

A Friend Recommendation System For Social Networks

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Abstract: Existing social network services recommends friends to users based on their similar friends and recommendation is send to other friends. This approach is not sufficient for user's to select a friend. In this paper, friendbook, it is a semantic based friend recommendation system. This recommends friends based on life styles, daily routines and activities. The recommendation of friends' mechanism can be deployed as a standalone app on smartphones. Friends helps to find the mobile phone users finds friends among strangers or within a certain group as long as they share similar life styles. In this paper, a user's daily life is calculated as life documents, where users' different activity styles are observed and taken by Latent Dirichlet Allocation Algorithm. Then similarity metric is proposed to measure similarity of different activity styles between different users, and calculate user's impact with friend matching graph. Friendbook will provide list of people with higher matching scores to query users and recommendation will receive. Then, users' feedback mechanism is introduced to remove the recommendation accuracy. Friendbook is implemented on android based Smartphone's the performance is calculated on both small scale and large scale experiments. Finally, the recommendation results will be shown in the user's preferences while choosing friends.

Index terms: Social networking system, Recommendation.

1. INTRODUCTION

In past years, users made friends with each others who work close to them. This type of friendship is called as traditional way of making friends. The challenges faced with current social networks are that how to recommend a friend to user. Before few years, friends were made on earlier relation among themselves. Previously, FB is based on social limits among them, where recommendation is done to user for friends. But the above method may be appropriate on recent search [3], [5], [6], [7].

Unfortunately, this approach is not useful to find social relations [7],[8],[9],[10].

Based on recommendation system it can be implemented on the existing system of social network. In such above cases, users can get recommendation among unknown or similar life style is found.

In existing life style, there is hundreds of activity, which gives the information of user's life style. In this paper, the word activities provide the action taken by the users such as "walking", "sleeping", or "typing", the phrase is used to define the life style. Here daily life style can be created with live document, where semantic words are used and are observed.

To overcome all the challenges in this paper, we propose a friend recommendation system based on many different phones.

2. PROPOSED SYSTEM

This friend recommendation system provides a client server model, where client side consists a smart phone which contains a user and server side is data cloud.

The client side will perform real time daily activities and it generates a life document on the server side. Every user generates 50mb data every day, so MySQL is used as our low level data storage and hadoop Map reduce as the computing platform.

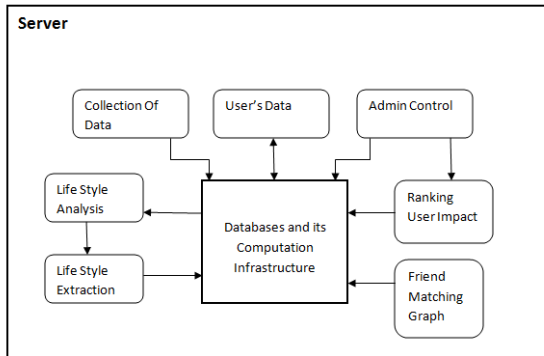
As the user will use our friend recommendation system, so user will use more and more action of the documents based on life styles.

The server side consists different modules to make use of friend recommendation system. The collection of data provides the users information. The life styles of users are extracted from the life style module.

Then further, a similarity of the life styles between the users, then it calculates their impact of activity styles with a matching graph.

When receiving a request, friend recommendation system will submit a list of people with high recommendation scores to the query user. Then it makes a use of feedback mechanism to improve the recommendation accuracy. Then friend-matching graph calculates the impact of user by the user impact ranking. It uses particularly a PageRank [12] which uses a web page ranked list, then users

Fig 1: System Architecture of Friend Recommendation



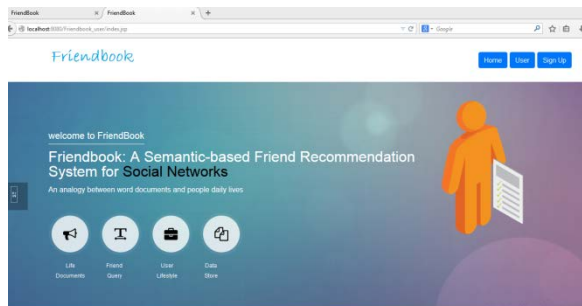
ranking is submitted to friend matching graph by his neighbors’.

