



# International Journal of Innovative Research in Computer and Communication Engineering

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## Implementation of User Based Collaborative Algorithm in Real Estate Property

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**ABSTRACT:** An excessive amount of information available in the Internet due to the unsteady evolution of information has thus made information search as complicated process. As much as information became accessible digitally, the necessities for effective essence of information and complement of filtering tool. User faces many problems due to lots of information known as intoxication. To conquer this intoxication Recommender system (RS) can be used in commercial sites. RS provides personalized advice to users and, thus helps in making good decisions about which property to buy from the vast amount of property choices. The internet has made a meaningful proceedings platform for the online estate industry. However, use of the internet does not benefits homebuyer in terms of search time, flexibility, and intuitive results. We are choosing an algorithm which creates an accurate and efficient result. User's gets more accurate and systematic approach by using collaborative filtering algorithm. This paper will provide a basic approach for its implementation and exceeding efficiency in prediction intricacy.

**KEYWORDS:** Collaborative Filtering (CF), User-Based CF, Search Pattern, Recommender System (RS), Real Estate Property, Buying Renting and Selling (BRS).

### I. INTRODUCTION

The internet consists of various tool kits that received signal, store the signal, transmitted any information electronically. The Internet modifies the root of managing business. It has become very confidential parameter for research and collecting data. It is simple for people to find the information on internet and the information can be shared using various technologies.

Internet provides services based on personal interaction like messaging, email and teleconferencing. Internet also provides various facilities that allow user to communicate at relatively lower cost. It has made the living better by creating a worldwide highway of information. Internet is a ubiquitous network. It has made the world compact. Online property portal has been proved to be an efficient way for searching the reliable property. The online property portal provides the accurate information about the property.

Hence searching the property through online property portals is one of the most beneficial options amongst various number of property portals. Online searching is the most capable way of finding suitable property. One can find countless properties and deals on the single click of the mouse. These portals are beneficial especially for those who are interested in selling and buying the properties. The vital reason of choosing the online property portal is that they allow searching the property without any hassles. By observing the image users can get full idea about that property this is the prime benefit of online property.

### II. RELATED WORK

In [5] author had proposed profile aggregations based on clustering transactions algorithm, which was used to group the similar kind of transactions and clustering to identify the similar pages in each transaction. In [4] author, states that recommender systems provide recommendations to the users based on past user-item relationship. Based on the past



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user-item relationship neighbours are computed which makes the prediction easy. The weights of all the neighbours are calculated separately. The proposed method is stated to provide recommendation in 0.2 milliseconds. The training also takes less time unlike very long time in large scale applications. The proposed method was tested on data which consisted of 2.8 million queries which was processed in 10 minutes. In [5] author proposed a semantic web personalization. In this, web contents are modified based on the user's searching and navigational behaviour. In [5] author proposed a technique that incorporates web recommendation and personalization of websites based on the user interest. They have taken web logs for their source. They have used the data structures such as Web-Interest Matrix, User-Interest Matrix, Class-Interest Matrix and Frequent-Path Matrix to keep track of user interest and change the website based on the impact of the users. Probabilistic memory-based collaborative filtering (PMCF) combines memory-based and model-based techniques [10]. They use a mixture model built on the basis of a set of stored user profile and use the posterior distribution of user ratings to make predictions. To address the new user problem, an active learning extension to the PMCF system can be used to actively query a user for additional information when insufficient information is available. To reduce the computation time, PMCF selects a small subset called profile space from the entire database of user ratings and gives predictions from the small profile space instead of the whole database. In [4] author, discussed about recommending data sources for news articles or web sites after learning the taste of the user by learning his profile. It mentioned various types of information that can be considered to learn the profile of a user. Real Estate portals nowadays are not more interactive, where user can search the property randomly. Existing system does not provide effective search patterns for selling, renting and leasing.

### III. PROPOSED ALGORITHM

#### A. PROPOSED WORK OF SYSTEM:

This paper proposes a method by the means of real estate portal which offers better searching facility to user using collaborative search algorithm.

