# Capstone Project

# Recommendation System

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## Introduction

The aim of this project is to build a movie recommendation system based on collaborative filtering. User-User Based Collaborative filtering is used to make recommendations by finding similar users. The system will input a user and the corresponding attributes and recommends a list of movies. The collaborative filtering used in the project is built by identifying similar users of the input user and then try to predict the rating of the movie not watched by the input user and then recommend the highest predicted rating movies to that user.

## Data

The data used is this project is the MovieLens-100k data. The two files from this folder is used: user and movie data. The user data contains user's rating of different movie. Most of the data is empty as every user has not watched every movie. Next is the movie data where we have movie titles and its genres attributes. Finally, both files are combined and used as a single dataframe to build this recommendation system

## Technical Approach

The approach followed is building item-item based collaborative filtering using KNN technique using cosine similarity as the metric. The dataframe is pivoted to be suitable to fit the knn method. The similar users are found and then the ratings are predicted for unwatched movies for the input user. Finally, the highest predicted rated movies are recommended to watch. Here the coldstart problem is solved by recommending the most watched and most highly rated movies to the new user.

## Result

The model takes in an input user id and five recommended movies are displayed. The model is able to find five similar users with the help of KNN model built. This type of recommendation is very useful as the user is not restricted to a particular

genre or a characteristic of a movie. The new user is recommended the movies which are watched by at least 200 people and having rating more than 4.

## Conclusion

The model built uses user-user based collaborative filtering. The other alternative is to use item-item based collaborative filtering but the best thing is to build a hybrid model which takes the leverage of both types of recommendation. The ambitious goal is to build the hybrid model  using same dataset.