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Review Paper on various Recommendation Techniques of Friends Recommendation System

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Abstract: ***Social network sites have attracted millions of users with the social revolution in Web 2.0.Social networking services currently existing recommend friends based on their social graphs to users , this is not how user's preference on selecting friend in real life. Social networks have become an unlimited source of information, for that several applications have been proposed to mine information from social networks such as: recommender systems. The rapidity and scalability of such a recommender algorithm is as important as the actual logic behind the algorithm because such algorithms generally run over a "huge" graph and implementing these normally would probably take a lot of time for recommending items even if there is one user. The basic idea of recommendation system is to recommend items to users. In this paper various recommender systems are classified are discussed. This paper focuses on providing the overview about the various categories of recommendation techniques developed till now. This paper we present review on recommendation system for find friend on social networks.***
Keywords: text mining, friend recommendation, social networks, friend, life style

I. INTRODUCTION

Social networks can be considered as a milestone in the web history with the advance in online social life. A social network is “a set of people (or organizations or other social entities) connected by a set of social relationships, such as friendship, co-working or information exchange.” Social Networking sites like FaceBook (FB) focus on building and reflecting the social networking and relationships among the community sharing similar interests. FaceBook showed tremendous changes in the way how people communicated and connected to one another. And mainly the friends are recommended based on the previous existing relationships and pick among them as friends for example, FaceBook makes use of social link analysis among those who already share.

A common friends and recommends symmetrical users as common friends and connect people across the country. Which might be not that suitable to recommend as it doesn’t reflect any user preferences on friend selection in real life.

Social networking sites have enormous data set of users, according to the current survey. Every individual social networking site makes record of the activities of users such as his/her likes; what user likes? , what user is doing? , what is user’s hobby? Etc. and it has gained main area of focus in understanding the user behaviour, One of the best example we might consider is FaceBook.

II. RELATED WORK

1) Paper Title: Collaborative and structural recommendation of friends using weblog-based social network analysis [1]
Author Name: W. H. Hsu, A. King, M. Paradesi, T. Pydimarri, and T.Theyninger

In this paper, they address the problem of link recommendation in weblogs and similar social networks. First, they present an approach based on collaborative recommendation using the link structure of a social network and content-based recommendation using mutual declared interests. Next, they describe the application of this approach to a small representative subset of a large real-world social network: the user/community network of the blog service LiveJournal [1]. They then discuss the ground features available in LiveJournal’s public user information pages and describe some graph algorithms for analysis of the social network. These are used to identify candidates, provide ground truth for recommendations, and construct features for learning the concept of a recommended link. Finally, they compare the performance of this machine learning approach to that of the rudimentary recommender system provided by LiveJournal.

2) Paper Title: A Probabilistic Approach to Mining Mobile Phone Data Sequences [2]
Author Name: Katayoun Farrahi JKU University Linz, Austria

In this paper, they present a new approach to address the problem of large sequence mining from big data. The particular problem of interest is the effective mining of long sequences from large-scale location data to be practical for Reality Mining applications, which suffer from large amounts of noise and lack of ground truth. To address this complex data, they propose an unsupervised probabilistic topic model called the distant n-gram topic model (DNTM).

The DNTM is based on Latent Dirichlet Allocation (LDA), which is extended to integrate sequential information [2]. They define the generative process for the model, derive the inference procedure, and evaluate our model on both synthetic data and real mobile phone data. They consider two different mobile phone datasets containing natural human mobility patterns obtained by location sensing, the first considering GPS/wifi locations and the second considering cell tower connections. The DNTM discovers meaningful topics on the synthetic data as well as the two mobile phone datasets. Finally, the DNTM is compared to LDA by considering log-likelihood performance on unseen data, showing the predictive power of the model. The results show that the DNTM consistently outperforms LDA as the sequence length increases.

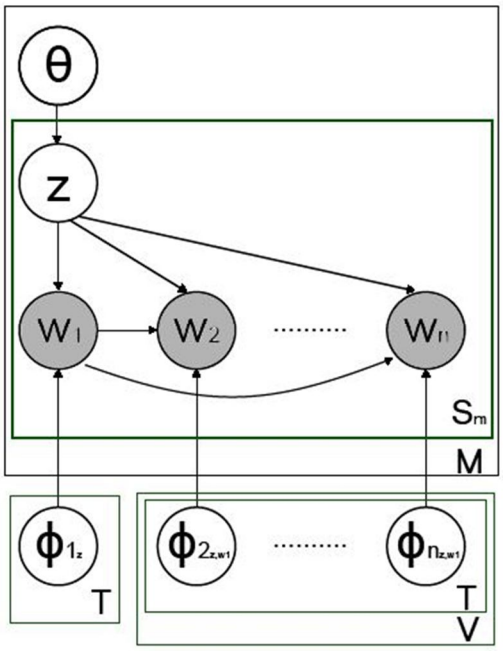

Fig.1: Graphical model of the Distant N-Gram Topic Model (DNTM).