Fig. 1 shows the data flow diagram of online real estate management through which individual agents or buyers can maintain their property. The user does not need to register itself to post his/her property to sell or rent. Admin has all the privileges to add, update, delete and edit the properties which are posted. Admin will verify the properties posted by the user. The properties posted by user and admin will be stored in database. The user will see the home page of this portal. On the home page user can search the property according to his/her needs. Depending on his needs portal will fetch data from the database and will be shown as the results. The next page of the portal is the Post Property by which user can post the properties on the page that he wants to sell, rent or lease. The user has to provide all the information of property to be posted and the information about the owner of the property which would be verified by the admin. On posting the requirement user can get the notifications via SMS or by email.

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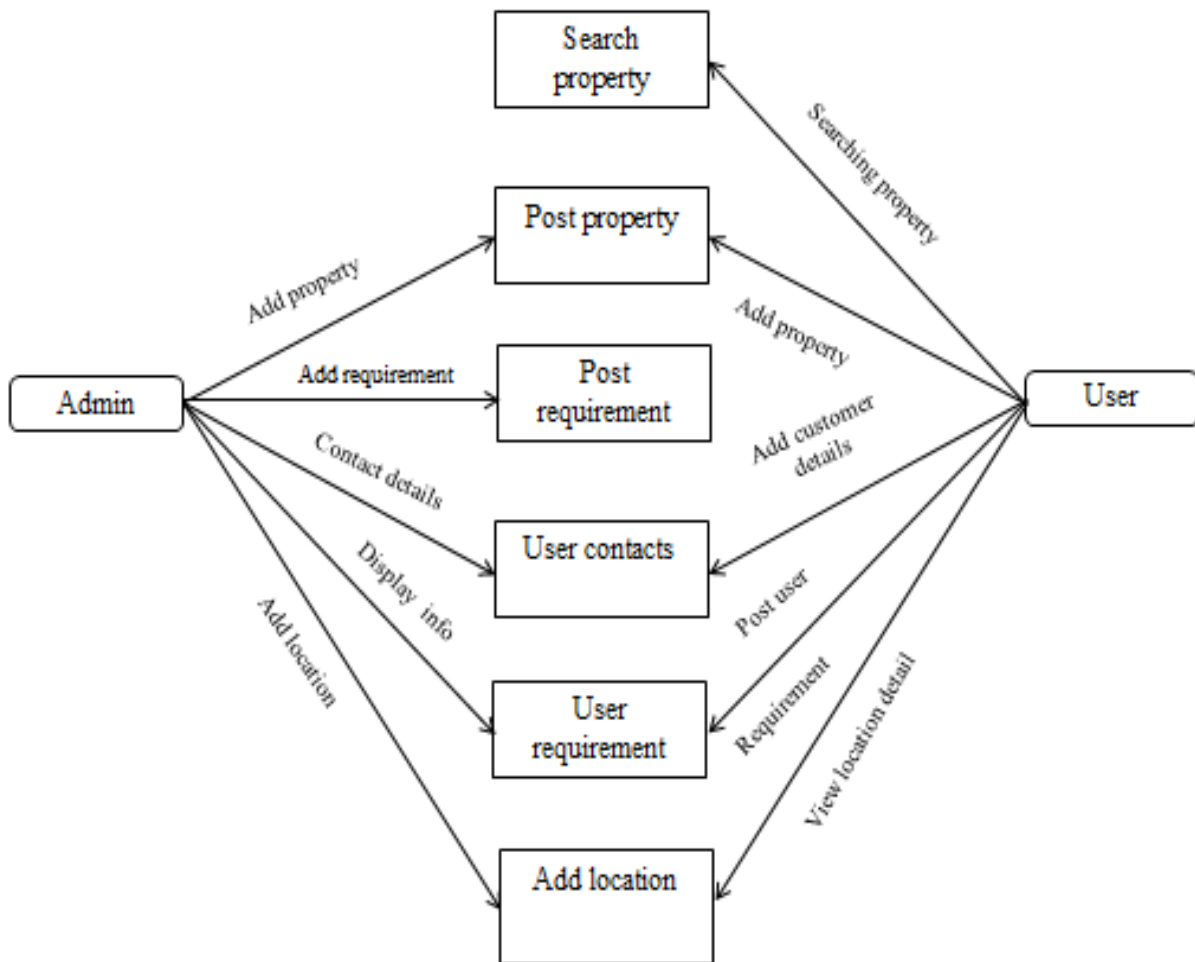


