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Movie Recommendation System Considering Multiple Scenarios

Movie Recommendation

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Abstract — *The challenges to existing system like Bookmyshow.com are: There is no automation in existing system for giving notification. We have to browse a website and search for movies. It also does not suggest the movies based on user preference so we propose a Recommendation system" which gives notification in the form of mail based on analysis of historical data items. The design of Recommendation system is based on collaborative filtering technique. This system determine the similarity among a huge collection of data by analyzing historical user data and then extracting hidden useful information or patterns. This system can be used for recommending many data items to users. We are implementing Recommendation System for movie recommendation using Mahout. Mahout is such a data mining framework that normally runs coupled with the Hadoop infrastructure at its background to manage huge volumes of data. Movie Recommendation systems store user preferences over movies and find the relation between users and movies based on properties of movies like director, actor, actress, singer or producer etc. Recommendation systems suggest movies to users based upon the user likes in order to help the users in purchasing movie ticket from a large collection of movies.*

Keywords*-Recommendation, Collaborative Filtering , Content-Based Filtering, Demography, Knowledge-Based, Utility-Based, Cloud, mahout.*

I. INTRODUCTION

There are millions of websites applications and systems build on the internet. We need a system that give individualize suggestion based on the interesting content of the users that they may like out of large number of alternatives. So we propose a system called recommender system which helps in making decisions based on their past preferences. It can provide suggestion for products to buy, books to read, places to eat or movies to watch. During the last few years , as a huge amount of data is used for generating recommendations, those system are equipped with solution characteristics of the problems of big data. The task of recommendation system is to present users with information about the items in which they might be interested. The systems different from one another in the way they analyze the available data. There are different types recommendation system such as Collaborative Filtering, Content-Based Filtering, Knowledge-Based Filtering, Utility-Based Filtering, Demography Filtering,Hybrid Recommendation system.

II. LITERATURE SURVEY

In this paper [1] explore different recommendation system algorithms such as user based and item based collaborative filtering. Its advantage is it supports various learning algorithms such as clustering, classification and recommendation. and disadvantages are It requires more resources to process big data. This paper[2] describes implementations of slope one collaborative filtering that can enhance efficiency of recommendation. This paper benefits , A very fast and simple runtime approach to evaluate recommendations. Its drawback is Cold Start: These systems often require a large amount of existing data on a user in order to make accurate recommendations. This paper[3] describes implementation of Mobile Context Aware recommendation system based on hybrid-greedy algorithm. It suggest more user suitable items depending on his/her interest. It may miss the best item.

This paper[4] develop a recommendation system which uses item based collaborative filtering based on hadoop and spark. It gives per item recommendation. System performs poorly when there are many items but comparatively few rating. This paper[5] implements clustering by using K-nearest algorithm. It is robust to noisy training data. Effective if the data is large. Computation cost is high because we need to compute the distance of each query instance to all the training samples. This paper[6] propose a method of rapid deployment for machine learning system in the educational cloud so that it reduces the require preparation time. In this Knowledge-based systems are able to create new knowledge and learn from cases or data instead of just referring the stored content. The disadvantage is there is need of defining recommendation knowledge in explicit fashion.

This paper[7] makes use of user-based collaborative filtering for recommending the choices without sufficient personal experience of the alternatives. It allows finding better neighborhoods of similar users. The disadvantages is Data Sparsity: The number of items sold on major e-commerce sites is extremely large. The most active users will only have rated a small subset of the overall database. Thus, even the most popular items have very few ratings.

This paper[8] propose recommendation system for large amount of data available on the web in the form of ratings, reviews, opinions and comments about any item using hadoop. In this Item similarity is handled very well. The drawback is Scalability: In many of the environments in which these systems make recommendations, there are millions of users and products. Thus, a large amount of computation power is often necessary to calculate recommendations. This paper[9] propose a service recommendation schema that is robust against unfair ratings. It gives Good Prediction Accuracy. The disadvantage is it does not work well with clusters of Different size and Different density. This paper[10] implements recommendation system using puzzle –based programming. It is best for solving real-world problems. The disadvantage is Learning by example is useful which is currently accepted but not all people get a good effect.

