Friendbook: A Semantic-Based Friend Recommendation System for Social Networks

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Abstract- *TWENTY years past, folks generally created friends with others who live or work near themselves, like neighbors or colleagues. We have a tendency to decision friends created through this ancient fashion as G-friends, that stands for geographical location-based friends as a result of their influenced by the geographical distances between one another. With the speedy advances in social networks, services like Facebook, Twitter and Google+ have provided us revolutionary ways in which of creating friends. According to Facebook statistics, a user has a mean of one hundred thirty friends, maybe larger than the other time in history. One challenge with existing social networking services is a way to suggest a good or reliable friend to a user. Most of them rely on pre-existing user relationships to choose friend candidates. for instance, Facebook depends on a social link analysis among those that already share common friends and recommends users as potential friends. Unfortunately, this approach might not be the foremost applicable supported recent social science findings. According to these studies, the principles to group individuals along include: 1) habits or life style; 2) attitudes; 3) tastes; 4) ethical standards; 5) economic level; and 6) individuals they already know. Life styles are typically closely correlate with daily routines and activities. Therefore, if we tend to may gather data on users' daily routines and activities, we are able to exploit rule #1 and suggest friends to individuals supported their similar life styles. This recommendation mechanism may be deployed as a standalone app on smartphones for existing social network frameworks.*

KEYWORDS- FriendBook, Life styles, Matching Graphs, Life Document, Comparing Profiles.

1. INTRODUCTION

1.1 Overview:

Friendbook will facilitate mobile users to find friends either among strangers or inside an exact cluster as long as they share similar lifestyles. In our everyday lives, we tend to could have many activities that type important sequences that form our lives. during this paper, we tend to use the word activity to specifically seek advice from the actions taken within the order of seconds, like "sitting", "walking", or "typing", whereas we tend to use the phrase life vogue to seek advice from higher-level abstractions of daily lives, like "office work" or "shopping". For example, the "shopping" life style mostly shows real personality of person. To model daily lives properly, we tend to draw associate analogy between people's daily lives and documents, previous analysis on probabilistic topic models in text mining has treated documents as mixtures of topics, and topics as mixtures of words. impressed by this, similarly, we are able to treat our daily lives (or life documents) as a mix of life designs (or topics), and every life style as a mix of activities (or words).Observe here, basically, we tend to represent daily lives with "life documents", whose semantic meanings are reflected through their topics, that are life styles in our study. Similar to words function the premise of documents, people's activities naturally function the primitive vocabulary of those life documents. Our projected resolution is additionally motivated by the recent advances in smartphones that became a lot of and a lot of widespread in people's lives. These smartphones (e.g., iPhone or Android-based smartphones) are equipped with an expensive set of embedded sensors, like GPS, measuring system, microphone, gyroscope, and camera. Thus, a smartphone is not any longer merely a communication device, however additionally a strong and environmental reality sensing platform from that we are able to extract made context and content-aware data. From this attitude, smartphones function the perfect platform for sensing daily routines from that people's life styles may be discovered. In spite of the powerful sensing capabilities of smartphones, the rarest ill multiple challenges for extracting users' life styles and recommending potential friends supported their similarities.

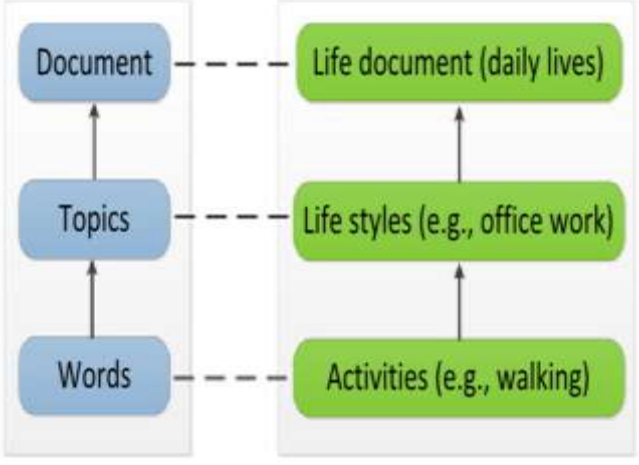

Fig.1.An analogy between word documents and people's daily lives.

