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A Friendbook Recommendation System for Social Networks

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Abstract - Existing social networking sites like Facebook, Google+ etc. recommend friends to their users supported by their tastes and people they already perceive, that can`t replicate users' reality preferences on friend selection. In this paper, we present a life style primarily based on friend recommendation system for social networks that recommends friends to users supporting their life designs rather than social graphs. By exploiting sensor-rich smartphones, this technique makes an endeavor to derive life kinds of users by exploitation data obtained from sensors that's terribly user-centric. It, in addition measures the similarity of life styles between users, and recommends friends to users if their life styles have high similarity. It permits users to talk with friends. Galvanized by text mining, we tend to model a user's manner as life documents; from that his/her life designs area unit are extracted by exploitation the Latent Dirichlet Allocation formula. We tend to additional propose a similarity metric to live the similarity of life designs between users, and calculate user's impact in terms of life styles with a friend-matching graph. Upon receiving asking, system returns an inventory of people with highest recommendation scores to the question user. Finally, this model additionally integrates a feedback mechanism to boost the recommendation accuracy and users satisfaction.

***Keywords* - Data Mining, Friend Recommendation, Sensors, Android, Smartphones, Machine Learning, Lifestyle.**

1. Introduction

Existing social networking services recommend friends to users supported by their social graphs, that can`t be the foremost acceptable to mirror a user's preferences on friend selection in planet. Throughout this paper, we have a tendency to tend to gift Friendbook, a very distinctive semantic-based friend recommendation system for social networks [5] that recommend friends to users supported by their life designs instead of social graphs [4]. By taking advantage of sensor-rich sensible phones, Friendbook discovers life varieties of users from user-centric detector knowledge, measures the similarity of life styles between users, and recommends friends [8] to users if their life styles have high similarity, affected by text mining. We have a tendency to tend to model a user's way as life documents; from that his/her life styles square measure extracted by mistreatment the Latent Dirichlet Allocation algorithmic [15] rule. We have a tendency to tend to additional propose a similarity metric to measure the similarity of life styles between users, and calculate user's impact in terms of life styles with a friend-matching graph. Upon receiving request, Friendbook returns an inventory of people with highest recommendation scores to the questioned user. Finally Friendbook integrates a feedback mechanism to additional improve the recommendation accuracy. We've got enforced Friendbook on the Android-based sensible phones [12], and evaluated its performance on every little scale experiments and large-scale simulations.

The results show that the recommendations accurately replicate the preferences of users in selecting friends. As time passes, World Wide Web (WWW) goes on growing and lots of knowledge is accessible on computer network. All the information which we get is not relevant, only few of them are relevant. When a user tries to search something on WWW s/he lands up with thousands of result. As a result, s/he will mess up with huge information. Hence fetching the actually required details becomes cumbersome and time consuming. This provides rise to information filtering system [8]. In period, for information filtering, knowledge filtering (IF) was used. IF was primarily developed for filtering documentation, articles, news etc. Attempting to our era, e-commerce is growing explosively. Whenever a user makes a hunt for specific item on net to buy for, s/he will get many

selections. Perceptive, the alternatives user gets confuse what to buy for, and can`t ready to type the item that is appropriate to him/her. This downside gave rise to Recommendation System [RS] [10]. A recommender system is also a personalization system that helps users to search out things of interest supported their preferences. Recommender systems square measure economical tools that overcome the information overload downside by providing users with the foremost relevant contents.

2. Literature Survey

The recommendation system is very important in each field of social networking. With the recommendation system the recommending things become more popular. Flipkart recommends different form of electronic product; household appliance etc. Friendbook will help mobile users realize friends either among strangers or within a certain cluster as long as they share similar life styles. Recommendation systems that try to suggest items (e.g., music, movie, and books) to users became additional and additional popular in recent years. For example, Amazon [1] recommends items to a user based on items the user antecedently visited, and items that alternative users are watching. Netflix [3] and Rotten Tomatoes [4] recommend the film to user with their rating accordingly. The recommendation system becomes the important part of the social networking and also the web application. There are previous friend recommendation systems like Facebook, twitter, LinkedIn that suggest friend and their mutual friends to every alternative. Matchmaker [8], a cooperative filtering friend recommendation system is proposed by Bian and Holtzman. This technique is based on personality matching. Kwon and Kim [13] proposed a friend recommendation method using physical and social context. We need to know working of sensors like GPS provides knowledge to understand the transportation mode of the users. Accelerometer on the smartphones is used to detect the transportation mode of an individual. CenceMe [12] used multiple sensors on the smartphone to capture user's activities, state, habits and surroundings.