III . METHODOLOGY

1. **Collaborative Filtering:** Basic idea behind the collaborative filtering states that if ratings of users u and v are similar, and user u rated item i which user v did not rank, then probably v's rank would be similar to the one that u gave. Although the assumption seems to be simple, variety definitions of similarity lead to various methods and evaluations.

2. **Content-Based Filtering:** The general goal of this approach is to characterize items which user likes and suggest him those which share this characteristic. Information about an object i might be stored in the feature vector xi. For data in the form of text documents, like websites or reviews, vectors containing frequency of occurrence are commonly used. On the other hand, for each user u we compute his preference profile vector xu. Common technique, used in such system as Newsreaders, is to update the profile xu, whenever user ranks item i by the xi in proportion of the rank ruin, i.e Then recommender can for instance suggest items which are similar to user's taste ac- cording to cosine similarity or Minimum Description Length where Iu describes the set of ranked items.

$$x_u = \sum_{i \in I_u} r_{ui} x_i,$$

1.

3. **Knowledge-Based Filtering:** A knowledge-based recommender suggests products based on inferences about a users needs and preferences. This knowledge will sometimes contain explicit functional knowledge about how certain product features meet user needs.

4. **Demography-Based Filtering:** This system categorises the user based on personal attributes. To use these methodologies we need to make different demography classification such as age wise classification, income wise classification, female-male ratio and their classification. So based on these classification we can recommend action movies to youth, family movie to women, friction movies to seniors.
   Example: the evaluation procedure used in, utilized a demographic recommendation algorithm as part of the integration of three other recommendation algorithms to provide a hybrid recommendation as a prototype.

5. **Utility-Based Filtering:** Utility-Based recommendation system is help to identify the best match using constraint satisfaction techniques. The single problem can be solved by different solutions. This considers the performance parameters for each approach. Thus considers the efficiency issues.

6. **Hybrid Recommendation System:** These methods combine collaborative and content-based methods. Hybrid RS overcome the limitations of CF and CB systems and are able to provide more accurate recommendations but at the cost of the complexity to build them.

V. APPLICATIONS

The most common recommendation systems applications include:
• **Entertainment**: recommendations for movies, music.
• Content personalized newspapers, recommendation for documents, recommendations of Web pages, e-learning applications, and e-mail filters.
• **E-commerce:** recommendations for consumers of products to buy such as books, cameras, PCs etc.

V. SUMMARY AND CONCLUSION

Summary:

- Mahout is a machine learning API built on top of Hadoop which includes clustering, pattern mining, classification, regression evolutionary algorithms, and recommendation.
- Recommendation systems help navigate vast product spaces, helping locate items that are interesting and useful to individual users.
- Mostly used in business-to-person e-commerce contexts.
- Collaborative filtering solves information overload problem by presenting personalized content to individual users based on their interests, which has been extensively applied in real-world recommendation systems.
- As a class of simple but efficient collaborative filtering method, similarity based approaches make predictions by Recommending users with similar taste or items that have been similarly chosen. However, as the number of users or items grows rapidly, the traditional approach is suffering from the data sparsity problem.
- Hence multiple types of recommendation systems, based on type and source of input/background data (can be combined into hybrids).

Conclusion:

We did exhausted literature survey on recommendation system and come to a conclusion that there is not a full-fledged recommendation system. We evaluated how to use different recommendation strategies to generate recommendations However; if you have fewer users than items then it is better to use user-base recommendations. In contrast, if you have fewer items than users, then it is better to use item based recommendations to gain better performance. People use recommendation system to recommend books, music, news, smart phones, vacation trips, and romantic partners. Nearly every product, service, or type of information has recommendation to help people select from among the large alternatives the few they would most appreciate. Our recommendation system uses the hybrid filtering technique. Thus, it would generate better recommendations for users.

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