The user query module will argue for user query and will send a response to potential users. The feedback mechanism will allow the user for recommendation system which can be given and processed by the feedback control module. Then the accuracy can be improved.

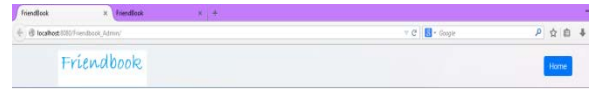
According to increasing computation of PageRank [1],[2], the distribution computation of PageRank matrix vector multiply can be implemented for large scale increasing graph.

2.1 Screen Shots

Home Page:



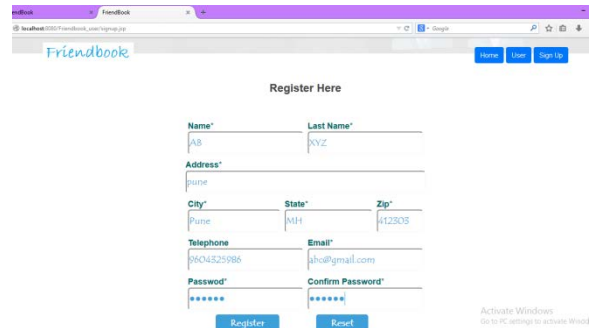
Admin Login:



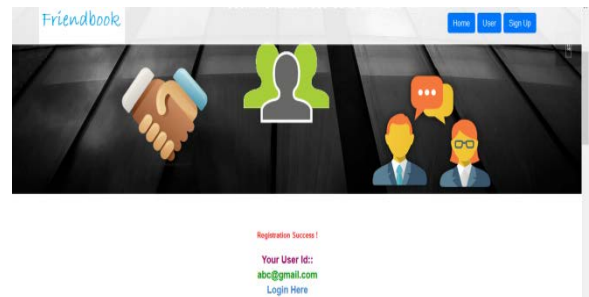
Login for Admin



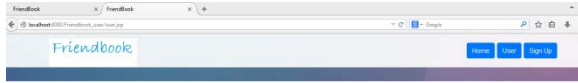
Registration Page:



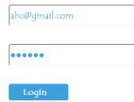
Registration Succes!!!:



User Login:



..login Page for User



3. EXTRACTION OF LIFE STYLES USING DIFFERENT MODELS:

3.1 Life Style Model

Life style indexing model gives the basic of life style and activities at two different levels. In this levels daily life styles are expected. In this model, daily life of users are calculated as life documents and the topics are life styles, the words are calculated as activities. In this model probabilistic topic model are discovered, life styles from the life documents.

In this model we propose a bag of activity which represents his/her life document which consist mixture of words.

By observing $p(w_i | d_k)$ it can be frequently calculated by using bag of activity and life document is represented by d_k .

Life style of users can be calculated using life style vector.

$$L_k = [p(z_1 | d_k), p(z_2 | d_k), \dots, p(z_Z | d_k)].$$

The main purpose of our paper is to discover the life style vector, for given user's life documents In this paper the details of activity recognition are presented first, that are used to calculate $p(w_i | d_k)$. After that decomposition algorithm is used for solving different equation so that, we can obtain life style vector of each user.

Extraction of life style using LDA life documents of user can be calculated by equation one where it can be represented by matrix decomposition problem

$$P(w|a) = p(w|z)p(z|a)$$

where,

$$p(w|a) = [p(w|a_1), p(w|a_2), \dots, p(w|a_n)]$$

Where it is the activity matrix.

Where it contains probability of each activity of each life document.

