

MOVIES RECOMMENDATION SYSTEM USING ML

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Abstract - In today's environment, recommendation algorithms, particularly in streaming services, are a crucial aspect of suggesting products. Recommendation algorithms are critical for streaming services like Netflix to help consumers discover new movies to watch. We present in this work a method for creating a content-based filtering system that forecasts movies and series for a user based on a vast database of user ratings. We investigate the application of deep learning to forecast movies, their ratings and redirect links, thereby providing movie recommendations, utilizing our own database and some internet scrap dataset. It suggests the finest movies for users based on their age and gender, as well as the genres they enjoy watching.

Keywords- AI, Deep Learning, Recommendation Engine, Machine Learning, Content based Filtering, Review.

I. INTRODUCTION

With the fast-growing technologies, Machine Learning and Deep Learning are also growing exponentially all over the world. ML is a modern technology that is spreading its arms in almost every field which helps people to make their life simpler and easier.

Recommender systems are simple algorithms that aim to provide users with the most relevant information by discovering patterns in the dataset. The algorithm ranks the items and shows the user which items they appreciate. An example of a real recommendation is if you visit Amazon and find that some items are recommended, or if Netflix recommends a particular movie. It is also used by music streaming apps such as Spotify and Deezer to recommend your favorite music. Recommendation systems are usually of 2 types i.e., Content Based Filtering, Collaborative Based Filtering, and Hybrid Filtering Techniques. Now a days many of us only purchase the product which was recommended by the influencers or other review platforms. There are many uses of a recommendation system that can help both large-scale and

small-scale companies to establish themselves in the market and sell their product effectively. This is a useful way to find useful information for your users from the wide range of data available to them. When it comes to Movie Recommendation System, the recommendation is done based on the similarity between users (Collaborative Filtering) or by considering a particular user's activity (Content Based Filtering) which he wants to engage with[1]. So to overcome the limitations of collaborative and content based filtering generally, the combination of collaborative and content based filtering is used so that a better recommendation system can be developed.[1] Many product advertising organizations also use these recommendation engines to drive the given product sales as per need and widely display that product to a user who is in the need of a similar kind of product and for that, a filtering mechanism is also widely used. Filtering is the selection method that selects features independently of the machine learning algorithm model. Filtering is one of the methods of feature selection techniques in which a small part of data is taken as a set and use that set for further analysis.[2]

II. PROPOSED METHOD

Over the past decade, a large number of recommendations for various domains have been developed and implemented. These recommendation programs use a variety of methods such as content-based approach, collaborative approach, knowledge-based approach, service-based approach, multidisciplinary approach, etc. Most of the online recommendation programs for various items use ratings from previous users to make recommendations for current users with similar interests. One such system was designed by Jung, Harris, Webster, and Herlocker (2004) to improve search results[7]. The program encourages users to submit long and informative search queries and collects ratings from users as to whether the search results meet their information needs or not. These ratings are then used to make recommendations for recent users with similar needs.

The elaboration of common types of recommendation systems are content-based and collaborative systems. In collaborative

filtering, user group behavior is used to make recommendations to other users[5]. Recommendations are based on the preferences of other users. A simple example would be to recommend a movie to a user based on the fact that their friend liked the movie. There are two types of interactive models. Memory-based methods and model-based methods[6]. The advantage of memory-based techniques is that they are easy to use and the resulting recommendations are usually easy to explain. They are divided into two parts [5]:

User-based interaction filtering: In this model, products are recommended to users based on the fact that they are popular with users like users[4]. For example, if Dan and Logan likes the same movies and a new movie got released that Logan likes, we can recommend that movie to Dan because Logan and Dan seem to like the same movies.

Object-based filtering: These systems identify similar objects based on previous user ratings. For example, if users A, B, and C give a 5-star rating on the books X and Y when user D buys the book Y they also get a recommendation to buy the book X because the system identifies the letters X and Y as the same bases. in user ratings A, B, and C.

