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A Life Style Based Friend Recommendation System

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Abstract: ***The friend recommendation system in social sites will recommend friends based on geographical locations or number of mutual friends or pages they liked in common. This may not suits the user's preference or the user recommended to another user may hate each other in real life. This system is a friend recommendation system where the users will be recommended to the other user based on their lifestyles. The lifestyle of a user will be derived using user's activities using Latent Dirichlet Allocation method. The lifestyle of the each user will be compared with the other user to find the similarities. This will return the user with high similarity values. The user value ranking will be given to each user by the other user who are recommended. The average of the rank will be calculated for each user and the value rank will be used in recommending the friends to a user. This system can be implemented in Android smartphones for implementation and the system can be used in social sites to improve the friend recommendation system***

I. INTRODUCTION

Nowadays, most people use social networking sites and people like to make friends using these sites. There is a constant increase in number of people using the social sites.Friend Recommendation is one of the most important aspects of the Social networking sites. The social sites recommend friends mainly based on the geographical location of the users or pages they have like in common or based n the number of mutual friends.

The friend recommendation efficiency can be further increased if the people recommended to us have some similarities like us. This helps to get easily attached with the other. If the user recommended to us share similar life style to us means, it will be more helpful to us in many aspects.

The life style of the user will be determined with the help of the activities done by the user in the day to day life. The day to day activities can be helpful in determining the life style of the users. The LDA method is useful in determining the lifestyle of the user with the activities user had given. Then the similarities between the lifestyle of the two users will be calculated. The users with greater similarity will be recommended to each other.

II. EXISTING SYSTEM

People will have different lifestyle when compared with others. It is little hard to know the lifestyle of the users at ease. But it is easy to determine the lifestyle of the user with the activities that they will do in day to day life. The activities of the user will be acquired during the registration of the user. The user needs to answer the few question which will be asked to acquire the activities of the user. The question will be about the activities which will be done by the user in his day to day life. The activities will be stored and evaluated. The answers which each user had given is used to determine the lifestyle of the user. Lifestyles and activities are reflections of daily lives at two different levels where daily lives can be treated as a mixture of life styles and life styles as a mixture of activities. This is analogous to the treatment of documents as ensemble of topics and topics as ensemble of words. The lifestyles of the user will be calculated by using the LDA (Latent Dirichlet Allocation) method. Since LDA is topic modeling method, the life style of the user can be determined.

The day to day activities can be helpful in determining the life style of the users. The LDA method is useful in determining the lifestyle of the user with the activities user had given. The matrix decomposition problem is actually the Latent Dirichlet Allocation model. The Expectation-Maximization (EM) method to solve the LDA decomposition, where the E-step is used to estimate the free variational Dirichlet parameter and multinomial parameter in the standard LDA model and the M step is used to maximize the log likelihood of the activities under these parameters. The "similarity" in activities or topic patterns, there is no need to infer the physical meaning of each cluster center or topic. On the other hand, not revealing the actual physical meaning of activities and topics also has advantages from the perspective of preserving privacy. The life style extraction should be done in a way that it should maintain the privacy of each user.

After determining the lifestyle of the users, the similarity should be found to find the real connection between the users. The lifestyle

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between two users will be used to find the similarity between the users. The lifestyle is divided in two as dominant and non-dominant lifestyle. The similarity will be calculated by comparing the each lifestyle between the two users that makes the life document. Each users life document will be compared with the all other users lifestyle and the count will be noted for each comparison. Based on the similarities between dominant and non-dominant lifestyles, the similarity values will be calculated. This similarity value will not change for a user unless if the changes are made in the activities of the user.

After the calculation of the similarity value, the friend matching graph construction will be drawn. This helps to know the users who has similarity value above the threshold value. The threshold value is administrator generator based on the lifestyle of the users. The connected vertices will show connection between the two user and the vertices which are all not connected will show that the user does not share wide enough life styles. This will give a clear demonstration about the user who have real connection in their life styles.

The user will be recommended with the set of friends who have similarity value greater than equal to the threshold value. The users who will be recommended to other user may not know him in the real world, but they do have in their lifestyles.

III. PROPOSED SYSTEM

The existing system will do the friend recommendation for users who share similar kind of lifestyles. But many users may give the fake data about their lifestyles and it may share a similar relationship with many users and recommendation will be done for them too. This may results in irrelevant recommendation to some users who had given some fake data. These kind of users will not have any kind of impact in other user's life.