3) Paper Title: EasyTracker: Automatic Transit Tracking, Mapping, and Arrival Time Prediction Using Smartphones.[3]
Author Name: J. Biagioni, T. Gerlich, T. Merrifield, and J. Eriksson.
In order to facilitate the introduction of transit tracking and arrival time prediction in smaller transit agencies, they investigate an automatic, smartphone-based system which they call EasyTracker. To use EasyTracker, a transit agency must obtain smartphones, install an app, and place a phone in each transit vehicle. Our goal is to require no other input. This level of automation is possible through a set of algorithms that use GPS traces collected from instrumented transit vehicles to determine routes served, locate stops, and infer schedules. In addition, online algorithms automatically determine the route served by a given vehicle at a given time and predict its arrival time at upcoming stops. They evaluate our algorithms on real datasets from two existing transit services. They demonstrate our ability to accurately reconstruct routes and schedules, and compare our system's arrival time prediction performance with the current "state of the art" for smaller transit operators: the official schedule. Finally, they discuss our current prototype implementation and the steps required to take it from a research prototype to a real system [3].

4) Paper Title: Friend Recommendation Method using Physical and Social Context [4]
Author Name: J. Kwon and S. Kim.
In this paper, the main idea of the proposed method is consisted of the following three stages; (1) computing the friendship score using physical context; (2) computing the friendship score using social context; (3) combining all of the friendship scores and recommending friends by the scoring values. The main idea of the proposed method is consisted of the following three stages; firstly, our method computes the friendship score based on similar behaviour using physical context. In the computation, they adopt the traditional information retrieval method, BM25 weighting scheme. Secondly, the method computes friendship score with friend relation in the friendship graph using social context. Finally, they combine the all of the friendship scores and then recommend friends by the scoring values [4].

5) Paper Title: Friendbook: A Semantic-based Friend Recommendation System for Social Networks [5]
Author Name: Zhibo Wang, Jilong Liao and Qing Cao,
In this paper, by taking advantage of sensor-rich smartphones, 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, they model a user's daily life as life documents, from which his/her life styles are extracted by using the Latent Dirichlet Allocation algorithm [5]. They further propose a similarity metric to measure the similarity of life styles between users, and calculate users' impact in terms of life styles with a friend-matching graph. Upon receiving a request, Friendbook returns a list of people with highest recommendation scores to the query user. Finally, Friendbook integrates a feedback mechanism to further improve the recommendation accuracy. They have implemented Friendbook on the Android-based smartphones, and evaluated its performance on both small-scale experiments and large-scale simulations. The results show that the recommendations accurately reflect the preferences of users in choosing friends.

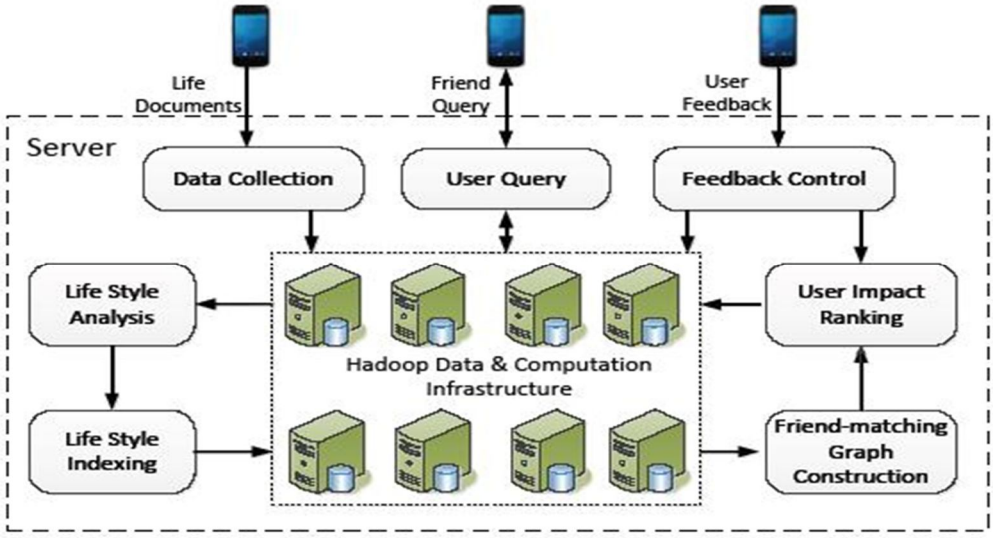

Fig.2: System Architecture

III. CONCLUSIONS

This paper focuses on providing the overview about the various recommendation techniques developed or proposed. Various categories in which recommendation algorithms can be classified are discussed above. Also various open source graph processing platforms are discussed in detail.