Model-based approaches are based on Matrix Factorization and are better at dealing with sparsity[9]. They are developed using data mining and machine learning algorithms to predict the user rate of unlimited objects. In this way strategies such as dimensionality reduction can be used to improve accuracy. Examples of such model-based methods include Decision Trees, Rule Based Model, Bayesian Model, and Latent Factor models[3].

Content-based recommendation engines use metadata such as genre, producer, character, and artist to recommend movies or music. Such a recommendation would be for example recommending Infinity War featuring Vin Diesel because someone watched and liked The Fate of the Furious. Similarly, you can get music recommendations from certain artists because you like their music. Content-based systems are based on the idea that if you like something you might like something similar. Here we will further discuss our working method and algorithm using content based recommendation approach.

III. PROPOSED ALGORITHM

3.1 Working Flowchart

The flow chart shown below depicts the entire operation and the working methodology of the project. This flowchart contains the necessary logical operations that were used during the development of the project.

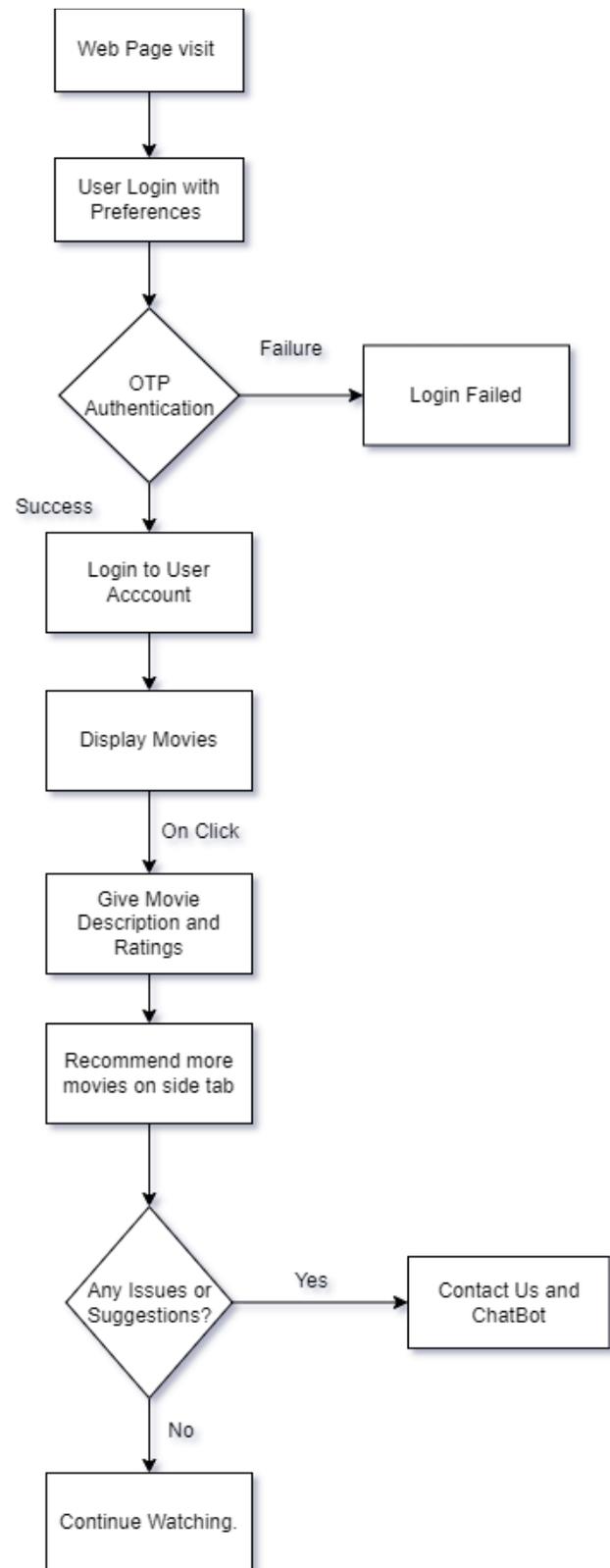


Fig.1 Flow chart of the working methodology

3.2 Implementation

The basic idea behind this system is that movies that are more popular and critically acclaimed are more likely to be liked by the average audience. Second, content-based filtering, where we attempt to profile a user's interests using the information collected and suggested items based on that profile[8].

