

## “Formation of E-Commerce Recommendation (E-Shop)”

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### **Abstract:-**

Recommendation techniques are very important in the fields of E-commerce and other Web-based services. One of the main difficulties is dynamically providing high-quality recommendation on sparse data. In this paper, a novel dynamic personalized recommendation algorithm is proposed, in which information contained in both ratings and profile contents are utilized by exploring latent relations between ratings, a set of dynamic features are designed to describe user preferences in multiple phases, and finally a recommendation is made by adaptively weighting the features.

Recommended systems are changing from novelties used by a few E-commerce sites, to serious business tools that are re-shaping the world of E-commerce. Many of the largest commerce Web sites are already using recommended systems to help their customers find products to purchase. A recommended system learns from a customer and recommends products that she will find most valuable from among the available products. In this paper we present an explanation of how recommended systems help E-commerce sites increase sales

**Keywords:** E-commerce recommendation , Personalized recommendation , Product.

### **I. INTRODUCTION**

Nowadays the internet has become an indispensable part of our lives, and it provides a platform for enterprises to deliver information about products and services to the customers conveniently. As the amount of this kind of information is increasing rapidly, one great challenge is ensuring that proper content can be delivered quickly to the appropriate customers. Personalized recommendation is a desirable way to improve customer satisfaction and retention. In our experiences, the interest cycle differs from user to user, and the pattern how user preferences changes cannot be precisely described by several simple decay functions.

With rapidly increasing amount of information in the networks, there is a serious need for a new technology to help people find what they want from a huge mass of data. Personality service system

emerges as the times requires, which is used to help users find the information they are interested in. The provided personalized service is accepted by more and more E-commerce Web site, digital library and many other similar fields, it also becomes one of the most important functions in these systems. At present, almost all large-scale e-commerce systems, such as Amazon, eBay, and taobao, use recommendation systems in a variety of modes.

As a type of information technology that aim to support personalized service, recommendation systems are widely used by e-commerce practitioners and have become an important research topic in information sciences and decision support systems . Recommendation systems are decision aids that analyse customer's prior online behaviour and present information on products to match customer's preferences. Through analysing the patron's purchase history or communicating with them recommendation systems employ quantitative and

qualitative methods to discover the products that best suit the customer. Most of the current recommendation systems recommend products that have a high probability of being purchased. They employ content-based filtering (CBF), collaborative filtering (CF), and other data mining techniques, for example, decision tree, association rule, and semantic approach. Many researchers have proposed various kinds of CF technologies to make a quality recommendation.

All of them make a recommendation based on the same data structure as user-item matrix having users and items consisting of their rating scores. There are two methods in CF as user based collaborative filtering and item based collaborative filtering. User based CF assumes that a good way to find a certain user's interesting item is to find other users who have a similar interest. So, at first, it tries to find the user's neighbors based on user similarities and then combine the neighbor users' rating

Scores, which have previously been expressed, by similarity weighted averaging. And item based CF fundamentally has the same scheme with user based CF.

It looks into a set of items; the target user has already rated and computes how similar they are to the target item under recommendation. After that, it also combines his previous preferences based on these item similarities. The traditional collaborative filtering algorithm works by building a database of preferences for items by users. To find information that the target user may probably be interested in, we first discover the target user's nearest neighbours, which are other users who have historically had similar taste to the target. The traditional nearest neighbour collaborative filtering recommendation algorithms face the challenge of extreme sparsity of user rating data.

#### **Literature survey:**

Systems or applications which are available, they all worked on interest form basis. In this user gets a recommendation products from predefined set of samples and based on that application or system identifies the interest of the person or user.