First, a way to automatically and accurately discover life styles from buzzing and heterogeneous sensing element data ? Second, a way to live the similarity of users in terms of life styles ? Third, who ought to be counseled to the user among all the friend? to handle these challenges, during this paper, we present Friendbook, a semantic-based friend recommendation system supported sensor-rich smartphones. The contributions of this work ar summarized as follows: To the simplest of our data, Friendbook is that the first friend recommendation system exploiting a user's life style info discovered from smartphone sensors. Impressed by achievements within the field of text mining, we tend to model the daily lives of users as life documents i.e. we gather data regarding their life style and use the probabilistic topic model to extract life style info of users. we trying to propose a unique similarity metric to characterize the similarity of users in terms of life styles and so construct a friend-matching graph to suggest friends to users supported their life styles. we tend to integrate a linear feedback mechanism that exploits the user's feedback to enhance recommendation accuracy. we tend to conduct each small-scale experiments and huge scale simulations to judge the performance of our system. Experimental results prove the effectiveness of our system.

1.2 Literature Survey:

A small team of computer engineers from Taiwan, US, China has developed this algorithm that desired to manipulate an social network i.e. Facebook. In Feb 2004. Facebook relies on a social link analysis among those who already share mutual friends and suggest symmetrical users as reliable friends. Unfortunately, this approach may not be the most appropriate based on recent sociology findings.

SITINA algorithm:

Facebook uses SATINA algorithm to recommend friends. SATINA is selective invitation with tree an node aggregation.

Disadvantages:

It only recommends friends depend on mutual friends.
Google+ recommend circle to get in depend on if that circle present their friends.
Google implement Edge Rank algorithm which demonstrate functionality explained next

Edge Rank algorithm:

This algorithm invented by Google in Jan 2010 it works how to determine mutual connections and shared interactions.

1. MainlyEdgeRank algorithm checks your mutual connections with peoples on Google products such as Gmail.
2. Interactions with other on Google products.
3. The link you have added on your profile.
4. The connected accounts you have linked on google account.
5. The peoples which are in extended circles.

In this way Google+ recommend friends by considering above points.

Disadvantages:

This algorithm checks all the points more than other social sites to recommend friends but because of more complexity more friends recommended by Google+ are unknown to users. Twitter also recommend peoples which are followed by the peoples which itself he follows.

DIMSUM algorithm:

Dimension Independent Matrix Square using MapReduce algorithm is designed by Reza Zadeh who is worked for twitter in March 2005.
Reza Zadeh shows working of DIMSUM algorithm in two ways:
1. Matching promoted adds with right users
2. Suggesting similar peoples to follow after users follow someone.

Disadvantages:

This algorithm works for suggest similar type of users which that person previously follow e.g. Bollywood, Hollywood,Sports,Technologyetc

Paper presented by am Hu`ynh, Mario Fritz and BerntSchiele
on "Discovery of Activity Patterns using Topic Models" gives us very important information they propose a novel method to study daily routines as a probabilistic combination of activity patterns.The use of topic models enables the automatic findings of such patterns in a user's daily routine. We report experimental results that show the ability of the approach to model and study daily routines without user annotation. Paper presented on "Latent Dirichlet Allocation" by Devid M Blai,Andrew Y Ng explains LDA algorithm for text and other collections of discrete data that generate or improve on previous models Bytes/Unigram mixture of unigrams and Hofmann's aspect.In context of text modeling our model points that each document presented as mixture of topics where continuous valued mixture proportions are distributed as Latent Dirichlet random variables. In LDA we assume that there are k underlying latent topics referred with documents are generated and that each topic is represented as multinomial distribution over v words in vocabulary. Paper presented on "Darwin Phones: the Evolution of Sensing and Inference on

Mobile Phones" by Ashwin Ramaswamyy, Tanzeem Choudhuryy,
Zhigang Liux, Andrew T. Campbell.
In this paper authors shows design, implementation and evolution of Darwin System,that combines classifier evoluation,Model Pooling, Collaborative Interference for mobile sensing to gather users data.

Disadvantages:

The problem with sensing context and conditions and setting common to mobile phones.

Paper presented on "CenceMe: Injecting Sensing Presence into Social Network Applications
using Mobile Phones" by A. T. Campbell, S. B. Eisenman, K. Fodor, N. D. Lane, H. Lu

E. Miluzzo, M. Musolesi, R. A. Peterson, X. Zheng.

The team who implement CenceMe system explains transparently useful inferences from sensor data gathered using mobile consumer devices exploiting ad hoc, Wi-Fi, and cellular connectivity; it supports both the self-consumption and social sharing of this data.

Disadvantages:
It is difficult to implement practically.

Paper presented on "Collaborative and Structural Recommendation of Friends using
Weblog-based Social Network Analysis" by William H. Hsu, Andrew L. King, Martin S. R. Paradesi, TejaswiPydimarri, Tim Weninger in.

In this paper they address problem of link recommendation for weblogs.
First they focus on collaborative recommendation using mutual declared interest.
Next they focus on small representative approach of large real world social network.

