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ACQUAINTANCESHIP: A SEMANTIC-BASED FRIEND RECOMMENDATION SYSTEM FOR SOCIAL NETWORKS

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ABSTRACT
In this paper a novel semantic-based friend recommendation system for social networks, which recommends friends to users based on their life styles instead of social graphs. By taking advantage of sensor-rich smartphones, 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.

INDEX TERMS – *Latent Dirichlet Allocation algorithm.*

1. INTRODUCTION

Existing social networking services recommend friends to users based on their social graphs, which may not be the most appropriate to reflect a user's preferences on friend selection in real life. In this paper, we present Friendbook, a novel semantic-based friend recommendation system for social networks, which recommends friends to users based on their life styles instead of social graphs. By taking advantage of sensor-rich smartphones, 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. We further propose a similarity metric to measure the similarity of life styles between users, and calculate users' impact in terms of life styles with a friend-matching graph. Upon receiving a request, 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. We have implemented Friendbook on the Android-based smartphones, and evaluated its performance on both small-scale experiments and large-scale simulations. The results show that the recommendations accurately reflect the preferences of users in choosing friends.

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2. LITERATURE SURVEY

Bian [2] proposed an online friend recommendation based on personality matching and collaborative filtering. An automated collaborative filtering sy stem that recommends friends to users on Facebook by analyzing and matching user's online profile with the profile s of TV characters is utilized. The goal is to leverage the social information and mutual understanding among people in existing social network connections and produ ce friend recommendations based on rich contextual data from people's physical world interactions using relation ships in TV programs as a parallel comparison matrix. It proje cts these relationships into reality to help people find friends whose personality and characteristics have been voted to suit them well by their social network. This system also encourages more TV content viewing by using the social network context and connections to provoke people's curiosity of TV characters whom they have been matched with in their social network. The system recommends friends to Facebook users based upon the TV characters they have been matched with. Fig. 3 depicts the relationship schema in a more visual way.For example let the Facebook users be X and Y. The TV characters be M and N .To recommend Y as friend of X the following steps are followed.

'Facebook user X has m atching personality to TV character M according to fr iends ranking', 'Facebook user Y also ha s matching personality to TV character N according to friends ranking',and if TV character M and TV cha racter N are friends in the same TV show, then the sys tem recommends user X to become friend with user Y, if user X and user Y are not already friends on Facebook. The main advantage of the system is it uses social networking site information and mutual understanding among u sers. Personality matching provides more contextual informati on about the recommended friends. The disadvantag e is that this application is limited only to TV shows [2].

Naruchitparames [3] proposed a friend recommendation system based on and genetic algorithm and network topology. It is based on link reco mmendation approach. There are various attributes like location, age, religion, language, general interests, educati on which are extracted from the user profile. There are two step filtering process using friends of friends (FOF) and Pareto optimal genetic algorithm. It applies filter which will throws irrelevant individuals using complex networ k theory before applying genetic algorithm. The attributes that follows the friendship

criteria is extracted from the user profile. A social graph is created where n odes are users. Then filter based on friends of friends is used t o decrease number of potential friends. Hence those friends are chosen from the graph that have more outlinks and fitness value is found for each of the friends and is iterated for few generations. The sorting in descending order of fitness value is done. Top ten results are provided which will be shown as recommended friends. The advanta ge is that the network based approach consistently performs better than the social based approach. Another merit of th is approach is that it also ensures the likelihood of a person pursing a friendship of someone they know than someon e they do not know.

3. PROPOSED SYSTEM

A novel semantic-based friend recommendation system for social networks, which recommends friends to users based on their life styles instead of social graphs.

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.

Similarity metric to measure the similarity of life styles between users, and calculate users.

We integrate a linear feedback mechanism that exploits the user's feedback to improve recommendation accuracy.