Over the past two decades, the Internet has emerged as the mainstream medium for

online shopping, social networking, e-mail and more. Corporations also view the Web as a potential business accelerator. They see the huge volume of transaction and interaction data generated by the Internet as R&D that informs the creation of new and more competitive services and products several "e-movement" crusaders have discovered that customers spend significant amounts of time researching products they seek before purchasing. In a bid to assist customers in these efforts, and conserve precious time, these organizations offer users suggestions of products they may be interested in. This serves the dual purpose of not just attracting browsers but converting them into buyers. For instance, an online bookstore may know that a customer has interest in mobile technology based on previous site visits and suggest relevant titles to purchase. An uninitiated user may be impressed by such suggestions. Suggestions (or "recommendations" as they are popularly known) predict likes and dislikes of users. To offer meaningful recommendations to site visitors, these companies need to store huge amounts of data pertaining to different user profiles and their corresponding interests. This eventually culminates in information overload, or difficulty in understanding and making informed decisions. One solution to combating this issue is what is known as a recommendation system.

Many major e-commerce Websites are already using recommendation systems to provide relevant suggestions to their customers. The recommendations could be based on various parameters, such as items popular on the company's Website; user characteristics such as geographical location or other demographic information; or past buying behaviour of top customers

#### **Working principle:**

Many recommendation systems employ the collaborative filtering technology, which has been proved to be one of the most successful techniques in recommendation systems in recent years, the difficulties of the extreme sparsity of user rating data have become more and more severe. To solve the problems of scalability and sparsity in the collaborative filtering, this paper proposed a personalization recommendation algorithm based on rough

Set which is proposed, the algorithm refine the user ratings data with dimensionality reduction, then uses

a new similarity measure to find the target users' neighbours, then generates recommendations. To prove our algorithm's effectiveness, the authors conduct experiments on the public dataset. Theoretical analysis and experimental results show that this method is efficient and effective.

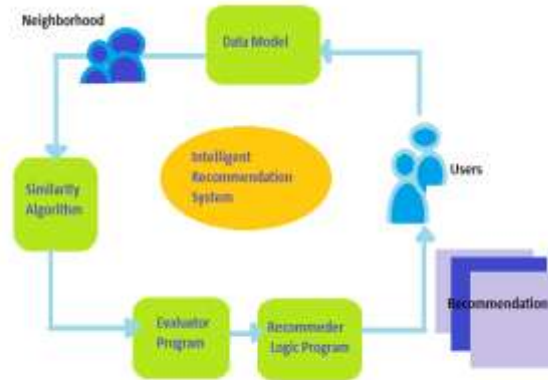


Fig .1 Recommendation System Execution Flow

### Actual working:

#### Modules:

##### 1 Registration and Login:

Every user in the system will have to register in this application. Only after registration user will be able to use the application and they can login into it with help of their own credentials. Every user during login will be varied and only valid user will be able to login into the application.

##### 2 Admin login and category creation:

Admin will also have to login into the application with help of their credentials and once they login they have different sets of feature or functionality provided under them. Basically the admin is the owner of the e commerce site, hence they got an option to create the category. These categories will be seen in the front end when user will browse the e-commerce application. E.g. Categories like Clothing, Electronics etc.

##### 3 Product Add module:

Only admin has the right to add product under different categories which has been created previously. Every details of product like name, product details and description is to be added by the

admin and all the content will be visible to e-commerce site user.

##### 4 User browse history tracking:

Every user will browse the e-commerce site after login into it. All the activity and product views will be tracked and recorded in the system. Based on their views and activity system will analyse user interest domain. Every users history will help application to know the users tendency and interest and it will vary based on their usage.

##### 5 Recommendation based on history:

Application will then recommend the product from the domain user is interested in.

This recommendation system will completely work on the back history of user's browsed data.

##### 6 Past history of purchase product:

User has an option to checkout with their selected products which they want to buy.

Application at the backend tracks all the bought products and process them to form a Cluster based on the similar products purchased by the past users.

We use a clustering

Algorithm to cluster or group the products under one domain.

##### 7 Recommendation of similar or missing products from cluster:

Whenever any user buys any product and add product in cart, system automatically process and finds out whether the added product falls under any cluster or not. If it falls on any defined cluster then it looks after the products there in cluster to get any missing item. The missing item is then recommended to the user so that user gets tend to buy that product.

##### 8 Payment Module:

In this module, the complete payment structure and process is been covered. User adds the card details and then it gets saved in dummy transaction and the products are purchased successfully.

##### 9 Friend add module:

In this module, every user can send a friend request using their mail id and once they are confirmed they come under single friend circle. Application tracks the products bought by user's friends.