This particular matrix decomposition probability is same as LDA [3]. We use expectation maximization (EM) method to further solve LDA decomposition, where E-step is used to calculate free variational Dirichlet parameter (7)

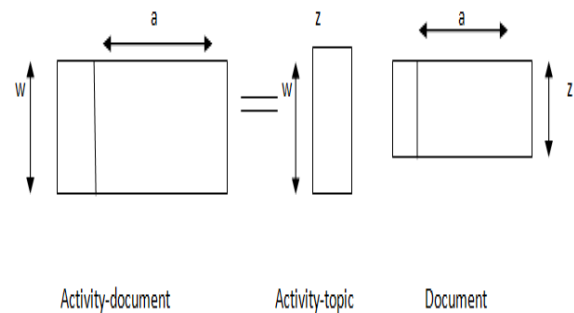


Fig::Matrix decomposition for life styles.

and multinomial parameter Φ in the standard LDA model[10] and the M-step is used to maximize the log likelihood of the activities under this parameter EM algorithm converges, we are able to calculate the decomposed matrix.

Friendbook can obtain the new life style vector for each user. In this our system uses unsupervised algorithms to obtain the activities and different model to discover life styles.

In friendbook, because we are comparing 'similarity' in topic pattern or life style there is no need to know the meaning of each cluster topic.

4. FRIEND RECOMMENDATION AND QUERY SYSTEM:

When user sends a request before that, he/she should have many activities in his/her life document.

The time for collecting data usually takes 1 day if user wants to get more satisfied friend recommendation result we need longer time.

When users request is received the server extract the users life style vector based on which friend recommendation is send to user.

5. FEEDBACK CONTROL MODEL:

To optimize the performance at run time feedback control model is introduce in the friendbook.

The server generates a reply to query then feedback mechanism, is used to measure the satisfaction of users. It provides interface which allow the users to rate friend list.

In this system user feedback is considered to improve the accuracy of future friend recommendation.

6. CONCLUSION:

In this paper the implementation and design of friendbook is presented where a semantic based friend recommendation system is provided for social network.

This recommendation of friend is different for different social network, friendbook extract life styles from user center data which is collected from sensors on different smart phones and recommendation is send friend to users. If similar life styles are shared. Friendbook can be implemented an Android based Smartphone's. This system results shows the recommendation accurately which reflects the preferences of user in choosing friend.

Actually we expect to incorporate friendbook into existing social services, so friendbook utilizes more information to discover life to improve recommendation experience in the future.

References

- 1] B. brahmani, A. chowdhury, A. Goel. Fast incremental and personalized pagerank. Proc. of VLDB Endowment, vol 4, pages 173-184, 2010.
- 2] P. Desikan, N. Pathak, J. Srivastava, and V. Kumar. Incremental page rank computation on evolving graphs. Proc. of WWW, pages 1094-1095, 2005.
- 3] N. Eagle and A. S. Pentland. Reality Mining: Sensing Complex Co- cial Systems. Personal Ubiquitous Computing, 10(4):255-268, March 2006.
- 4] J. Kwon and S. Kim. Friend recommendation method using physical and social context. International Journal of Computer Science and Network Security, 10(11):116-120, 2010
- 5] M. Tomlinson. Lifestyle and Social Class. European Sociological Review, 19(1):97, 2003.
- 6] Z. wang, C. E. Taylor, Q. Cao, H. Qi, and Z. wang. Demo: Friendbook: Privacy Preserving of Friend matching on Shared Interest. Proc. of ACM SenSys, pages 397-398, 2011.
- 7] I. Ropke. The Dynamics of Willingness to Consume. Ecological Economics, 28(3):399-420, 1999.
- 8] A. giddens. Modernity and self identity: Self and Society in the late Modern Age. Stanford Univ Pr, 1991.
- 9] I. ropke. The Dynamics of Willingness to Consume. ecological economics, 28(3):399-420, 1999.
- 10] G. Spaargaren and B. Van vliet. activity Lifestyles, Consumption and the Environment: The ecological modernization of domestic Consumptions. Environmental Politics, 9(1):50-76, 2000. [30] M. Tomlinson. Lifestyle and Social Class. European Sociological Review, 19(1):97-111, 2003.