- Create a user account using OTP authentication via email.
- Record their interests and languages and save them in a dedicated database.
- Based on the history, We recommend similar movies.
- Based on his previous watched movies, We recommend other movies in same webpage.
- Also recommends movies based on similar genres.
- Can track the most preferred movie genre among n users.
- We also provide a brief description of the movie along with its rating.

3.3 System Architecture & working:

In the starting whenever a user comes to our webpage, we firstly take their login details to create their account. These details include categories such as the user's name, the user's email address, the user's phone number, and the preferred language for watching the movie, their preferred genres, etc to create a personalized experience webpage according to their choices. These recommended results were made through a content based recommended system using Python and ML and merging them with HTML pages using Django.

Initially, when a user enters his credential via login or signup we have his/her genres and language recorded.

This data can be accessed by using the admin panel by authorized developers but with a secure user password using different securing algorithms.

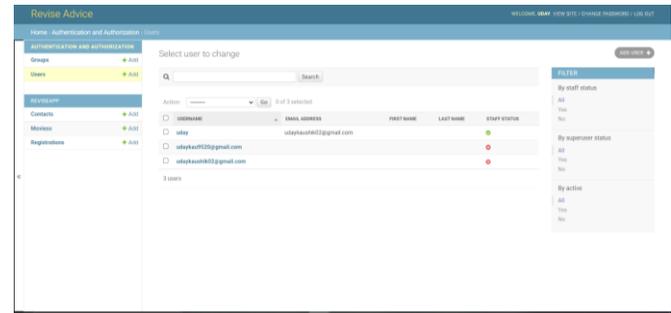


Fig 2. Admin panel

This can be further used to recommend movies via content based filtration method.

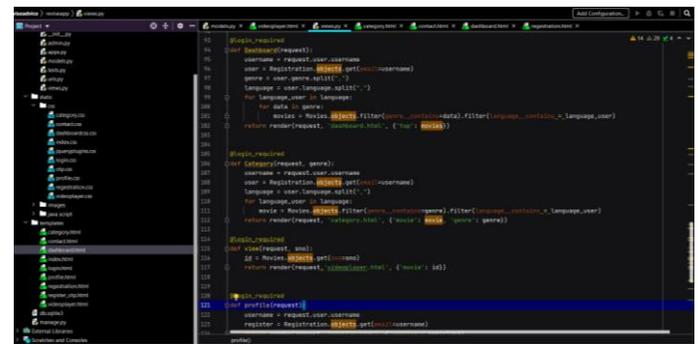


Fig 3. Content Based Filtering

3.4 Software used

1) Django: We have used Django Framework which is a python based high level framework which helps in maintaining the web development processes . Fig. Shows the screenshot of the code which we have uploaded in Django.

2) Pycharm: We have used pycharm to write the code. Pycharm is an IDE which helps to build code an provide multiple features to enhance the writing of the code.

Other Software and technologies which were used while making this project are Python, ML, HTML, JS, Bootstrap, etc.

IV. RESULT

The result of this project has been test over few users which shows the following result.

For a user having watch languages as Hindi, English and having genres as Action displays the results as:

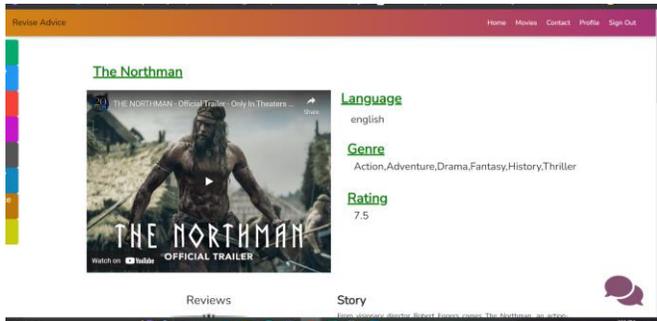


Fig 4. Movie selected by user to watch

Having a user review and movie’s description always boosts user’s retention rate. So it is also added in movie page.

