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A Linguistic-Based Acquaintance Suggestion Arrangement for Public System

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ABSTRACT: The present social networking sites like as LinkedIn, Twitter and Face book, furnish friend suggestion services to users based on people they already know, trade position, and literacy information. The suggestions furnished this way, sometimes may not be the most appropriate to express user's predilection on friend selection. Hence, it is essential to introduce a Friend Suggestion System in order to recommend friends to the users based on their daily routines. A Linguistic-based acquaintance suggestion arrangement for public system is an application that exhibits a proposition to users by discovering their life styles from smart phones. The sensor's such as accelerometer, gyroscope, GPS and camera are outfitted with modern smart phones. User's daily routines are trapped by using these sensors. The trapped information's are processed and user's life styles are excerpted with the help of text mining algorithm called as Latent dirichlet allocation. Further, user's life style similarities are measured by similarity metric. User impacts are calculated with friend matching graph. Finally, the application provides a list of person with highest suggestion scores to the query user. A feedback control system is integrated, to improve the accuracy of the application.

Keywords: Social network,Friend recommendation,Life activities,Sensor,Latent dirichlet allocation.

I. INTRODUCTION

The people made friends with someone, based on their working and living place, in olden days. It is called as geographical location-based friends. But, now a day the people made friends with someone using social networks. The current social network sites have grown in great popularity and have invited enormous numbers of users and play a considerable role in online interaction. Most, of the social networking services like as LinkedIn, Twitter, Face book and Google+, which depend on pre-existing user relationships. It suggest friends to users based on, people they already know. But the friend suggestions furnished this way, sometimes may not be the most appropriate to show user's predilection on friend selection. Hence, recommending good friends to user is a challenging task.

Different ways are used to group people (or) made friends with someone on social sites. Some of them are (1.Custom, 2.Discernment, 3.Attitudes, 4.Trade position, 5.People they already know, 6.Economic status). All of these, discernment and people they already know are the most intuitive factors for friend selection. But, custom is not comprehensively used by most of the social networking sites. Because, the user's life style activities are complicated to handle. Rather, user's life styles are correlated with their routines. Therefore, it is possible to collect daily activities of user then we can suggest new friends based on similar habits.

So, this system, a linguistic based acquaintance suggestion arrangement for public network, which recommend friends to user's based on their daily routines. The current smart phones are outfitted with GPS, Magnetometer, and Microphone. Mobile phone is used to sense the surrounding. And, context and context level information are extracted with the help of smart phones. User's life style activities are excerpted by smart phones. Using the term life style activity, to represent the actions such as running, jogging, office work, prayer and shopping.

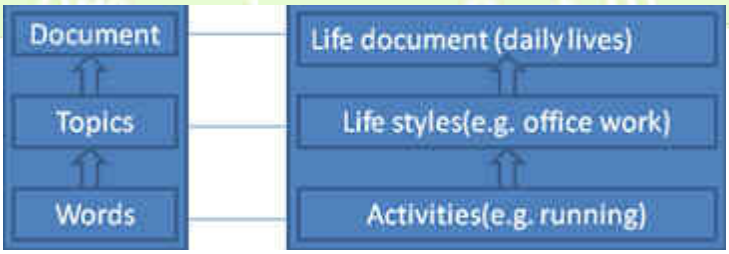

Fig. 1 An analogy between word documents and people's daily lives

User's day to day activities and documents related analogies are created. The analogy is used to model the daily routines. These activities are used to build the life documents of user. Also, activity recognition is performed. And, the generated life

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activity documents are reported to server by client. The seized details are processed and user's life styles are excerpted by probabilistic topic model. Further, user's life style similarities are measured by using similarity metric. User's impacts are calculated with friend matching graph. Then, the application gives a list of person with highest suggestion scores to the query user.

II. LITERATURE REVIEW

The social networking applications such as Face book, Twitter and Google+ recommend friends to users based on people they already know. Here, most of a people to catch friend candidates based on pre-existing user relationships [1]. Amazon suggests items to user depend on items previously visited by user, and items that various users are searching for [2].

