

# Recommendation Engine

## Recommendation Engine - User Collaborative Filtering

Recommender systems are active information filtering systems which personalize the information coming to a user based on his interests. These systems are used widely for recommending movies, articles, restaurants, places to visit, items to buy etc. Industry at large uses two different types of recommendation Engines - Content and Collaborative filtering based. This project is all about Collaborative filtering. Further Collaborative filtering is further divided into 2 type - User based and Item based.

This project deals with user based collaborative filtering algorithm. This algorithm usually works by searching a large group of people and finding a smaller set with tastes similar to yours. It looks at other things they like and combines them to create a ranked list of suggestions.

## Library

```
## Loading required package: SnowballC
```

## Data

## Implementing User based Collaborative Filtering

This involves two steps: Calculating Similarity Function Recommend items to users based on user Similarity Score

## Calculate Similarity Scores for Users

We need to first fill the N/A where the user has not rated and determine the similarity score.

Creating Similarity score for people helps us to identify similar people

## Recommending

For recommending movies we are using the above similarity matrix. As first step, separate the non-rated movies and a weighted matrix is created by multiplying user similarity score (`user_sim[,6]`) with ratings given by other users.

Next step is to sum up all the columns of the weight matrix, then divide by the sum of all the similarities for critics that reviewed that movie. The result calculation gives what the user might rate the movie

```
##          Claudia Puig Gene Seymour Jack Matthews Lisa Rose
## Just My Luck          3.0          1.5          3.71119          3.0
## Lady in the Water      NA          3.0          3.00000          2.5
## Snakes on a Plane      3.5          3.5          4.00000          3.5
## Superman Returns       4.0          5.0          5.00000          3.5
## The Night Listener      4.5          3.0          3.00000          3.0
## You Me and Dupree       2.5          3.5          3.50000          2.5
##          Mick LaSalle      Toby
## Just My Luck          2 3.120538
## Lady in the Water      3          NA
```

## Snakes on a Plane	4	4.500000
## Superman Returns	3	4.000000
## The Night Listener	3	NA
## You Me and Dupree	2	1.000000

## Conclusion

So by using the function `rec_itm_for_user` we can now recommend various movies to each person based on user rating