

# IMPLEMENTATION OF RECOMMENDATION SYSTEM FOR MOVIES

\*Nayana Petkar, \*Arti Parsad, \*Shakshi Tiwari, \*Rajshree Verma, \*\*D Anantha Reddy

\*Student, \*Student, \*Student, \*Student, \*\*Asst. Professor

Information Technology Department,

Kavikulguru Institute of Technology and Science, Ramtek, India

*Abstract:* Today people are flooded with many options on internet. Recommendation System collects information about item according to the preferences of the users. Recommendation System are successfully implemented in different e-commerce setting. There are two types of recommendation system; Collaborative filtering system and Content based filtering. Collaborative filtering (CF) uses the numerical reviews given by the user and is mainly based upon the historical data of the user available to the system. Content based recommendation system tends to work really well when there aren't so many items, and we don't know so much about the user so far. The collaborative filtering approach considers only user preferences and does not take into account the features or contents of the items (books or movies) being recommended. In this project, in order to recommend movies we will use a large set of users preferences towards the movies from a publicly available movie rating dataset which can be implement in R platform by the help of installation of R packages.

*IndexTerms* - Recommendation System, R, Collaborative filtering, Content based filtering..

## I. INTRODUCTION

Recommender systems or recommendation systems are a subclass of information filtering system that seek to predict the 'rating' or 'preference' that user would give to an item. Recommender systems have become extremely common in recent years, and are applied in a variety of applications. The most popular ones are books, research articles, movies, music, news, search queries, social tags, and products on e-commerce websites in general. Recommender systems assist and augment this natural social process to help people sift through available books, articles, web pages, movies, music, restaurants, jokes, grocery products, and so forth to find the most interesting and valuable information for them. Recommender systems are widely used by online stores for they improve user convenience and store benefits. It turns browsers into buyers, cross-sell items that are suggested at the checkout page, increase users' loyalty by making the purchase only a few clicks away or awarding frequent customers with good deals and such. E-commerce recommendation algorithms often operate in a challenging environment, especially for large online shopping companies like eBay and Amazon. Usually, a recommender system providing fast and accurate recommendations will attract the interest of customers and bring benefits to companies. Usually Recommender systems produce a list of recommendations in one of three ways: Collaborative filtering (CF), Content-based filtering, and Hybrid recommender systems. RSs are primarily directed towards individuals who lack sufficient personal experience or competence to evaluate the potentially overwhelming number of alternative items that a Web site, for example, may offer.

## II. LITERATURE SURVEY

A **recommender system** or a **recommendation system** is a subclass of information filtering system that seeks to predict the "rating" or "preference" a user would give to an item[1]. Recommender systems have become increasingly popular in recent years, and are utilized in a variety of areas including movies, music, news, books, research articles, search queries, social tags, and products in general. There are also recommender systems for experts, collaborators, jokes, restaurants, garments, financial services, life insurance, romantic partners (online dating), and Twitter pages. Recommender systems typically produce a list of recommendations in one of two ways – through collaborative filtering or through content-based filtering (also known as the personality-based approach). Collaborative filtering approaches build a model from a user's past behavior (items previously purchased or selected and or numerical ratings given to those items) as well as similar decisions made by other users. This model is then used to predict items (or ratings for items) that the user may have an interest in Content-based filtering approaches utilize a series of discrete characteristics of an item in order to recommend additional items with similar properties)[2].

### TYPES OF RECOMMENDER SYSTEM

Over the years, recommender systems have been studied widely and are divided into different categories according to the approach being used. The categories are collaborative filtering (CF), content based and context based [3].

#### 2.1 COLLABORATION FILTERING

Collaborative filtering (CF) uses the numerical reviews given by the user and is mainly based upon the historical data of the user available to the system. The historical data available helps to build the user profile and the data available about the item is used to

make the item profile. Both the user profile and the item profile are used to make a recommendation system. The Netflix Competition has given much popularity to collaborative filtering [3]. Collaborative filtering is considered the most basic and the easiest method to find recommendations and make predictions regarding the sales of a product. It does have some disadvantages which has led to the development of new methods and techniques.