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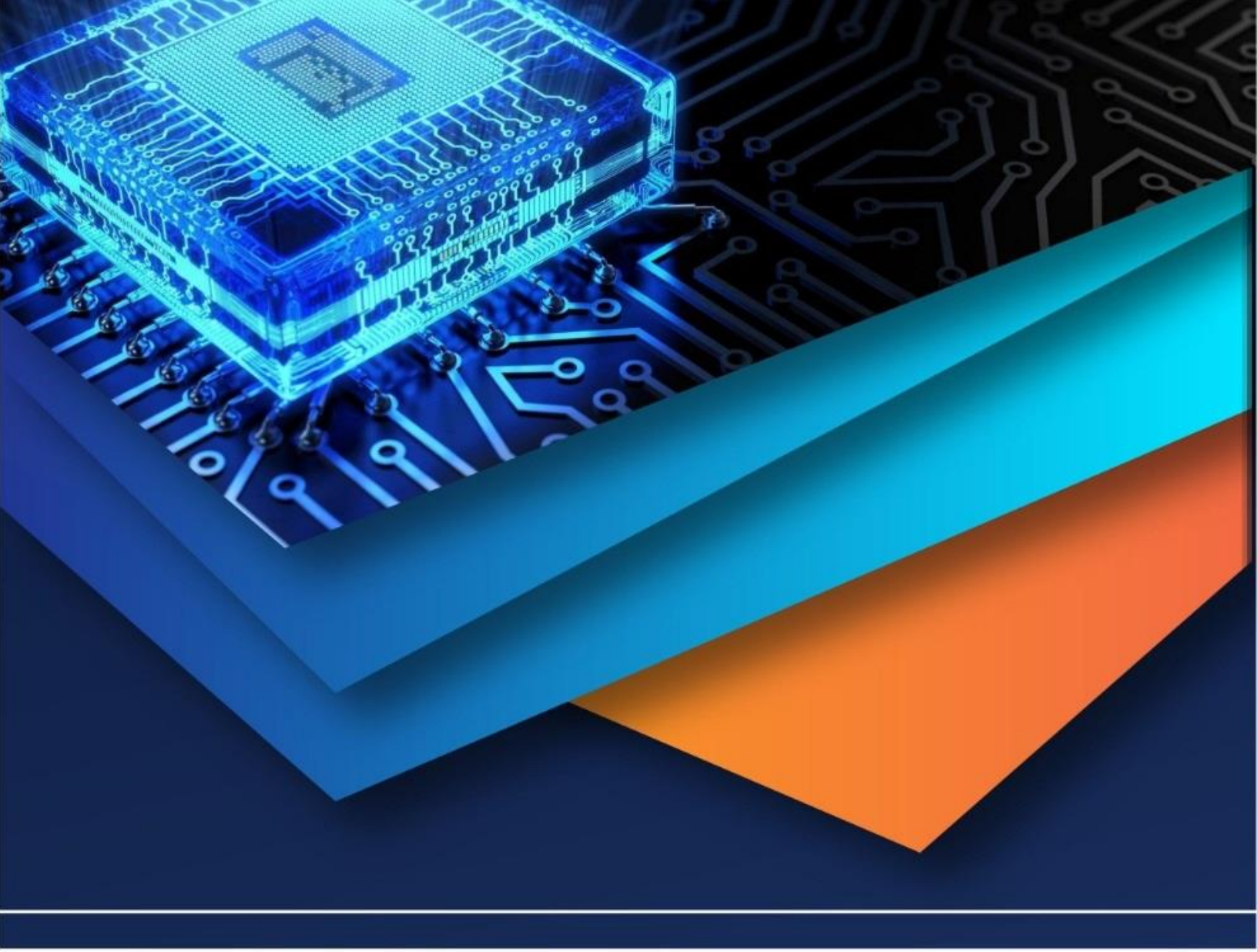

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