Disadvantages:
It is not get implemented on large system,it can apply to limited number of nodes.

Paper presented on "Using Mobile Phones to Determine Transportation Modes" implemented by SASANK REDDY, MIN MUN, JEFF BURKE, DEBORAH ESTRIN, MARK HANSEN, and MANI SRIVASTAVA .

Explains us, as mobile phones advance in functionality features with capability, they are being used for more than just communication. Increasingly, these devices are being employed as used for introspection into habits and situations of individuals and communities. Many of the applications enabled by this new types of mobile phones rely on contextual information. The focus of this work is in only one dimension of context, the transportation mode of an individual when outside. We create a convenient differentiation system that uses a mobile phone with a built-in GPS receiver and an accelerometer. The transportation modes point out which include whether an individual is stationary, walking, running, biking, or in motorized transport.

Disadvantages:
Implementation of this concept involved various problems like battery of mobile is discharge very fastly because of sensing continuously etc.

1.3 Relevance:
As we are trying to design social media app on smart phone, which feels systems are already present in market but our uniqueness is friend recommendation system. We are trying to design application which is fulfilling all drawbacks of existing friend recommendation system, which is our purpose.

1.4 Scope of System:
At initial level we are trying to design this application for fifty users only. As it is difficult to match or compare profiles practically, so at initial level we use limited database.

2. METHODOLOGY

To implement this application we divide it's process in three different phases:

2.1. Semantic based friend recommendation system:
Firstly we create android app same like social media app. From that we collect real time dataset of user's. When user use this app and when he started to post something on his timeline then we can able to make their dataset regarding life styles. For that we have to give some time to system for data collection.

2.2. Compare Profiles:
By using smartphone application i.e. Friendbook discovers likes and dislikes i.e. Behavior of users from user-centric knowledge, By scrutiny profiles of users measures the similarity of between them, and recommends friends to users if their life styles have high similarity. Impressed by text mining, we tend to model a user's life style as life documents, from that his/her life styles are extracted by mistreatment the Latent Dirichlet Allocation algorithmic program.

LDA:
In this work we are trying to propose reliable method to recognize daily routines as a probabilistic combination of activity patterns. The use of topic models enables the automatic findings of such patterns in a user's daily routine. We report experimental outputs show the ability of the approach to model and recognize daily routines without user annotation. We use the LDA algorithm to understand life styles of users from that life styles we create match graphs which are further used to compare profiles of users for suggesting friends depend on life style matching, Which is moto of this application.

2.3. Create Match graphs:
Here we develop friend recommendation algorithm for group data into clusters, also we have to create friend matching graph for how was matching done. Here we first match the profiles of users and define one threshold value. This threshold value is nothing but approx. profile matching percentage. If profile matching percentage is up to or above threshold value then that users are recommended to each other for being friends.

3. DATA FLOW DIAGRAMS

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD is often referred as a preliminary step to create an overview of the system, which can later be elaborated. DFDs can also be referred for the visualization of data processing.

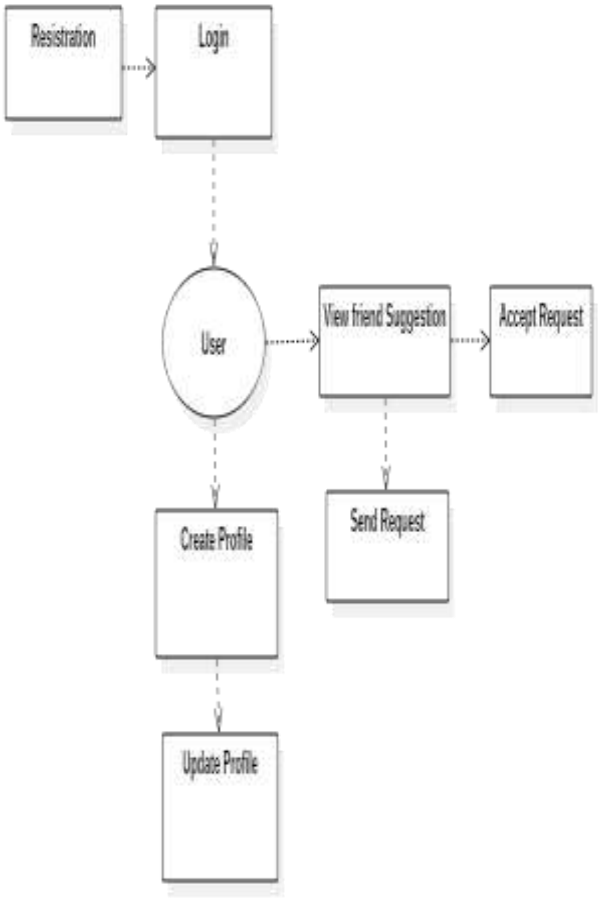

Fig 1: DFD Diagram

3.1 Class Diagrams

A diagram that points to a set of classes, interfaces, and collaborations and their relationships; class diagrams address the fixed design view of a system a diagram that shows a collection on of declarative (static) elements.

