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Music Recommendation System

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Abstract- Music recommendation systems provide a mechanism to assist users in classifying users with similar interests. This makes recommender systems essentially a central part of websites and e-commerce applications. This project focuses on the music recommendation systems whose primary objective is to suggest a recommended movie though a content-based recommendation system.This recommendation system will collect information about the user's preferences of different music in two ways, either implicitly or explicitly. Implicit acquisition of user information typically involves observing the user's behaviour, such as watched movies. On the other hand, explicit acquisition involves collecting the user's previous ratings or history. Such recommendation systems are beneficial for organizations that collect data from large amounts of customers and wish to effectively provide the best suggestions possible.The systems can recommend music based on one or a combination of two or more attributes. In this project, the recommendation system has been built on the type of genres that the user might prefer to watch. The approach adopted to do so is content-based filtering using genre correlation. For the music recommendation problem, we want models that are good at predicting the next song a user will listen to given a small number of recommendations. In other words, we want a model to be able to predict as many relevant songs as possible in as few recommendations as possible. Bearing this in mind, we evaluated our models on two competing metrics: mean precision and mean recall.

Keywords:- Recommender Systems, Collaborative Filtering, Content-based Filtering, Recommendation, Evaluation Metrics.

I. INTRODUCTION

Recommendation systems help users find and select items (e.g., books, movies, restaurants) from the huge number available on the web or in other electronic information sources. Given a large set of items and a description of the user's needs, they present to the user a small set of the items that are well suited to the description. Similarly, a movie recommendation system provides a level of comfort and personalization that helps the user interact better with the system and watch movies that cater to his needs. Providing this level of comfort to the user was our primary motivation in opting for movie recommendation system as our BE Project.

The chief purpose of our system is to recommend musics to its users based on their viewing history and ratings that they provide. The system will also recommend various E-commerce companies to publicize their products to specific customers based on the genre of musics they like. Personalized recommendation engines help millions of people narrow the universe of potential films to fit their

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unique tastes. Collaborative filtering and content based filtering are the are prime approaches to provide recommendation to users. Both of them are best applicable in specific scenarios because of their respective ups and downs.

In this paper we have proposed a mixed approach such that both the algorithms complement each other thereby improving performance and accuracy of the of our system. Recommendation systems facilitate users to notice and choose things (e.g., books, movies, restaurants) from the massive range offered on the net or in alternative electronic info sources. Given an oversized set of things and an outline of the user's desires, they gift to the user a tiny low set of the things that square measure well matched to the outline.

Similarly, a pic recommendation system provides a level of comfort and personalization that helps the user act higher with the system and watch movies that cater to his desires.

II. LITERATURE REVIEW

MUSICREC is a music recommendation system presented by, **D.K. Yadav et al.** based on collaborative filtering approach. Collaborative filtering makes use of information provided by user.

Luis M Capos et al. has analysed two traditional recommender systems i.e. content based filtering and collaborative filtering. As both of them have their own drawbacks he proposed a new system which is a combination of Bayesian network and collaborative filtering.

A hybrid system has been presented by, **Harpreet Kaur et al.** The system uses a mix of content as well as collaborative filtering algorithm. The context of the movies is also considered while recommending.

Urszula Kużelewska et al. proposed clustering as a way to deal with recommender systems. Two methods of computing cluster representatives were presented and evaluated.

III. PROBLEM FORMULATION

Many online businesses rely on customer reviews and ratings. Explicit feedback is especially important in the entertainment and ecommerce industry where all customer engagements are impacted by these ratings.

Netflix relies on such rating data to power its recommendation engine to provide the best movie and TV series recommendations that are personalized and most relevant to the user. This practice problem challenges the participants to predict the ratings for jokes given by the users provided the ratings provided by the same users for another set of jokes form a recommendation for a vigorous user.