3. System Overview

In this section, we tend to provide a high-level summary of the Friendbook system. Figure.1 shows the system design of Friend book that adopts a shopper-server mode wherever every client could be a good phone carried by a user and also the servers are knowledge centers or clouds. On the shopper aspect, every good phone will record knowledge of its user, perform period activity recognition and report the generated life documents to the servers. It is worth noting that an offline data collection and training phase is needed to build an appropriate activity classifier for real-time activity recognition on smartphones.

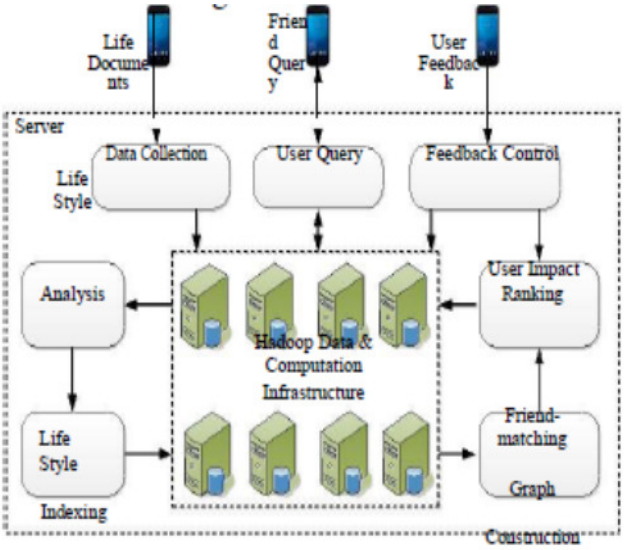

Fig.1. System Architecture

We tend to spent 3 months on aggregation of eight volunteers for building an outsized coaching data set. As every user usually generates around 50MB of data daily, we decide MySQL as our low level knowledge storage platform and Hadoop MapReduce as our computation infrastructure. When the activity classifier is constructed, it'll be distributed to every user's good phone and so activity recognition may be performed in period manner. As a user frequently uses Friend book, he/she can accumulate additional and additional activities in his/her life documents, supported that, we will discover his/her life designs mistreatment probabilistic topic model. On the server aspect, seven modules are designed to satisfy the task of friend recommendation. The information assortment module collects life documents from users' smartphones.

The life types of users are extracted by the life vogue analysis module with the probabilistic topic model. Then the life vogue categorization module puts the life types users into the information within the format of (life-style, user) rather than (user, life-style). A friend-matching graph may be made consequently by the friend-matching graph construction module to represent the similarity relationship between users' life designs. The impacts of users are then calculated supported by the friend-matching graph by the user impact ranking module. The user question module takes a user's question and sends a stratified list of potential friends to the user as response. The system conjointly permits users to provide feedback

of the advice results which might be processed by the feedback management module. With this module, the accuracy of friend recommendation may be improved.

4. Life Style Extraction

4.1 Life Style Modeling

Life style and activities area unite the key contributors in modeling the existence of an individual. Here, existence could be a mixture of life designs and a Life vogue is viewed as a combination of activities. This can be almost like the documents being shapely as a combination of topics and topics as a combination of words. An analogy is established between existence and document, life style and topic, activity and word. Therefore in our system, existence of a user is shaped as a life document, designs as topics and activities as words.