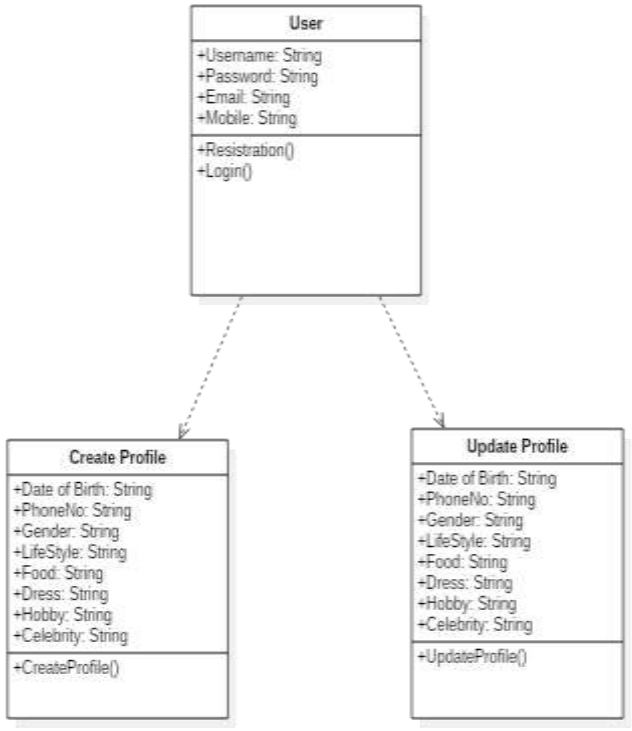

Fig 2: Class Diagram

4. FUTURE WORK

In this paper, we have a tendency to conferred the design and implementation of Friendbook, a semantic-based friend recommendation system for social networks. completely different from the friend recommendation mechanisms hoping on social graphs in present social networking services, Friendbook extracted life styles from user-centric knowledge from recommended potential friends to users if they share similar life styles. We implement Friendbook on the Android-based smart- phones, and evaluated its performance on each small- scale experiments and large-scale simulations. The results showed that the recommendations accurately reflect the preferences of users in selecting friends. on the far side the present example, the long run work may be fourfold. First, we might prefer to judge our system on large-scale field experiments. Second, we have a tendency to will implement the life vogue extraction exploitation LDA and therefore the repetitive matrix-vector multiplication technique in user impact ranking incrementally, in order that Friendbook would be climbable to large-scale systems. Third, the similarity threshold used for the friend-matching graph is fixed in our current example of Friendbook. 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. Actually, we have a tendency to expect to include Friendbook into existing social services (e.g., Facebook, Twitter, and LinkedIn) in order that Friendbook will utilize additional data for life discovery, that ought to improve the advice expertise within the future.

4.1 ADVANTAGES OF PROPOSED SYSTEM: ·

Friendbook is the first friend recommendation system depends on user's life style information. It use the probabilistic topic model to study life style information of users.

5. CONCLUSION

In this paper, we tend to given the planning and implementation of Friendbook, a semantic-based friend recommendation system for social networks. completely different from the friend recommendation mechanisms counting on social graphs in existing social networking services, Only Friendbook deals with life styles from user-centric knowledge collected from sensors on the smartphone and suggested potential friends to users if they share similar life styles. We tend to enforced Friendbook on the Android-based smartphones, and study its performance on each small-scale experiments and large-scale simulations. The results showed that the recommendations accurately reflect the preferences of users in selecting friends. on the far side the present model, the longer term work will be four-fold. First, we'd prefer to assess our system on large-scale field experiments. Second, we have a tendency to will implement the life style extraction exploitation LDA and also the repetitive matrix-vector multiplication technique in user impact ranking incrementally, so Friendbook would be expandable as large-scale systems.Third, the similarity threshold used for the friend-matching graph is fixed in our current prototype of Friendbook. it might be fascinating to explore the adaption of the edge for every edge and see whether or not it will higher represent the similarity relationship on the friend matching graph. Actually, we have a tendency to expect to include Friendbook into existing social services (e.g., Facebook, Twitter, LinkedIn) in order that Friendbook will utilize a lot of data for life discovery, that should improve the advice expertise within the future.

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