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# Friendbook: Activity-Based Friend Recommendation System for Social Networks

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**Abstract:**
Nowadays Social networking is a most effective and convenient way for interacting with the people around the whole world, by which people can communicate or interact with the others who are mile away from them or even unknown to them. The existing social networking services recommends friends to users based on their social graphs, which may not be the most appropriate to that user's preferences on friend selection in real life, So for giving a proper and appropriate friend recommendation it proposes the Friend book, activity-based friend recommendation system for social networks, which will recommends friends to users based on their life styles. The proposed system discovers the life style of the users from the user-centric sensor data by their sensor-rich smart phones and then measures the similarity between the users and recommends the friend to the user which is having the high similarity between their life styles. Life style of user will be extracted using Latent Dirichlet Allocation algorithm from life document. After that a friend matching graph will be constructed by calculating the overall impact of similarity between life styles. Upon receiving a request, system will returns a list of people with the highest recommendation scores to the query user. Finally, system integrates a feedback mechanism for improving the accuracy of recommendation.

**Keywords**: Friend recommendation, Ranking, social networks, life style.

## I. INTRODUCTION

Few years ago, people typically made friends with other who live or work. Friendship is an important part of human's life. Making friends is a very easy but making friends with our interests is a hard task. Many human being have many friend and have their own set of attractions. They are differ from person to person. Many social network provide recommendation system for making friends. The suggestion provided by supporting their users in various decisions making processes, such as location where are lives, as well as interest what music to be listen or what news to read. Recommendation system have to be valuable means for the online users to replication with the information overburden and have come to one of the most strong and accepted device in data mining. Example-Facebook, amazon, twitter. In this recommendation system there are two major types: Collaborative filtering based recommendation and content based recommendations. The most important thing in friend book recommendation system to identify or guess the user choice and analyzing the user interest on his/her behavior to generate the personalized friend recommendations [4]. In friend recommendation system for location [based means friend is connect from location related (eg. I am in pune) have used in many social websites example:-Facebook, twitter, Facebook is social network we can provide the recommendation system with friends of friends methods to recommends new friends to users [5]. This can perform that making friends is an ordinary way of establishing relationship with others social network. As they give the suggestions based on the predefined data or their mutual relationship hence the may give the incorrect and unsatisfied recommendation to the users for these purpose to overcome from this problem friendbook is proposed. In this system it will takes users daily activities as an life document and from this life document it will do analysis on that and then it will able to extract the users life style. From the various set of life styles it will recommend the appropriate friend to the user from their ranking.

## II. LITERATURE SURVEY

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, it model a user's daily life as life documents, from which his/her life styles are extracted by using the Latent Dirichlet Allocation algorithm [1].

Basically link analysis is a data analysis technique which is used to evaluate the relationship between the nodes. Link analysis is popular and widely used for web mining technique. Page ranking [4] is an algorithm from google search to rank their websites in their search engine results. Page rank work by counting the number and quality of links to a page to determine a rough estimate of how

important the website is. Techniques for incremental computations to study the change in graph structure over time would depend on underlying knowledge model [4]

William H. Hsu, Andrew L. King proposes the system which is content based recommendation using their mutual intrests. It addresses the problem of link recommendations I web logs and similar social networks. Facebook allows users to list their intrests and links to friends [5].

Bahman Bahmani, Abdur Chowdhury proposes fast incremental and personalized page ranking this system uses Monte Carlo methods for fast incremental computations of page rank. Monte Carlo method is a broad class of computational algorithms that relay on repeated random sampling to obtain numerical results [5].

David M. Blei, Michael I. Jordan describes the LDA that is latent Dirichlet Allocation. It is a generative probabilistic model for collections of discrete data. LDA is mainly used by natural language processing. Generative model that allows set of observations to be explained but unobserved groups that explained why some parts of the data are similar [6].

Katayoun Farrahi, Daniel Gatica-perez proposed the system which recommends the users based on location. It discovers that daily location driven routines which are contained in a large scale real-life human dataset collected by mobile phone [7].

Alex (Sandy) Puntland discovers social system based on reality mining which is used for sensing complex social networks. It describes how data is collected from mobile phone and it can be used to uncover the regular rules and structure in the behaviour of both individuals and organizations [8].

## III. PROPOSED SYSTEM

The proposed system is a recommendation system for recommending friends to the user based on their daily activities, likes-dislikes. In social networking recommendation systems plays very important role as they are only responsible for suggesting friends so it should be accurate in terms of their real nature then it will be more beneficial to the end users so for this reason implementing the friendbook which will recommend the friends to the user from their day to day activities.

In this proposed system users life style will be taken into consideration in the form of their activities which are taken by them in the post. In the posting system gives free of control to the user means user can post any of their activity in the form of sentences also there are some predefined basic activities are provided like reading, playing, chilling, etc. User can select any of them or they are allowed to give their own activities. Later on the post

