

Social Network Based Friend Recommender System

Mukesh C. Warade^{1*}, Mustak B. Bagwan², Suraj M. Marathe³ and Sweta Pandey⁴

^{1,2,3,4} Department of Information Technology, SSBT'S College of Engineering and Technology, Jalgaon, India

www.ijcseonline.org

Received: Feb/22/2015

Revised: Feb/28/2015

Accepted: Mar/24/2015

Published: Mar/31/2015

Abstract— Earlier, we make friendship with our neighbors, colleagues based on geographical area. This is the traditional method of making friends. With the evolution in Internet, a social network comes in existence for connecting with distant people and friends for communicating with them. Existing social network uses social graph and pre-existing relationship between users for recommending friends to user. Such as Facebook uses mutual friends that is friends of friend for recommending friends. This may not be most appropriate method for recommending friends and selection of those by user in real life. We are presenting Friendbook, a social network based friend recommender system, which is based on semantic-based friend recommendation for friend recommendation. Friendbook recommends friends based on users life-style not on social graph. Friendbook discovers the life-style of user, using the user centric data, by taking the advantage sensor rich smart-phones. We model user's daily life as a life document and extract his/her daily activities inspired by text mining through life document by using Latent Dirichlet Allocation Algorithm. We proposed similarity metric to measure the similarity of life styles between users. Friend matching graph is constructed based on impact ranking which is calculated in terms of users' life style. Friendbook returns a list of people with highest recommendation scores to query user. We also integrate feedback mechanism with Friendbook to improve the accuracy of recommendation. The result reflects recommendations preferences of users in choosing friends accurately.

Keywords— Life Styles, Life Document, Recommendations, Impact Ranking.

I. INTRODUCTION

Earlier, before the introduction to Internet and social networks, we pick friends from our colleagues, neighbors and area where we live or workgroup & so on. This is traditional method of making friends. Choosing a good friend is a critical task for people. Selecting friends from where we live are called as G-friends that are Geographical Location Based friends. Generally, we make friendship with people, whose thoughts are matching with our thoughts, and lifestyles. After the introduction of social networks, with evolution in Internet, people want to connect with distant and also with unknown people for communication and sharing of information among them.

The existing social network has the challenge how to recommend good friends to user. Most of them use the pre-existing relationship between the users. The existing social networks such as Facebook, twitter, Google+ uses revolutionary ways to recommend friend. But most of them rely on pre-existing relationship between the users, such as Facebook recommend friends based on common friends of user i.e. mutual friends i.e. friend of friend. But the question arises when we think to choose a new good friend, that we don't know, and then this existing social network fails. So unfortunately this approach is not appropriate [3].

So we proposed, "A Social Network Based Friend Recommender System" which recommends friends to a query user on the basis of following rule: 1) habits or life styles, 2) attitude, 3) taste, 4) Moral standard, 5) Economic level, 6) People that we already known [1]. Rule #3 and

Rule #6 are mostly used by the social networks. Rule #1 is most intuitive, is not widely used, since users life styles are difficult, it is not possible to capture through web actions. These life styles are usually correlated with user's daily routine and user's daily activities. This can match good friends based their similar life styles. We can analyze the user activities using wearable devices and sensor and wireless network. We deploy this recommendation mechanism as a standalone app on smartphones or as add-ons to existing social network frameworks to recommend good friends.

In our daily life, we perform various activities with meaningful sequences, such as talking, walking, sitting, playing and so on. We use the word 'activity' for any specific action taken, and the phrase "life style" for higher level abstraction of user lives such as user's location where he/she usually used to go, which place his/her is favorite or he/she daily visits, what shopping he/ she does, that vehicle he/ she used for travelling, these all or activities user performs daily in his or her life, which decides his/her life style. By using this rule, friend recommendation may be perfect. There is a thought in English that, if two persons have similar life style, attitude, and taste then they will become good friends.

We are using the advantage of sensor rich smart phones, which recognize the user's daily routine activities. Various sensors are embedded on the smartphones such as GPS, microphone, Camera, gyroscope, accelerometer, and so on. Thus smartphones can be used not only for communication, but also for extracting the contexts of user

and its life style using these sensors to build user's life document. A life document is the set of user's daily life activities.

But the problem is that, "How to recognize the user activities by using data sensed by sensor data?" Since the data sensed by sensor contains the noise and ambiguity, that contains the user daily activities and surrounding noise [2]. The sensor data is in the form of electronic signals. So to recognize user's activities, we apply signal processing to remove ambiguity of the data, and pattern matching to recognize user activities and analyze the activities. The set of user daily routine activities collected together in the form of life document. We build the life document by gathering the activities. And then this life document is transmitted to server.

On the server system, data collection is done through life document. User's lifestyles are extracted from the user life document. After data collection, user life styles are sent to life style analysis, where user life styles are analyzed, such as where he/she usually go, what he/she do and so on. Based on life style analysis, indexing of user life style is done in lifestyle indexing module. A friend matching graph can be constructed from life style indexing. Using friend matching graph, user impact ranking is calculated.

We define a similarity metric, which measures the similarities between life styles of user to recommend friends to its user with highest score of similarity metrics. When any user query for friend recommendation, Friendbook returns a list of people that can become his/her good friend based on similarity metric and impact ranking. We also integrate feedback control mechanism to improve the accuracy of friend recommendation of our system. The feedback is in the form of recommendations accepted or rejected by the user. Based on feedback, the accuracy of new recommendations is improved than previous recommendations.

II. SYSTEM OVERVIEW

In this paper, we proposed a "Social Network Based Friend Recommender System". For this, we use client server communication. We are using smart phones as a client system and Apache tomcat with MYSQL database as a server system.