Fig.1. Data flow graph of the system

Fig. 2 shows the control flow graph of Admin. This CFG will explain the working of the administration. There's a login page for admin, the admin has assigned username and password. If the username and password is valid, the admin will be directed to the new page that is Dashboard. With the help of Dashboard, admin will perform various operations such as adding the property, adding new locations, list of active properties and admin will look after the requirements posted by user.

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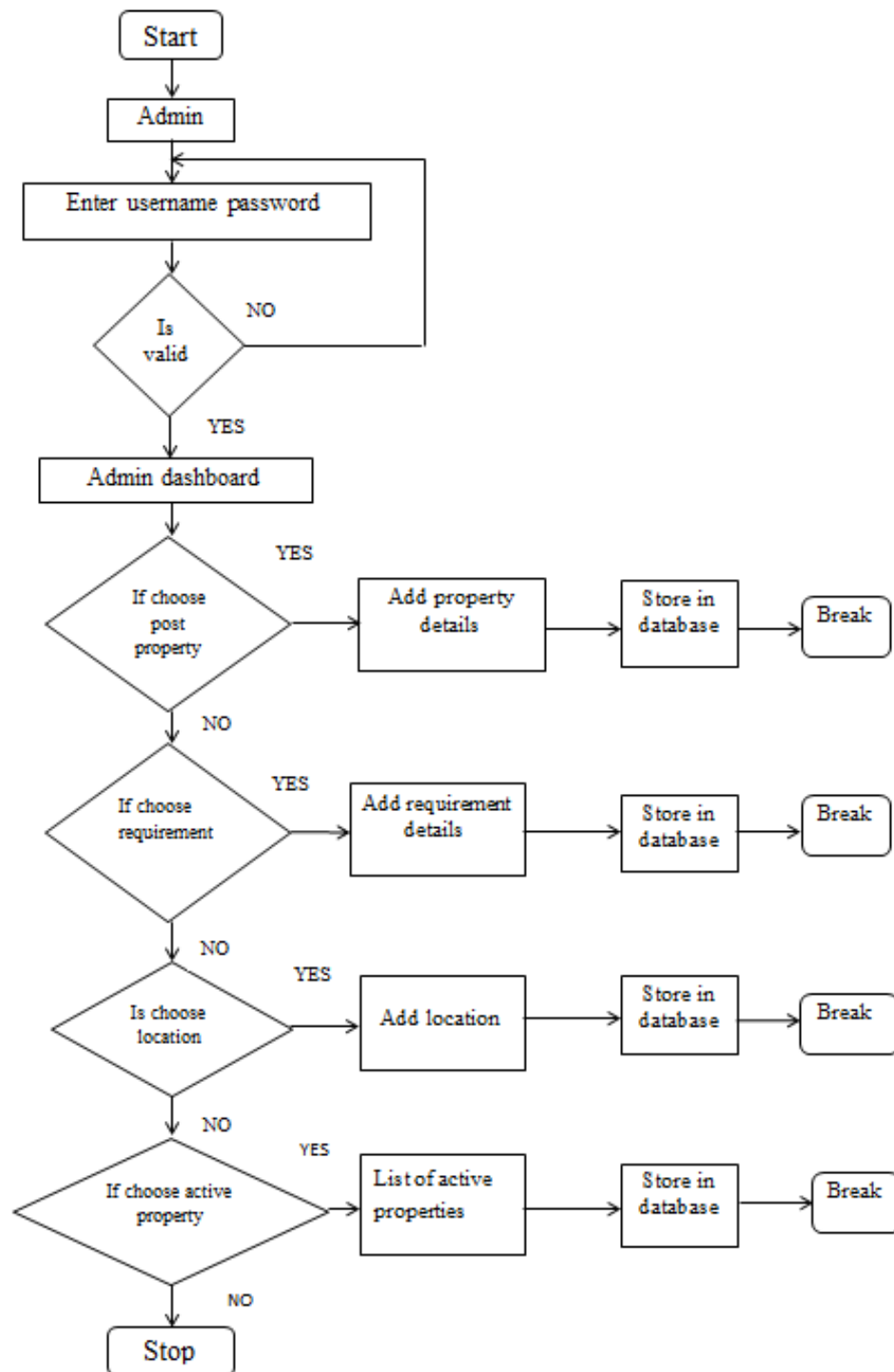