The user needs to answer the few question which will be asked to acquire the activities of the user. The question will be about the activities which will be done by the user in his day to day life. LDA (Latent Dirichlet Allocation) method is used to determine the lifestyle of the user with the use of the activities. Since LDA is topic modelling method, the life style of the user can be determined. The "similarity" in activities or topic patterns will not showcase the physical meaning of the user's lifestyle. The life style extraction should be done in a way that it should maintain the privacy of each user.

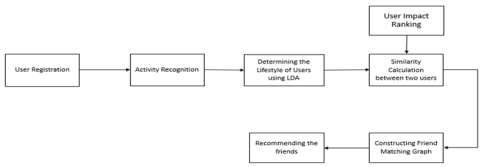


Fig A block diagram for proposed system

Our proposed work is to overcome the difficulties of existing system by increasing the number of friends recommended for a user based on the impact ranking given to the user by the other user. This will reduce the recommendation of more friends for a user who does not have any impact on the other user. The users will give an impact ranking to other user depending on the improvement in the lifestyle of the user by the recommendation of other user. Each user will give a rank to each other user for 5. The rank of each user will be stored and the average value will be calculated for the user. When a new rank is added to a user, it is designed to add the new rank to the average rank calculated before. The rank calculated will be used in the similarity calculation of two users. This will help to have a direct impact in the calculation of the similarities for a user with different user.

The impact ranking which is calculated will be used in the recommendation system by combining it with the similarity calculation. The similarity value will be checked with the threshold value and impact ranking will also be included in that process. If a user who have broad set of lifestyles will have similarity value which is greater than the threshold value for many set of users. But if he does not have impact in the user's lifestyle, it is of no use in recommending many friends to that user. So in that time the impact ranking has its use. Due to less value in impact ranking that user will not be recommended with many friends. This can be done by using the imapct ranking method.

A. Activity Gathering

In Activity Gathering, first we need to classify or recognize the activities of user. The users have to answer the questions to recognize their activities they do in their life. The Questions that are asked will give a clear idea of what the does the user in their life. The answer the user gives will help in find the lifestyle of the users, which will be used for the Friend Recommendation. The

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questions are separated as dominant lifestyle and non-dominant lifestyle questions.

B. Latent Dirichlet

Latent Dirichlet allocation (LDA) is a topic modeling concept based on probability. The basic idea is that documents are represented as random mixtures over latent topics, where each topic is characterized by a distribution over words [2].

The above matrix decomposition problem is actually the Latent Dirichlet Allocation (LDA) model The LDA Decomposition can be done using the Expectation-Maximization (EM) method, where the E- step and M-step will be used to find the variational Dirichlet parameter and multinomial parameter. This will used to increase the activities under each parameter. Then after these method the activity-topic matrix can be derived [3].

The incremental iteration will be more efficient than the matrix decomposition. The incremental iteration will be more efficient than the matrix decomposition. The lifestyle vectors can be changed in case of changes occur in user's day to day activities.

C. Similarity Calculation

The similarity can be calculated based on the similarities between the two users. The similarity of life styles between user i and user j, denoted by S(i,j), is defined as follows:

$$S(i,j) = Sc(i,j) \bullet Sd(i,j)$$

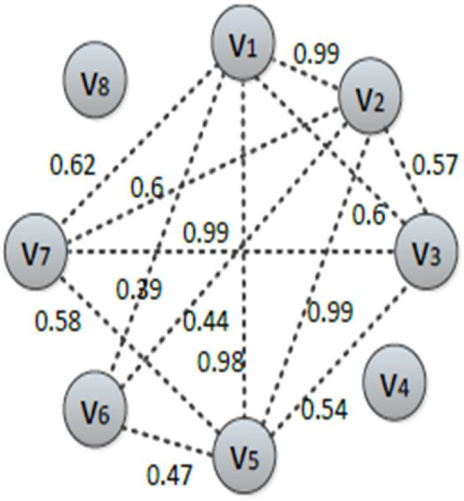
Where Sc(i,j) is used to measure the similarity of the life style of users as a whole, Sd(i,j) is the similarity of users on their dominant life styles[3]. The commonly used cosine similarity metric for Sc(i, j), that is,

$$Sc(i, j) = \cos(Li,Lj)$$

in order to calculate Sd(i, j), we first define the set of dominant life styles of a user.