### 10 Recommendation using friends similar buying products

All the similar products which are been purchased by the users friend circle are recommended to users too from application side.

### 11 Admin management of product:

Admin has an option to add, edit, delete or manage the complete e-commerce side from the backend. Only site owner has this right to do.

### System architecture

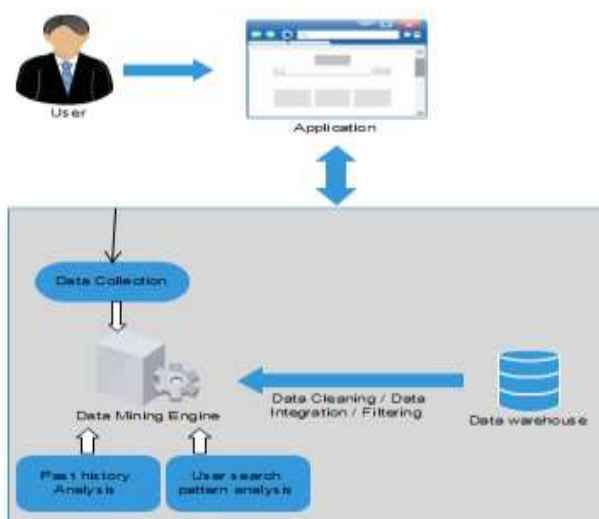


Fig.2 System Architecture

### Result and snapshots:

In this paper, we presented a product recommendation approach to find desired products for users. We incorporate user interest and past history for recommending top-k product. Compare to other recommendation system, we proposed new approach in which every user can send a friend request using their mail id and once they are confirmed they come under single friend circle. Application tracks the products buy by users friends. Due to this recommendation become wider, that user gets more recommended options

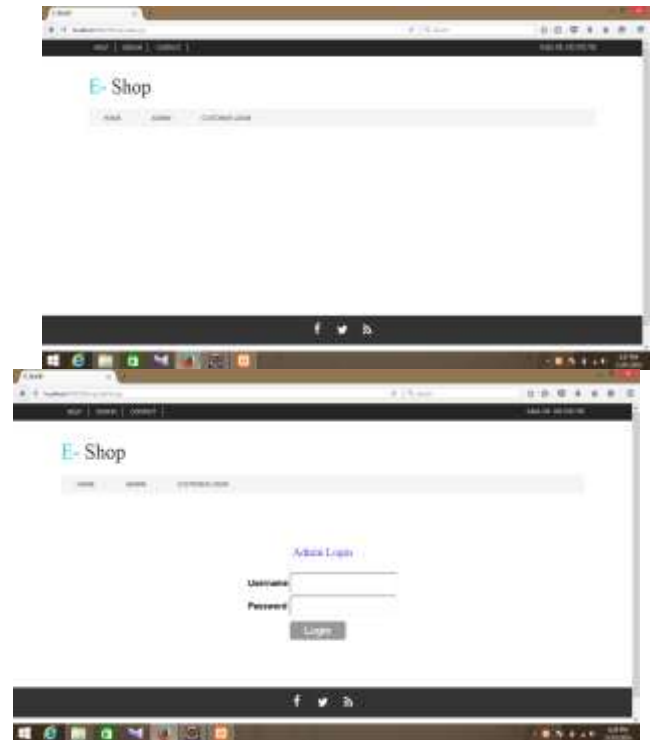


Fig 3 : Home Page Snapshot

Fig 4: Admin Login

### Merits:

- It makes products easy to find: Finding a product online is much easier than looking for it in the local store. In a store, you have to search for the product you want; if it's not there, you may have to visit several locations, which is frustrating and time-consuming. However, online you can easily search for any product by using the website's search feature, and it's more
- Recommendation: product are recommended by friends which are they likely to be purchased.
- Customer can give their own feedback on any purchase.

### Demerits:

- There is a delay before receiving your package: The main disadvantage of online shopping is that there is no instant gratification. Because the item must be shipped to you, you will have to wait a few days. I sometimes prefer going to the store if I see that the delivery time is too long.

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Collaborative Filtering Recommender Systems



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