Fig.2. Control flow graph of Admin

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Fig. 3 depicts the flow of property search by the User. When user wants to search the property according to his/her needs. If the properties are available then list of properties will be shown. And it will provide direction of property location with the help of static maps. If in case the properties is not available posted by the user requirements then in future admin will notify.

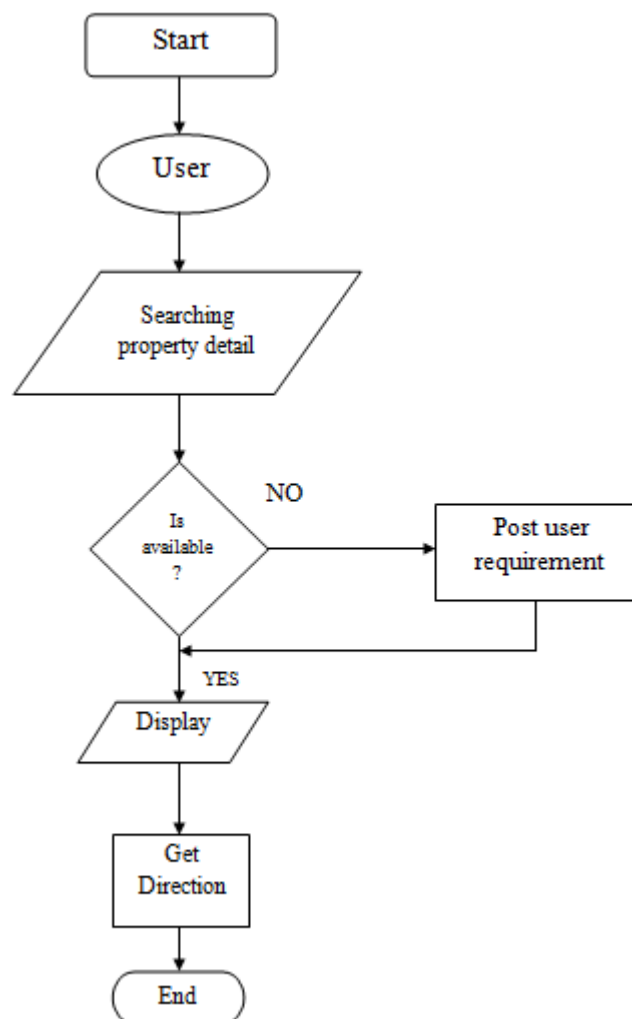


Fig.3. Data flow diagram of Search Property

## B. DESCRIPTION OF THE PROPOSED ALGORITHM

### Collaborative filtering algorithm:

The growth of the Internet has made it so much difficult to effectively extract useful information from all the available online information. The insignificant amount of data necessitates mechanism for effective information filtering. The only technique to deal with this problem is collaborative filtering technique. The propulsion for collaborative filtering comes from the idea that people often get the best recommendations as per the tastes similar to themselves. Collaborative filtering encompasses techniques for matching people with similar interests and makes the recommendations based on interest.

