

### Movie Recommendation System



## Problem Statement & Business Value

# How to recommend movies to a user based on the preferences of similar users?

## Why invest in building a recommendation system



Improve customer retention



Increase revenues



Form habits



#### **About the dataset**

#### Overview of the dataset



Dataset consists of movies released on or before July 2017



Dataset also has files containing 26 million ratings from 270,000 users for all 45,000 movies



Data points include cast, crew, plot keywords, budget, revenue and other details



## Methodology

#### Collaborative filtering



A technique that can filter out items that a user might like based on the reactions by similar users

#### Collaborative filtering - Introduction











Search a large group of users

Find a smaller set with tastes similar to a specific user Look at the items they like and create a ranked list



### **Our Model**

#### **Project lifecycle**

Data ingestion & processing



**Model Development** 



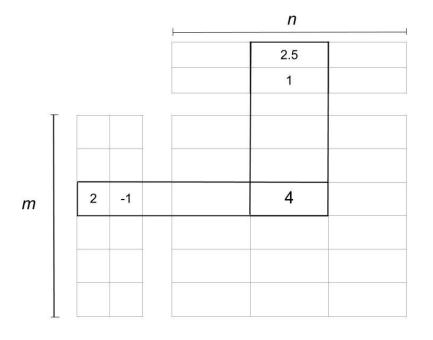
**Model Evaluation** 

Convert data into a form suitable for modeling

Develop a model suited for the business problem

Evaluate effectiveness of the developed model

#### **Model Details**



- Since, we have a sparse user-rating matrix, first step is to reduce the matrix dimension
- We have used the Low Rank Matrix Factorization using Least Squares Method algorithm

For example in the image above, the matrix is reduced into two matrices. The one on the left is the user matrix with m users, and the one on top is the item matrix with n items. The rating 4 is reduced or factorized into:

- A user vector (2, -1)
- An item vector (2.5, 1)



# Results and Conclusions

#### Interpreting model results

- Our model provides an estimate of the rating that a user will provide to a movie that he has not seen
  yet
- We sort these ratings in descending order and pick the first K movies to recommend to this user, where K is the number of movies we want to recommend.

Collaborative Filtering Model

original_title	genres
Sleepers	[{'id': 80, 'name': 'Crime'}, {'id': 18, 'name': 'Drama'}, {'id': 53, 'name': 'Thriller'}]
Nuovo Cinema Paradiso	[{'id': 18, 'name': 'Drama'}, {'id': 10749, 'name': 'Romance'}]
The French Connection	[{'id': 28, 'name': 'Action'}, {'id': 80, 'name': 'Crime'}, {'id': 53, 'name': 'Thriller'}]

 original\_title
 genres

 Pulp Fiction
 [{'id': 53, 'name': 'Thriller'}, {'id': 80, 'name': 'Crime'}]

 The Shawshank Redemption
 [{'id': 18, 'name': 'Drama'}, {'id': 80, 'name': 'Crime'}]

 Schindler's List
 [{'id': 18, 'name': 'Drama'}, {'id': 36, 'name': 'History'}, {'id': 10752, 'name': 'War'}]

Top rated movies

Recommended movies