Bian and Holtzman presented a system called Match maker. This technique is proposed to examine and compare the location, Trade position and Literacy information of person's profile data and television character profile details. It recommends good friends to users based on, the combination of personality matching and notable characteristics of an individual. TV content viewings are motivated by match maker. Here, network ranking algorithm is used to ensure the performance of data. User relationships are also authenticated with the help of network ranking algorithm. But this method is not good for comparing data and making connections [3]. Smart phones are used to gather the day to day location driven activities of user. Probabilistic topic model is used to determine and investigate the regular activities of humans. Also, the collected documents are viewed as combination of topics, by using LDA. Depend upon the location, it describes both individual and group manner. However, once the person is resting at the same place, it could not ascertain the day-to-day activities of that person [4].

Social Friends Visualization method is used to investigate and determine the friends with various attentions. First, the user's various interest based information's are extracted and then reflected using the tag network. With the help of tag network this approach helps users to search potential friends having similar attention. Tag tree exploration and interaction, social network exploration and interaction methods are supported by social friend visualization. Here, the first method is used to describe about context information. Second, method is used to indicate the direct friend. But this method has some user restrictions. However, it can't allot some persons to any group in a tag network, because they do not have any tag details [5].

Kwon and Kim presented a friend recommendation method, which uses the physical and social context to recommend friends. First the friend recommendation score is determined by using physical context, and then reckoned by social context. Both friend recommendation scores are mixed, and suggest friends to users based on scores [6]. User's daily routines, abnormal events, disposition, encompass are seized by using the method cenceme. Here, the sensing presence is shared by users with their chums. Life pattern information's are provided to user with the help of this method. The system is built on sensor equipped mobile phones and gives a list of services to user [7].The distinct and correct picture features are excerpted by using feature based picture searching method. The features are matched by server. Also, potential friends are matched with the help of comprehensive centralized system. This approach suggests good friends to users, based on the resemblance of images captured by users. But this method is not secure [8].

Cyber-physical social network is the combination of social network and sensor data. Transform raw and noisy GPS data to meaningful form by using GPS pattern extraction method. This method extracts the user data from mobile. Also, users are allowed to store and share their locations. Mobile devices are used to gather the trajectory. The real life friends are discovered by geo friend. People's social interaction and correlations are described by GPS pattern sets. Determine the similarity between the users with the help of random walk score method [9].

GPS data's are used to capture the transportation mode of users. Every GPS trajectory is divided into isolate segments of various transportation modes by using the method of change point based segmentation. The elaborate features are identified from each segment. The segments of various transportation modes are classified by using a generative inference model. Change points are grouped by density based clustering algorithm. To further, improve the performance of inference, the graph based post processing method is incorporated [10]. New personalized recommendation framework is used to determine the different user's interests. The similarities between the user's interests are calculated. Finally, the user with highest similarity is recommended as friend. But some information losses, due to complex network environment [11].

Mobile phone with built-in GPS receiver and accelerometer is used by convenient classification system. User walking, running, biking modes are captured by using this method. Here, our goal is to determine the outside activities of a human [12]. The temporal regularities and activity smoothness are captured by HIDDEN MARKOV MODEL. The combination of

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discriminative and generative classifier is used, to model the human activities. It also, produces smooth and accurate outputs. This approach lays out various directions for recognizing the human activities automatically [13].

Vehicle routes, stops and schedules are discovered from GPS traces. At a given time, vehicles served routes are determined and its arrival times are ascertained by using online algorithms. Routes and schedules are automated and adjusted by easy tracker. Without manual interruption, the exact transmit tracking, and arrival times are predicted using easy tracker. It also degrades the one time and recurring costs of real-time transmit tracking system. But some error has occurred, due to GPS noise. Traversed road segment details are explained by road shape files. Each route stops are arranged in traversal order. Also, active vehicles are used to construct the route maps for understanding the next movement of vehicle. [14].