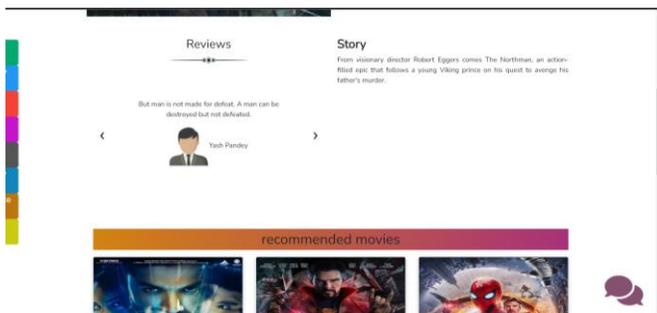


Fig 5. Reviews and Movie’s description

Recommended Movie will then be displayed in that webpage.

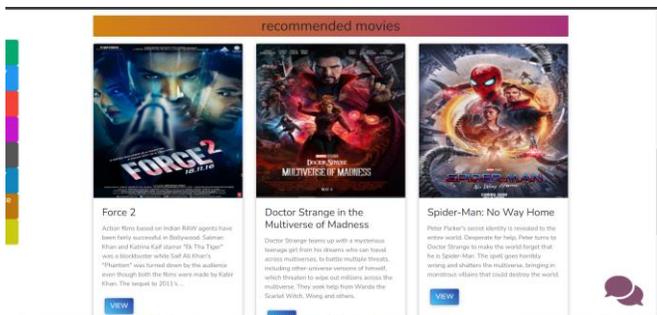


Fig 6. Movies Recommended as per content based filtering

V. FUTURE SCOPE

There are numerous changes that can be made in the current design to improve the working of the software. Different types of features can also be added to the webpage for enhancements. Some added features and changes in the website are listed below:

- The website can be improved by having multiple features such as streaming of whole movie and making it a wide platform.
- The web page design can be improves by using different css and Js code.
- This recommender system can also be improved by using various other method such as memory based methods of collaborative filtering or the use of matrix factorization.

VI. CONCLUSION

The proposed model is a fully functional and responsive website that can be used to recommend movies to users based on their interests. While many technologies such as Bootstrap, Javascript, and HTML provide users with a dynamic user interface and frameworks such as Django with the help of Python and machine learning, they recommend movies and connect them properly to the front end. Now we can host this website so that anyone with internet access can search and view the web page. This method can also analyzes how large companies have multiple mechanisms for recommending different types of products to different users. In this way, each user was targeted to watch movies, series or listen to music and stay longer on the platform, responding online. This will ultimately generate revenue for the business and in turn allow users to watch what they are interested in. The final software or website is shown in the given fig below:

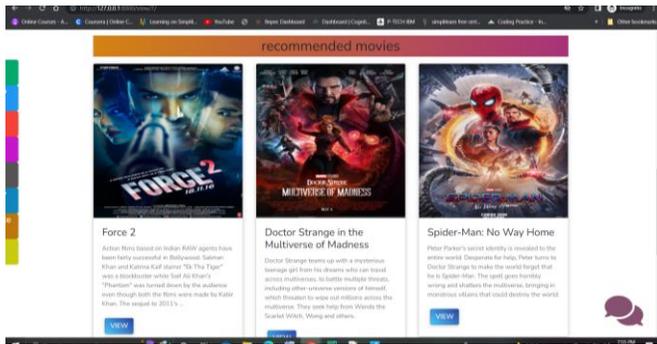


Fig 7. Final look of movie recommendation project.

<https://towardsdatascience.com/introduction-to-recommender-systems-6c66cf15ada>

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