On client system, we have to install our Friendbook application that will communicate with our server. We take input from user, and also some inputs from sensors of smart phone to collect the user data. After collecting data from user, the data is sent to the server system.

On server system, we analyze the data collected from user system and make life document for each user. Based on life style analysis, we do life style indexing, to construct friend matching graph for giving recommendations to user. Based on friend matching graph,

we calculate impact ranking for user. We also integrate feedback control mechanism with the system to improve accuracy of recommendations. Feedback is based on which recommendations are accepted and rejected by the user.

A. SYSTEM ARCHITECTURE

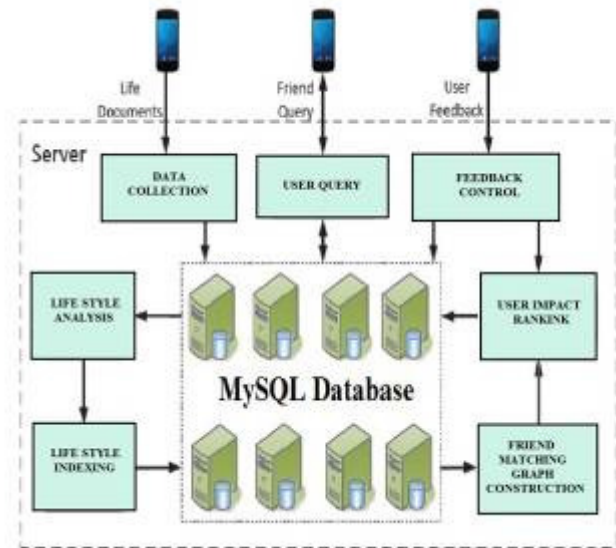


Fig. Architecture of Friendbook Server

B. SYSTEM FLOWCHART

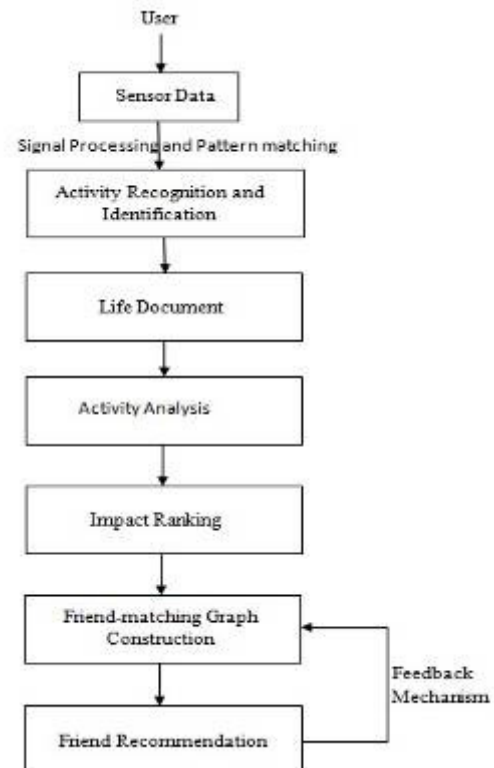


Fig. Flowchart of Friend Recommendation

III. CONCLUSION AND FUTURE SCOPE

We developed an android app which recommends friends to user on the basis their life styles rather than traditional method of friend matching such as geographical location based friends.

This app takes advantage of sensor rich smart phones. Friendbook extracts user-centric data from sensor's of smart phones and from user input. In this way, data is collected from users. After calculating impact factor, on receiving the query from the receiver, Friendbook returns list of users to recommend friends with similar impact ranking based on similarity of life styles. The recommended friends will be good friends in their life.

As it is a small scale system, we would like to develop our system on large scale and also we have to make matching on more accurately by applying more technologies and new algorithms. Also we would like to extend in Friendbook, chatting, sharing of data facilities. We would like integrate this module with existing system on large scale.

ACKNOWLEDGMENT

We would like to thank our Mr. S. J. Patil Sir, Head of Department, Principal and North Maharashtra University for their constant support and encouragement.

REFERENCES

- [1] ZhiboWang, Student Member, IEEE, Jilong Liao, Qing Cao, Member, IEEE, Hairong Qi, Senior Member, IEEE, and Zhi Wang, Member, IEEE "Friendbook: A Semantic-based Friend Recommendation System for Social Networks", IEEE 2014 .
- [2] Christian Vollmer, Horst-Michael Gross, and Julian P. Eggert. Learning Features for Activity Recognition with Shift-invariant Sparse Coding, Proc. 23. Int. Conf. on Artificial Neural Networks (ICANN 2013), Sofia, Bulgaria, LNCS 8131, pp. 367-374, Springer 2013.
- [3] A. Giddens. Modernity and Self-identity: Self and Society in the late Modern Age. Stanford Univ Pr, 1991.

AUTHORS PROFILE

Mr. Mukesh C. Warade, UG student, Department of Information Technology, Shram Sadhna Bombay Trust's College of Engineering and Technology, Bambhori, Jalgaon.

Email: warademukesh@gmail.com



Mr. Mustak B. Bagwan, UG student, Department of Information Technology, Shram Sadhna Bombay Trust's College of Engineering and Technology, Bambhori, Jalgaon.

Email: mustaqbagwan007@gmail.com



Mr. Suraj M. Marathe, UG student, Department of Information Technology, Shram Sadhna Bombay Trust's College of Engineering and Technology, Bambhori, Jalgaon.

Email: surajmarathe1@gmail.com



Miss. Sweta Pandey is an active researcher in the field of image processing, currently working as Assistant Professor in Department of Information Technology at SSBT COET, Jalgaon India. She has done her BE IT from Apeejay College of engineering, Gurgaon, M. Tech from Banasthali University (Rajasthan) and undergoing PhD from Banasthali University (Rajasthan), India.

Email: shwetapandey806@gmail.com