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The algorithm often requires:

1. User's active participation
2. An easy way to represents user's interest and
3. Algorithms that are able to match people with similar interest

Typically, the workflow of a collaborative filtering system is:

	1	2			n-1
1					
2					
S	R			R	
	R	R		R	
m-1					

Fig.4. Isolation of the co-related users and similarity computation. [21]

Above Fig. 4 shows the isolation of the co-related users and similarity computation. The user based collaborating filtering algorithm is somewhat similar to item based collaborative filtering algorithm. This paper focuses on the similarity between two users instead of computing the similarity between two items. This will used relativity-based method of computing similarity between two users  $u, v$  which is the similar as in item-based method.  $S_{u,v}$  Denote the similarities. Compute the rating similarity between the users search pattern and select highly rated search pattern in a critical phase in item based CF also by applying the similarity computation techniques, determine the similarity. In this isolate the user who has rated both the items. The prediction on property for a user  $u$  is calculated by computing weighted sum of different users search patterns on property  $i$ . The prediction  $P_{u,i}$  is given by,

$$P_{u,i} = \frac{\sum_u (r_{u,i} * S_{u,v})}{\sum_u S_{u,v}}$$

Where  $r_{u,i}$  is the search pattern of user  $u$  on property  $i$ .

**Benefits of using user based collaborative algorithm are:** CF system does not require content information about neither users nor items to be machine recognizable. Pure CF methods utilize rating and do not require any additional information about users or items. This system can make an assessment of quality, style or viewpoint by consideration of other people's experience. The main benefits is that CF system can produce personalized recommendations, because they consider other people's experience and recommendations are based on that experience. Another notable attainment is that CF recommender systems can suggest item by observing similar-minded people's behaviour. The limitation is that CF system cannot produce recommendations if there is no previous search pattern available. They manifest poor accuracy when there is little data about user's search pattern, this pros is called Cold-Start problem.

In Fig. 5, we are using an effective search pattern collaborative filtering algorithm which is a classic personalized recommendation algorithm; it is widely used in many commercial recommender systems [17]. The working of the algorithm is based on the search pattern of the user which is kept saved in cookies for future use thus helping the user in effective searching.

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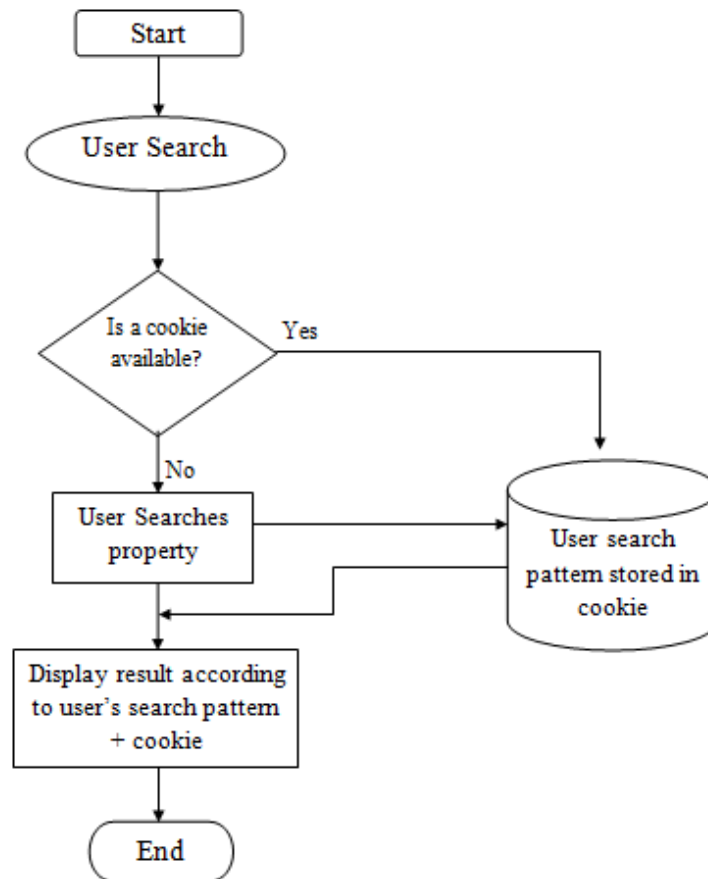


Fig.5. Data flow graph of User-Based CF

## IV. CONCLUSION

With the increasing usage of internet, it is necessary to provide information efficiently depending upon user's access patterns. The developed system can guarantee to keep the records safe which are stored in database. The database design is in structured format. In existing system, there is privacy problem and user does not get any notification. In the proposed system these limitations has been overcome. Thus this algorithm will assist effective search patterns for the buying, selling and renting /leasing facilities in real estate portals.

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