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Friendbook: An Advanced Friend Recommendation System For Social Networking sites

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***Abstract*—** A couple of years ago, people had a limited social circle. In this century of evolving technology, it has become easier for people to socialize on a large scale via social media. There are several methods in the existing social networking sites where friend recommendation is based on pre-existing relationships like mutual friends, geographical distances, etc. This is not best way to suggest friends based on recent social findings. Hence we have developed a friend recommendation system that recommends friends to the user based on the lifestyle vector. Inspired by Data Mining, this method uses Apriori algorithm to match the websites visited by the users, which is the similarity metric used in this method.

Keywords- *Apriori Algorithm, Lifestyle vector, Weightage calculation*

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I. INTRODUCTION

Friend recommendation is the process of recommending friends to users based on any common relationship among them. One of the popular friend recommendation systems these days that is widely used is Facebook, which relies on mutual relationships to recommend friends. Not all the users who have mutual relationships among them, have similar interests or lifestyles. According to social research people bond with the ones that share common interests and lifestyles. Social networking websites provide a platform for a variety of people to socialize. We use this platform to form a lifestyle-vector (interests like travelling, food, shopping etc) to provide a more efficient and a better way of suggesting friends. Hence we develop a mechanism that tracks their lifestyle, by allowing them to visit websites of their choice on the web browsing interface of the application.

This mechanism calculates the frequent sets of the websites visited by the user, using the Apriori algorithm. To recommend friends, these frequent sets are compared to ensure it satisfies the set threshold. The users are further given the option of sending friend requests to the recommended friends or the other users in the system.

II. LITERATURE SURVEY

A. Friendbook: An Efficient Way to Recommend Friends on Social Networks Through Life-Style[9]

In this paper, Nitish Gaikwad, Ankit Bhanushali, Dheeraj Mishra, Rupali Nirgude introduce a method that takes advantage of sensor-rich smart-phones. Here, Friendbook discovers life styles of users from user-centric sensor data, measures the similarity of life styles between users, and recommends friends to users if their life styles have high similarity. Inspired by text mining, we model a user's daily life as life documents, from which his/her life styles are extracted by using the Latent Dirichlet Allocation algorithm.

B. Friendbook: A Lifestyle based Friend Recommendation System[6]

In this paper, Pooja Tasgave, Amit Dravid propose a method whose main idea is to use the association recommendation algorithm that considers friend recommendations as a filtering problem where it optimizes a set of superiority, appropriate friends customized for each individual while concurrently determining their opinion of friendship. It begins by observing an individual in a social network which is considered to be the central node, U_c. With respect to U_c, it then inspects candidates for possible friendship, i.e., all users, U_i, who are not friends with U_c. First, It Filters U_i using a friends of friends approach and degree centrality to obtain a reduced set of potential friends.

C. Friend Recommendation Through Semantic Based Matching And Collaborative Filtering System In Social Networks[4]

In this paper Varun Jain D J, Dr. M Siddappa present the design of the Friend recommendation through Semantic based matching and collaborative filtering System in social networks. This recommendation system takes the user related data collected from user and by using that data. It constructs the friend match graph using which it recommends potential friends to users if they share similar life styles. It also obtains

the feedback and query from the user regarding certain issues so that it can resolve the issues.

D. A Friend Recommender System for Social Networks by Life Style Extraction Using Probabilistic Method - "Friendtome" [10]

Here, Namrata M. Eklaspur, Anand S. Pashupatimath proposed a framework Friendtome, a novel semantic based friend recommendation system for social networks .This framework that will recommends friends using an efficient algorithm. Here, they have analyzed the structure of Facebook and considered the activities of individuals got some values & computed the score of each individual based on which we have, analyzed and computed to show the percentage of similarity of life styles between users, and recommends friends to users if their life styles have high similarity.

E. Friendbook: A Scalable And Efficient Friend Recommendation Using Integrated Feedback Approach[2]

T. Gayathri Devi and R. Lakshmi, have proposed a method, which uses incremental computation of Page Rank, implemented incrementally (or) distributively for large scale evolving graphs. Additionally, they propose a novel algorithm, Weighted Page Rank algorithm which distributes rank score based on popularity of the pages and it sets a threshold for each edge & it can represent the similarity relationship of friend-matching graph. They have used the Hex Converter to efficiently secure the password of the users. Friendbook returns a list of people with highest recommendation scores to the query user. Finally, Friendbook integrates a feedback mechanism to further improve the recommendation accuracy.