which user provided to the system is then analyzed by an LDA algorithm. LDA breaks that sentences into words and then it will ignore the unnecessary words which will not be useful to matching like I, am, was, is etc. LDA only focuses on the important activity. For that a database is being maintained and some specific are provided for matching so that it will ignore the grammar from that post and only concentrate on mentioned activities and variables. After that for all the activities which are chosen by LDA will map together to form an activity table and for all activities. All the activities which are provided by the user are stored into this table. Then for calculating the matching activity graph reduce function is applied and for achieving good results it will be based on some specifications, their location is in the high priority as the system is defined some threshold for location. The user who are in the range of 100km from their current location and also they are giving same activity will get highest ranking and recommended first. In the friendbook, whenever the user required some data he fires the query which is sent to the database server which analysis the user searching query and give the related data based on the query. It adopts a client-server mode where each client is a smartphone carried by a user and the servers are data centers or clouds. On the client side, each smartphone can record data of its user, perform real-time 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.
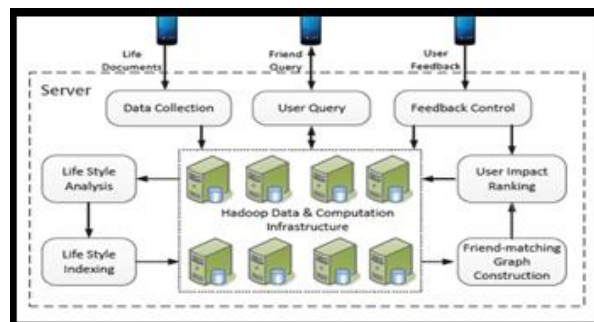
## IV.SYSTEM ARCHITECTURE



Fig.1: System Architecture

As seen in the above fig1 the system architecture have 7 modules:

1. Data Collection Module: In this module data which is required to construct a recommendation system is taken by the user. For this the data is extracted from the life document which is given by the user.

2. Life Style Analysis: In this module actual user's life style will be extracted from this life style analysis module by using the probabilistic module. Basically life style is a mixture of activities. For this analysis various calculations have to be performed in order to get the correct analysis. By taking the advantage of probabilistic topic model the topic that is activities are being calculated in terms of their likes-

dislikes and matched-unmatched. By this module users life will be reflected at will give the total calculations of their choices.

3. Life Style Indexing Module: Whenever the data is given to the system it have to be in the proper format so it will be easy to system to classify or performing operations over the data so for this purpose life style indexing module is proposed. This module actually done the job of database management it takes the life document of the user and puts the life style of the user in the database in the specific format as (life style, user). Because of this the data will be maintained in the proper format.

4. Friend Matching Graph Module: After indexing data is handled by friend matching module. This module is responsible for construction of friend matching graph. Friend matching graph is a representation of the relationship between users.

5. Impact Ranking Module: Here in this module ranking is done on the users likes and dislikes from these ranking overall impact of the users will be calculated on the basis of friend matching graph.

6. Users Query Module: This module is for taking the query from the user as an input and then it sends the ranked list of friends to the user.

7. Feedback Mechanism Module: this is the last module of the system. System allows users to give a feedback of recommendation result which will be useful to improve the accuracy for the future recommendation.
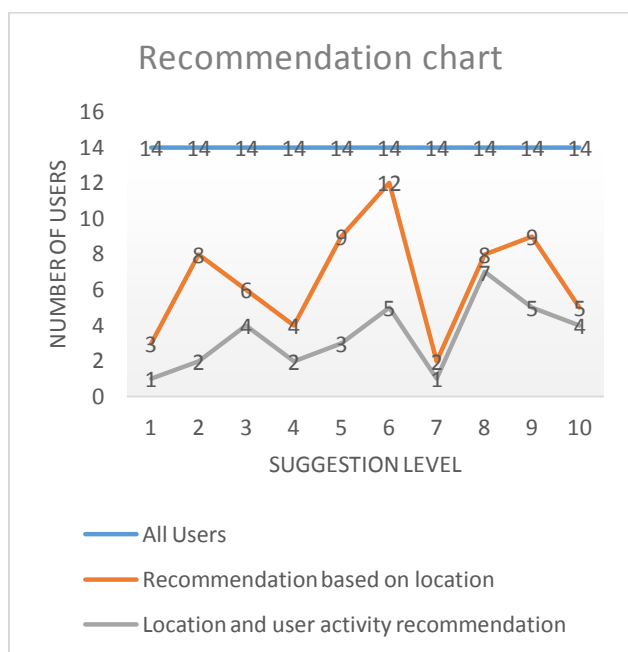
## V. RESULTS

Recommendation Graph:



Fig 2: Recommendation Graph

Chart result shows the output of our system according to various levels of recommendation strategies implemented. This chart is for 10 users in system who have used recommendation. Chart shows output on all users.

Level 1: All users-

This line shows all no. if users in system. These users have different attributes and activities which are useful for us to cluster them for next level of suggestions.

Level 2: Recommendation based on Location parameters.-

This is next level of recommendation which uses user's current position as an attribute mainly giving Number of other users for application user's current position. These suggested users are in proximity area of application handler. This makes a cluster of users which are nearby him/her.

Level 3: Recommendation based on user's preferences and activity along with current location

This is last level of filtering. It filter out level 2 suggestions based on location, to the application handler's choices and preferences. These suggestion are based on activity user have done in past and current. Along with the position he/she resides within. This way application handler gets the super set of users who are in having same activity as his /her and also nearby him/her.

By this way our recommendation system is more useful than existing systems which are mainly based on mutual friend relationship.

## VI. CONCLUSION

This paper describes the overview of the friendbook which is useful in social networking for recommending friends to the users on the basis of their likes and dislikes and their daily activities .in the system log in page is created for user to log in the system and for new users sign up page is available on that user have to fill some basic information then confirmation of their account on the successful creation mail will be sent to their respective mail id. After that user will be redirected to the home screen on which various options are there user can sent friend request to other user and accept vice versa. Also user can share media or some files or status on the system and others can like or dislike the shared items.

## VII. REFERENCES

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