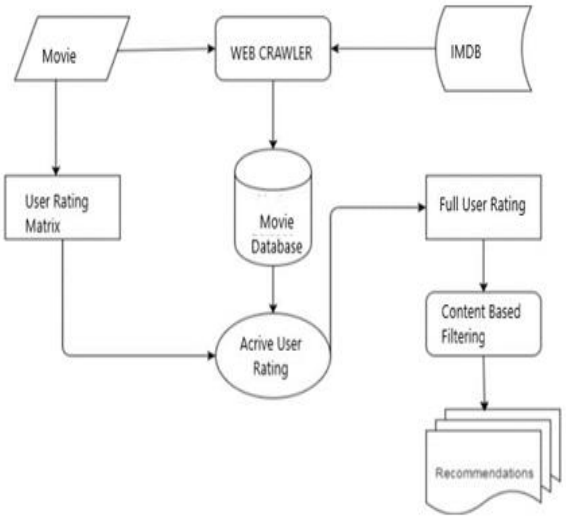

Fig 1. Flow chart.

IV. FEASIBILITY ANALYSIS

1. Financial:
The projected project is completely money freelance there's no money demand.

2. Technology:
Moving-picture show recommendation systems accessible within the market area unit addicted to the dataset to contain giant clusters of comparable users and things. They conjointly don't offer services like effective remote access via the cloud, client interaction modules, etc. to be solved with the projected system.

3. Operational Feasibility:
The project is going to be enforced during a means that it'll permit the functioning of recommendations swimmingly. it'll offer an easy program in a standard fashion.

4. Product/Service Marketplace:
The moving- picture show recommendation system can impact consumer establishments in many ways. the subsequent provides a high-level clarification of however the organization, tools, processes, and roles and responsibilities are going to be affected as results of the moving-picture show recommendation system implementation:- Tools: the present demand for on web site management systems are going to be eliminated utterly with the supply of a cloud-based system.

5. Processes:
With the moving-picture show recommendation system comes additional economical and efficient body and client relations processes. Hardware/ Software: shoppers can have to be compelled to handle no further software package or hardware aside from a stable high- speed net association and a pc device.

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V. TOOLS AND TECHNOLOGIES USED

1. Hardware Requirements:

- Processor: Single Core 1.0 Ghz
- Graphic Card: 64 MB minimum
- Storage: 100mb ~ 1GB
- Ram: 1GB
- Device: Laptop, Phone

2. Software Requirements (Developer):

- Python (3 or newer)
- Jupyter Notebook
- Anaconda

VI. LIMITATIONS AND FUTURE SCOPE

One of the best issues of content-based recommender systems is that the Brobdingnagian size of the item set. Since we'd like to search out things in a very set that correlates the foremost with the user's interests, we're duty-bound to look at all the things. In the other case, we tend to cannot eliminate the likelihood that things we tend to haven't examined don't seem to be additional relevant than those we tend to do.

Moreover, within the case of content-based recommender systems we tend to should examine the content of each item so as to form a recommendation, whereas, in cooperative filtering systems, we tend solely ought to examine their ratings by the users. Therefore, the quantity of things rises terribly quickly, as is that the case in most e-commerce services, the performance of a content-based system decreases.

As a result, once we will use a recommender system for internet service with an enormous range of either previous or new things, the answer of a content-based system wouldn't be seeming to satisfy our expectations in terms of performance. However, the dimensions of the item set as a full aren't the sole drawback of content-based systems.

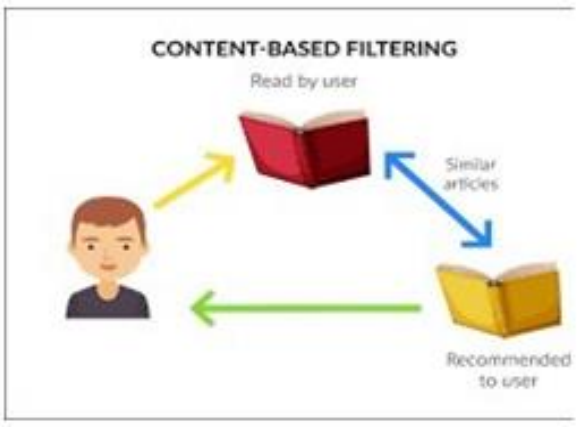

Fig 2. Collaborative filtering.

Additionally, each item has its own content that the algorithmic rule should use. though this sometimes isn't a retardant of your time or laptop resources, since most item representations tend to be tiny compared with the number of things, however this content springs from the first item are one among the foremost vital issues we tend to encounter once building a content-based system within the previous chapter, we've analyzed however things area unit painted and therefore the totally different techniques.