F. Friend Recommendation Method Using Physical and Social Context[5]

Joonhee Kwon and Sungrim Kim propose a friend recommendation method using the physical and social context. This method presents a friendship score combining both spiritual friendship and social friendship. The spiritual friendship is computed by physical contexts and social friendship is computed by social contexts. The spiritual friendship score is computed by a logged context score and an inputted context score. The logged context score is computed using the traditional information retrieval method, BM25 weighting scheme. The social friendship score is computed using distance between friends in the friendship graph.

III. PROPOSED WORK

In order to overcome the disadvantages of the existing systems which use pre-existing relationships, we propose the following work:

We propose a unique similarity metric to characterize the similarity of users in terms of life styles to recommend friends to users based on their lifestyles. To the best of our knowledge, Friendbook is the first friend recommendation system which makes an effective use a user's life style information as the basic requirement for friend suggestions. The proposed system improves the efficiency of friend making by use Apriori algorithm and Weightage calculation.

Apriori Algorithm-

Based on the Apriori algorithm we can find out frequent items (websites visited) of each user. Steps for Apriori algorithm-

1. Find the frequent itemsets: The sets of items that satisfy the minimum support count. A subset of a frequent itemset must also be a frequent itemset.
2. Use the frequent itemsets to generate association rules.

Weightage Calculation-

Weightage calculation is done for every user depending on the lifestyle, sex, age and area, and that calculated weightage is stored in the database. We choose one threshold value, and the stored weightage of user is compared with the weightage of the other user based on the threshold we choose.

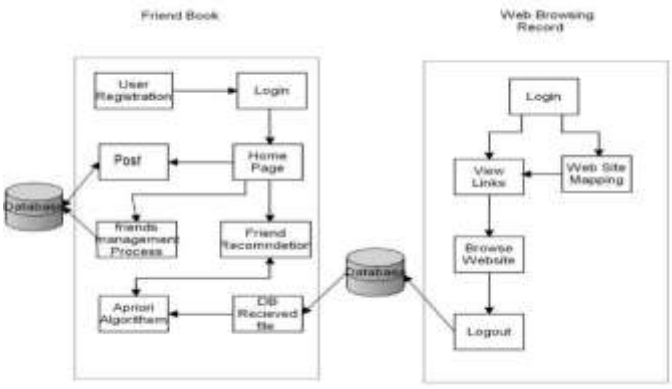

Figure 1. System Architecture

Figure 1, depicts the system architecture which consists of the two applications developed.

1. Friendbook application- provides admin and user operations.
2. Web browsing application- Allows the user to login and browse various websites.

IV. RESULT

The implementation of the proposed idea requires perfect handling of required tools and some basic Java and J2EE programming knowledge. It takes around 3 months for the implementation of this idea. We have developed two applications-

A. Web browsing application, which consist of a user login page and a set of websites which the user can browse.

B. Friend recommendation application, which consists of:

1. User Registration
2. User login
3. Admin login

The following figures would give a glimpse about the work completed.

Figure 2. User logs into the web browsing app

Figure 3. The set of websites in the web browsing app

Figure 2, shows the user login page of the web browsing application.

Figure 3, shows the websites the user can browse. This activity is tracked and stored in the database.

Figure 4, shows the user login page of the friend recommendation application. It also provides the option of admin login in the same page along with the user registration.


Figure 4. User and Admin login


Figure 5. Frequent set calculation

Figure 6. Friend recommendations

Figure 5, shows the main part of the application where the frequent set calculation is done by the admin.

Figure 6, shows the set of friends recommended by the application.

V. LIMITATIONS

The task of grouping the websites and comparing with each user may be tedious. It may not be a secure friend recommendation system, as it not have any method (such as mutual friends) to verify whether the users are legit or not.

VI. FUTURE ENHANCEMENT

It may also result in invasion of privacy. The future work can be concentrated on implementing it on other social networking, and same can be used to build stand alone app and access the user activity through mobile sensors. Friendbook can utilize more information for life discovery, which should improve the recommendation experience in the future

VII. CONCLUSION

The proposed friend matching method is semantic-based instead of conventional keyword-based or relation-based as most existing networks adopt. Better approach to make friends on social networking sites with the benefits of finding friends with common interests and lifestyle. Instead of performing only activity recognition, we further look into the activities to find correlations among them and infer interests of the individual.

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