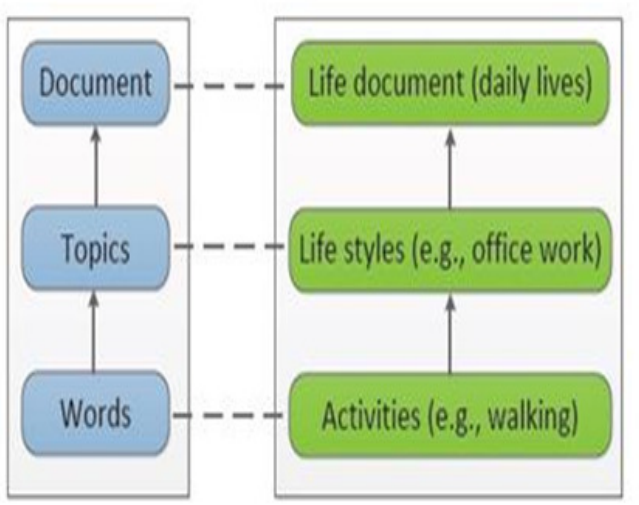

Fig. 2.Life Style Modeling

We can resolve the chances of the topics (life styles) if the life document (daily life) is given exploitation probabilistic topic model. During this we tend to live aiming to measure the frequency of a word (activity) in a life style. For this a table of activities is going to be maintained to arrange the knowledge obtained from the data from sensors. Every user has this table of activities that contains the activity name viz. walking, sitting, driving etc. and also the frequency related to it.

4.2 Activity Recognition

In our system, we are going to use motion sensors like measuring instrument, rotating mechanism and numerous different sensors like camera, microphone, GPS etc. the information obtained from these sensors is usually noisy . Hence, it has to be processed to get some info from it in order that we tend to use it to acknowledge the activities of a user. Numerous filters and techniques are won't to improve the popularity accuracy. Just in case of ambiguity, the user are going to be prompted to enter the activity he/she is acting.

4.3 Friend-Matching Graph

In this module data that are analyzed are used construct the graph that tells that user has high similarities with that user and additionally tells us what quantity similarity exist between the user in proportion. Then by exploitation those proportions value system can automatically suggest friends to the users whose life style has high similarity percentage. System can automatically suggest the friend to the user once their similarity is over sixty proportions.

4.4 User Impact Ranking

In this module system can calculate the users ranking supporting the behavior within the system and additionally what quantity friend recommendation that user got from different users supported that count the user impact ranking is calculated within the impact ranking module.

4.5 Feedback Module

In this module user send the feedback and rating of our recommendation system. User sends the feedback to the admin relating to bound problems in bound cluster and he/she additionally tells admin regarding the matter on that he's giving feedback. User additionally sends the rating of our Friend recommendation system. Then admin appearance into the feedback if any drawback exists in bound issue then admin will assume that resolution is best to resolve those issues. So implement the simplest resolution to resolve the matter.

4.6 Query Module

In this module, the user will send question message to a different user. If user desires to send question message to a different user, then enter cluster name, regarding and write question and send, that question can send to explicit user. We model the daily lives of users as life documents and use the probabilistic topic model to extract life vogue data of users

5. Conclusion and Future Work

In this paper, we presented the design of the Friend recommendation through linguistics primarily based matching and cooperative filtering System in social networks. That is totally different from the friend recommendation mechanisms wishing on social graphs in existing social networking services, this recommendation system takes the user connected knowledge collected from user and by exploitation that knowledge we tend to create the friend match graph and by exploitation that graph we tend to suggested potential friends to users if they share similar life styles? We tend to conjointly acquire the feedback and question from the user relating to sure issue in order that we are able to resolve the matter. We tend to conjointly obtain the feedback from the user regarding our suggested system. We tend to enforce our suggested system on the Android-based smart-phones, and evaluated its performance on each small-scale experiment. The results showed that the recommendations accurately replicate the preferences of users in selecting friends. Beyond the present model, the longer term work will be four-fold. First, we'd prefer to measure our system on large-scale field experiments. Second, we tend to shall acquire the user connected knowledge mechanically by exploitation the smartphone sensors. Third, the similarity threshold used for the friend-matching graph is mounted in our current model of our suggested system. It might be attention-grabbing to explore the adaption of the brink for every edge and see whether or not it will higher represent the similarity relationship on the friend-matching graph. At last, we tend to commit to incorporate a lot of sensors on the mobile phones into the system and conjointly utilize the knowledge from wearable equipment's (e.g., Fitbit, iwatch, Google glass, Nike+, and Galaxy Gear) to get a lot of attention-grabbing and substantive life designs.

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