We tend to conjointly note that unstructured information isn't simple to handle, particularly once it involves transmission information.

However, transmission information area unit rife in today's internet a pair of.0, whereas an enormous range of recent transmission things area unit being supplementary to the online daily. whereas we tend to still don't possess techniques that manufacture satisfying results, the user's want for recommending transmission things will increase daily. though many tries are created to resolve this drawback and progress has been created, the matter still remains.

Therefore, the content analysis required by content-based systems so as to form recommendations is Associate in Nursing's inherent drawback which may discourage their use once we wear down transmission things. Although several of the content-based blessings derive from the actual fact that the recommendations for each single user area unit freelance to the user's preferences, which may be the cause for one among its disadvantages.

Content-based systems emerged over a decade past, once the online was still young and not widely adopted. User communities were additionally primitive, wherever the user's profile consisted of some fields providing data like his name and his age, whereas communications wererestricted to text. Though content-based systems enable North American nation to form recommendations to users with distinctive interests, they fail to cluster users that have equivalent interests. Therefore, the dearth of a content-based recommendation system to form a gaggle of users that share common interests may convince be an excellent downside.

However, cooperative filtering systems cannot produce user teams either, as a result of they are doing not understand the common interests of the users, however solely their existence. Therefore, the hybrid model has once more tested superior. By combining the item's content with the user stereotypes, it permits the North American nation to form clusters of users that share interests, as a result creating it potential to form communities of users that share common interests. The results of this feature aren't solely to enhance the user's expertise of exploitation our service, however conjointly providing the accuracy of our recommender, since through social interaction the user's offer data which may prove terribly helpful to the recommender system.

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This realization has created a replacement trend in recommender systems, wherever Associate in the Nursing item is usually recommended to a gaggle instead of to people, so increasing the likelihood that the results area unit correct, a minimum of for many of the users of the community.

VII. DESIGN

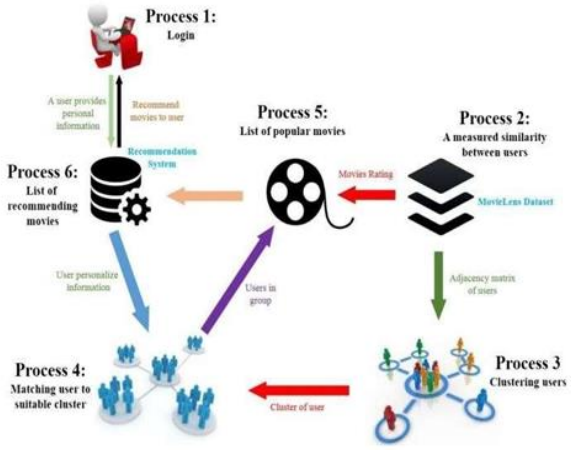

Fig 3. Flow Chart.

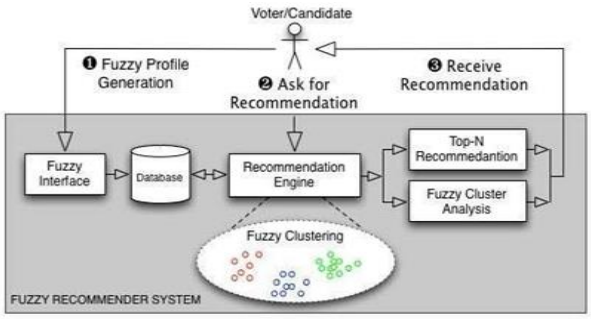

Fig 4. Fuzzy Recommendation.

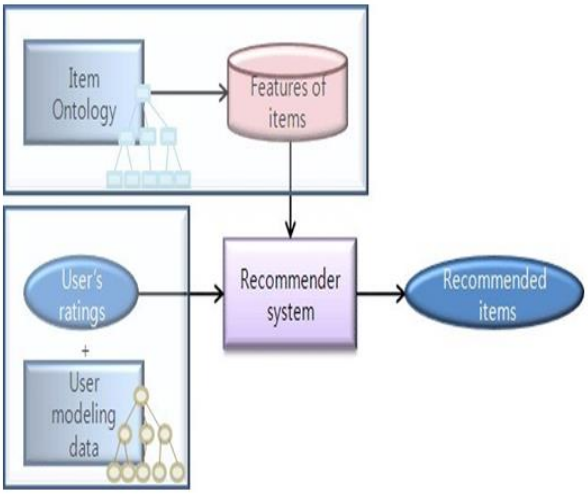

Fig 5. Flow chart music.