Bag of multi modal behavior is used to incorporate location and interaction. Here, the probabilistic topic model is used to extract the human activities. Also, missing sensor data is captured with the help of this method. Bluetooth sensor data is used to capture the human proximity. And, cell phone tower connections are used the human location. Moreover, the meaningful human activity details are mined, by the integration of human proximity and their location [15]. Link structure analysis and content analysis are combined by hybrid system. The combination of structure and contents are supported by this framework. LJ miner mechanism is developed by hybrid approach. Here, friends are differentiated from non-friends by using LJ miner. Compared to Live Journal it provides high accuracy. It produces strong positive results [16].

In general graphs, the page rank is computed by fast random walk based distributed algorithm. On round complexity the strong bounds are proved, by using this algorithm. An undirected graph, the rounds are taken by faster algorithm. The page rank values of directed and undirected graphs are estimated by simple-page-rank algorithm. Undirected graphs page rank values are calculated by using improved page-rank-algorithm. Poly logarithmic bits are required by improved page-rank algorithm. 'N' number of bits are processed and sent per round [17].

III. PROPOSED SYSTEM

In proposed system, friends are suggested to user based on their daily life styles. It shows the user's predilection on friend selection. Figure 2 shows the system architecture of friend suggestion system. It consists of client and server side. The client is a smart phone equipped with sensors. The main aim of client is to first register with the application and gather the raw sensor data and send it to server for preprocessing. The server side performs preprocessing, activity recognition, life style excerption using LDA algorithm and calculate similarities between the users using life style information. The server performs median filtering on raw data to remove outliers and K-means algorithm for activity recognition.

Here, the user's daily routines are excerpted by smart phones. The precious sensor's such as accelerometer, GPS and gyroscope are outfitted with modern smart phones. With the help of these sensors, human life styles are ascertained. The probabilistic topic model is used to extract the user's life style. It discovers the hidden life style from user's life document. And, user's similar life style activities are measured by similarity metric. Friend matching graph is constructed, from user's impact calculation. Friend matching graph, contain two factors, such as edge connection and edge weight. Finally, the application gives a user list with highest suggestion scores to the query user. At last, the feedback control mechanism is incorporated, to further improve the accuracy of friend suggestion. It helps the mobile user's to check whether the person is stranger or within a similar group.

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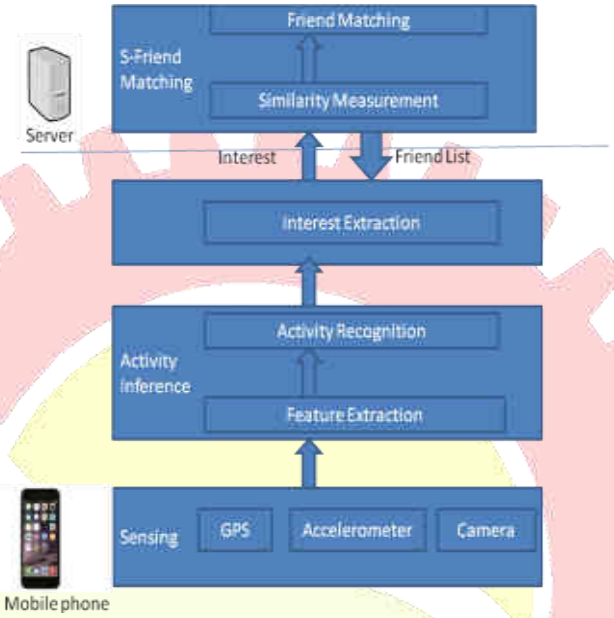

Fig. 2 System architecture

A. Data collection

User's daily activities are discovered by smartphones.The sensors such as accelerometer, magnetometer, GPS and mocrophone are outfitted with these smartphones. These sensors are used to capture, user's daily activities such as walking, jogging, shopping and office work. Real time activity recognition is performed and life documents are reported to server.Activity classifier is used to perform the activity recognition. Each day 50 MB raw datas are collected from each user. Here, Hadoop map reduce is used as computation framework.The collected informations are distributed to each user's mobile, after the successful implementation of activity classifier.