D. Friend Matching For A User

A threshold value should be maintained for matching the user with similarity. The users with similarity value more than the threshold value. Based on the similarity values calculated, there is an edge linking user i and user j if and only if their similarity S(i, j) >=S_{thr}, where S_{thr} is the predefined similarity threshold. The weight of that edge is represented by the similarity, that is, w(i, j) = S(i,j).



IV. CONCLUSION AND FUTURE WORK

This system helps in increasing the efficiency of the friend recommendation system by giving more relation to the friend who is recommended. This can help the social networking sites. The user impact ranking will further enable in efficient recommendation of the friends to a user. This may reduce the chances of fake data users in the social networking sites. This can help user to have a good

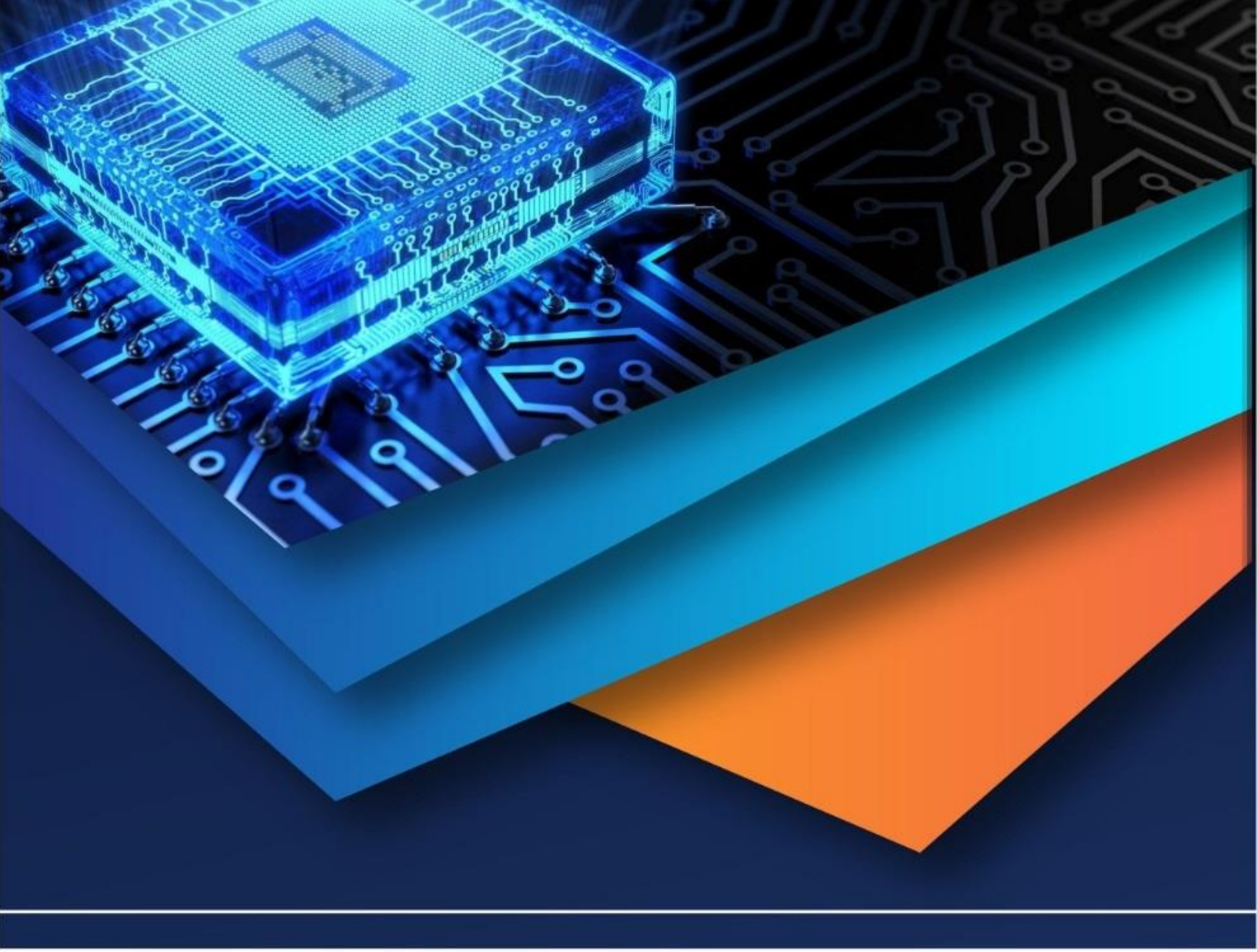
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impact of friend in their life.

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