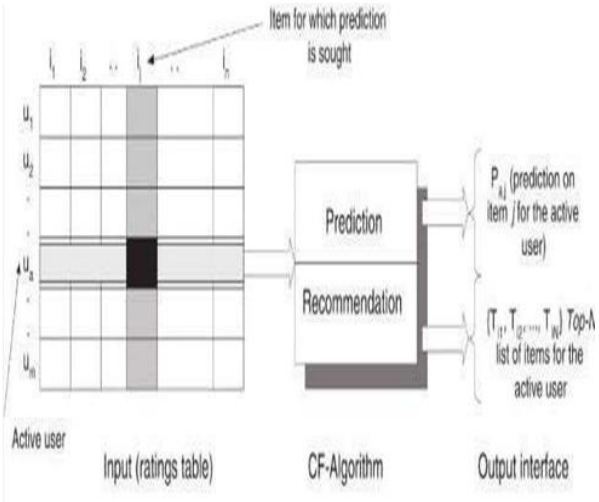

Fig 6. Matrix representation.

VIII. PROJECT IMPLEMENTATION

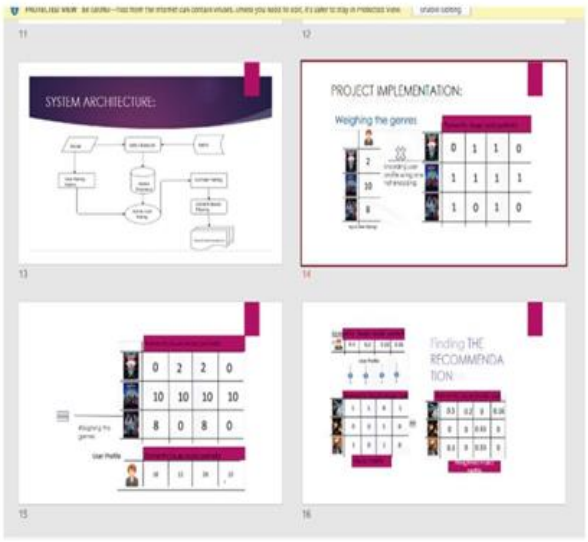

Fig 7. Recommendation.

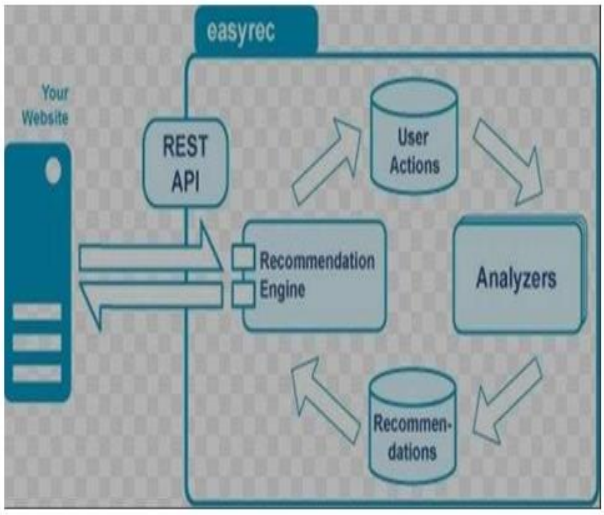

Fig 8. Deployment.

1. Steps:

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- Scrapping data from websites or another movie repository through Web Crawler.
- Processing scraped data into usable form while creating a Movie Database.
- Creating a User Rating matrix and encoding to get Active User Rating.
- Applying Content based filtering to get recommendations.
- Making sentiment analysis model using forward propagation.
- Making database and initializing backend server.
- Initializing rest API's and adding authenticating middleware.
- nitializing react js app.
- Wrapping up the complete website.

IX. CONCLUSION

In this project we have implemented a music recommendation engine/system using simple recommendations, content-based filtering. In addition, a movie recommendation engine has been developed using different method prediction methods. This model is implemented in the python programming language. We have observed that the model based proposed technique is healthier than the current technology after implementing the system with the help of python programming language.

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