B. Life style analysis

Users life styles are excerpted by using Latent Dirichlet Allocation algorithm. Underlying topic probabilities of given documents, are ascertained with the help of probabilitc topic model. From life documents, the hidden life styles are determined by topic model. Here, the bag-of-activity model is used to replace the original activity sequences with probability values. the database contains the user's life styles in the form of (lifestyle,user). Reverse index table is used to speed up the query and recommendation process. Computation overheads are reduced by reverse index table.

C. Similarity calculation

Cosine similarity metric is used to find the similar interest between the users. Let

$$L1 := [p(z1|d1), p(z2|d1), p(z3|d1) \ldots p(zt|d1] \text{ and}$$

$$L2 := [p(z1|d2), p(z2|d2), p(z3|d2) \ldots p(zt|d2]$$

Where z represents the user lifestyles and d represents the document. Therefore, the similarity of habits between user1 and user2 is denoted by:

$$Sim(u1,u2) := \cos(L1,L2) \qquad (1)$$

D. Friend matching graph

User's life style similarities are represented by friend matching graph. It is a weighted graph G=(V,E,W), where V represents the users and E represents the edges. There is an edge e(i,j) linking user i and j, if and only if therir similarity score is greater than thershold value.

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E. Friend recommendation

Large data values would be needed ,if the person expects to gain more satisfied friend suggestion results. User's life style vectors are extracted by the server, after receiving the request from user. User's preference is the main creteria for friend selection. Some user, expects the friend recommendation with high impact, while some other expects similar life styles.

F. Feedback control

Finally,the feedback control mechanism is incorporated. This module helps to improve the performance of friend recommendation process.The server gets the user query, and generate response after processing the query. Now,the user's satisfactions are measured by user intetrface.

IV. EXPERIMENTAL RESULT

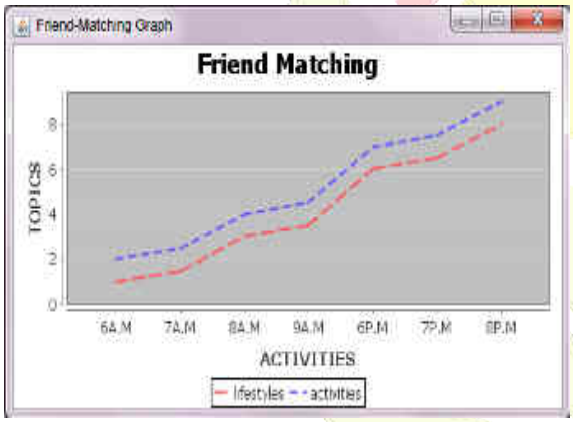

Fig. 3 Friendmatching graph

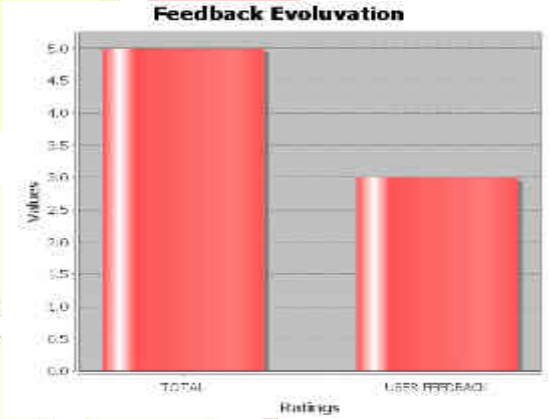

Fig. 4 Feedback Evoluvation

V. CONCLUSION

Most of the social networking services, which rely on the pre-existing user relationships. "A Linguistic based acquaintance suggestion arrangement for public network" is a mechanism, where the friend recommendations are furnished based on the daily routines of user's. In this application, user's day to day activities are seized by sensors, and friends are recommended to users, based on their similar life styles. The proposed application is implemented and performances are evaluated on Android-based smart phones. The results expressed that the friend suggestions, precisely reflect the user's predilection on friend selection.

Beyond, the present scheme the future enhancement can be three fold. First, LDA and iterative matrix-vector multiplication methods are used to extract the user life style and reckon user impact. Second, plan to conduct the experiment using different similarity threshold. Because, fixed similarity threshold is used in this experiment. At last, to plan integrate more sensors on smart phones. And, wearable devices are used to trap the meaningful life activities of user.

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