this project include computers, internet connectivity, programming software, and access to the TMDB database and the dataset containing movie information, user ratings, and interactions provided by Movielens

# Project Plan:

The project will be divided into several stages, including business understanding, data understanding, data preparation, exploratory data analysis, modeling, evaluation, and deployment. Each stage will involve specific tasks and activities to ensure the successful development and implementation of the recommendation system.

## Modelling:

The recommendation system will utilize various modelling techniques and algorithms, including content-based filtering and collaborative filtering, to create accurate and diverse movie recommendations. These techniques will leverage movie attributes, user ratings, and user interactions to generate personalized suggestions.

## Evaluation:

The performance of the recommendation system will be assessed using metrics such as the RMSE. By comparing the system's predicted recommendations with actual user preferences and interactions, the accuracy and effectiveness of the system will be evaluated.

## Deployment:

The recommendation system will be implemented and integrated into the online movie platform. This will involve the necessary technical configurations to ensure seamless integration and availability of personalized movie recommendations for users.

## Conclusion:

In conclusion, this project aims to develop a personalized movie recommendation system using content-based and collaborative filtering techniques. By leveraging user data, movie information, and various modelling algorithms, the system will provide accurate and engaging movie recommendations. This will enhance the user's movie-watching experience, improve user satisfaction, and increase user engagement, benefiting both existing and new customers on the platform.