Methodology

processing: Login/Signup

New User:New users will register and the existing users will directly login into the system

Find the life style: In the user's profile their lifestyle is discovered from the set of interests then **Lifestyle Discovery**

Friend suggestion: Similarities will be generated and using that friend suggestion will be made

Send the Recommendation: Friend Recommendation

Accept: If the user accepted the request they can chat through messenger

Convacation: Chat &Location

Algorithm Used for friendbook:

Step 1: Login/Signup

Step 2 New users will register and the existing users will directly login into the system

Step 3: In the user's profile their lifestyle is discovered from the set of interests

Step 4 Lifestyle Discovery

Step 5 Similarities will be generated and using that friend suggestion will be made

Step 6: Friend Recommendation

Step 7: If the user accepted the request they can chat through messenger

Step 8: Chat &Location

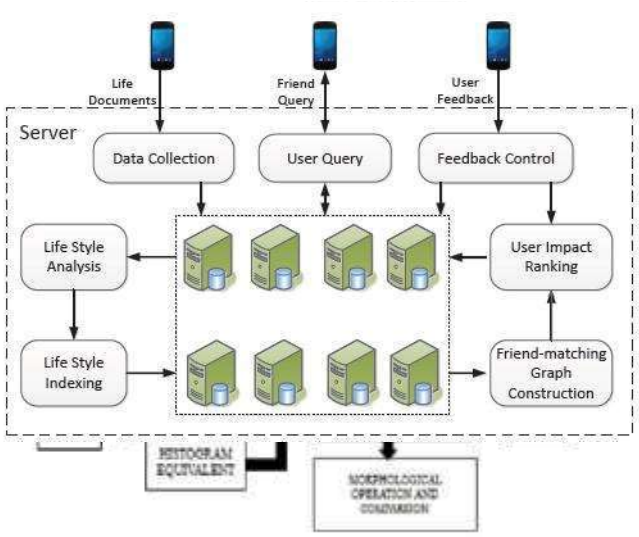

Fig 1:Block Diagram

Schematic of the Study

Similarity Calculation Based on A ttributes from User Profile

In most recommendation system, similarity among users is estimated based on the at tributes gathered from the user profile. This explicit mechanis m becomes more expensive.

Use of Social Graph for Friend R ecommendation

It means that the existing system recommends a friend based on mutual friends. This do es not reveal users' choices about their friend selection in rea l life. Recommending friends based on the user life styles prove to be more realistic.

Privacy Issue

It is important for users to keep their sensitive information safe. It should not do informat ion leakage.

Reliability

All The recommendations methodologies discussed above have not dealt with reliability. There is doubt whether the friends recommended by the system are reliable or spam.

Performance

There will be an effect on performance of the system with increasing load in the social ne twork. So the main goal of researchers who work in this field w ill be to secure the privacy of user. Several new techn iques should be introduced in order to improve the performance and reliability of the system. For that more sensors like accelerometer; gyroscope should be used to capture different life styles of the users.

Latent Dirichlet Allocation (LDA) Model

Latent Dirichlet allocation (LDA) is an example of a topic model and was first presented as a graphical model for topic discovery by Blei et al in 2003 [12].It is a generative model that allows sets of observations to be explained by unobserved groups that explain why some parts of the data are similar. For example, if observations are words collected into documents, it posits that each document is a mixture of a small number of topics and that each word's creation is attributable to one of the document's topics. It is a generative

probabilistic model of a corpus. The basic idea is that documents are represented as random mixtures over latent topics, where each topic is characterized by a distribution over words.

Extraction of Lifestyle using Probabilistic Topic Mode

The probabilistic topic model can find out the probabilities of topics in the given documents. Similarly probabilities of hidden life style can be discovered from life documents. In this model probabilities are depend on frequency of vocabulary as different frequency of words denotes their information entropy variances. The bag of activity model is described to replace the original sequences of activities recognized based on the raw data with their probability distributions.

Gradient Magnitude Formation: Gradient is termed to be an increase or decrease in the property of an object. By means of using the Sobel edge masks, imfilter and some simple arithmetic the gradient magnitude is formed. The gradient is high at the borders of the objects and low (mostly) inside the objects.

Watershed Transform: The term watershed refers to a ridge that divides areas based on different pixel intensities followed by converting into RGB image with unique labeling based on intensity values.

Marking the Foreground Object: A variety of procedures such as "opening-by-reconstruction" and "closing-by-reconstruction" to "clean" up the image and finally "opening-closing by reconstruction" are performed .

4. RESULTS AND DISCUSSION

In future we can embed this as a part of other social networks, such as Twitter, Facebook, etc ..,

And make video conversations with our friends in the future,Then expand our lifestyle choices which would help us meet more people, interact with them and share their wisdom.

5. CONCLUSION

Thus the user can add friends to their friendbook based on their lifestyle and can have a conversation with them and view their location.This application helps us widen our social circle by adding friends based on our lifestyle and not personal graphIt is user friendly and it helps the user in enhancing his/her life skills

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