## 2.2 CONTENT BASED RECOMMENDER SYSTEM

Content based systems focus on the features of the products and aim at creating a user profile depending on the previous reviews and also a profile of the item in accordance with the features it provides and the reviews it has received. It is observed that reviews usually contain product feature and user opinion in pairs. It is observed that users' reviews contain a feature of the product followed by his/her opinion about the product. Content based recommendation systems help overcome sparsity problem that is faced in collaborative filtering based recommendation system.

## 2.3 CONTEXT BASED RECOMMENDER SYSTEM

Extending the user/item convention to the circumstances of the user to incorporate the contextual information is what is achieved in context-based recommender systems. This helps to abandon the cumbersome process of making the user fill a huge number of personal details.

## 3. COLLABORATIVE FILTERING

Collaborative filtering [4] approach is widely used to design recommendation systems. This approach depends on gathering and examining a huge amount of information on users' behaviors, activities or preferences and predicting what users will search for based on their similarity to other users. A key benefit of the collaborative filtering technique is that it does not rely on machine analyzable content and therefore it is proficient for accurately recommending complex items. When building a model from a user's profile, a discrepancy is often made between explicit and implicit forms of data collection.

## III. RESEARCH METHODOLOGY

R is a programming language and free software environment for statistical computing and graphics that is supported by the R Foundation for Statistical Computing. The R language is widely used among statisticians and data miners for developing statistical software and data analysis. Polls, surveys of data miners, and studies of scholarly literature databases show that R's popularity has increased substantially in recent years. As of January 2018, R ranks 13th in the TIOBE index. R is a GNU package. The source code for the R software environment is written primarily in C, Fortran and R. R is freely available under the GNU General Public License, and pre-compiled binary versions are provided for various operating systems. While R has a command line interface, there are several graphical front-ends available.

## IV. RESULTS AND DISCUSSION

The main aim of the project is to provide recommendations to the users using algorithm, adjusted cosine similarity methods. The adjusted cosine similarity method is implemented via user based collaborative filtering technique. The recommendation is basically provided by calculating similarity between similar users and then calculating ratings for the movies which are not rated by the user according to the similarity.

The user interface is created such that first the user has to select the genres they would prefer. They have to select three genres in total. Secondly they have to select movies which they would like from those genres. Again they have to select three movies, each from one genre. This is optional, if the user does not select any movie a movie is selected by default from each genre. Then finally, recommendation of top ten movies is displayed according to the interest of user.

This recommendation engine is deployed in the form of website and can be accessed by any user through the address <https://recommendationapp.shinyapps.io/RecommendationApp/>

The site can be accessed through any device say it is mobile phone or PC. Only a proper internet connection is required to access this server. The recommendation provided is very accurate and versatile at the same time as it provides recommendation by considering three genres in total. Any one from anywhere can access this website.

**Movie Recommendation System**

**Select Movie Genres You Prefer (order matters):**

Genre #1  
Sci Fi

Genre #2  
Sci Fi

Genre #3  
Sci Fi

**Select Movies You Like of these Genres:**

Movie of Genre #1  
Matrix, The (1999)

Movie of Genre #2  
Inception (2010)

Movie of Genre #3  
Interstellar (2014)

**You Might Like The Following Movies Too!**

**User-Based Collaborative Filtering Recommended Titles**

1. Star Wars: Episode V - The Empire Strikes Back (1980)
2. Shawshank Redemption, The (1994)
3. Lord of the Rings: The Two Towers, The (2002)
4. Pulp Fiction (1994)
5. Lord of the Rings: The Fellowship of the Ring, The (2001)
6. Lord of the Rings: The Return of the King, The (2003)
7. Godfather: The (1972)
8. American Beauty (1999)
9. Forrest Gump (1994)
10. Seven (A.K.A. Se7en) (1995)

**Fig. Output**

#### IV. ACKNOWLEDGMENT

We would like to express our sincere gratitude to our project guide, **Mr. D. Anantha Reddy, Assistant Professor** for his kind, disciplined and invaluable guidance which inspired us to solve all the difficulties that came across during completion of project.

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\* → Student of Information Technology Department, KITS Ramtek  
 \*\* → Asst. Professor of Information Technology Department, KITS Ramtek