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Survey on Privacy Preserving Friend Recommendation System with Multi-Layer Perceptron Classification

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ABSTRACT: To connect with world for online communication and sharing information using the social network sites become a very famous in recent days. But it's very challenging job for social network site to provide the privacy and security. However, users need to get new friends to increase their social connections as well as to get information from specific group of people. Many online social networks (OSNs) make use of the past Friend recommendation methods and which is very popular now days. There is a huge requirement to implement privacy-preserving friend recommendation methods for social networks as user privacy is the main motive nowadays. Online Social Networks (OSNs), not only get the focused from millions people to spend their time every day on social networks but also incredibly implement OSN clients social circles by using companion suggestions. Recently most of the techniques have been developed to overcome this kind of issues, which are discussed in this survey. This paper discuss some recent approaches with concept, technique used its advantage and disadvantage.

KEYWORDS: Privacy, Online Social Networks, Trust, Social Relationship

I. INTRODUCTION

Online social networks are an online service that simulates the human social interactions and relations of real life. It allows users within the social network to communicate with other users, interact with them and add them to their friends lists. Research shows that users connect to friends they already know in real life and also new friends they discover on the online social network. Some users are interested in finding new people with whom they share similar interests, personalities or even research and work domains. Thus, the number of online social networks and their members is rapidly increasing. This makes the process of finding new friends on the social network very challenging and illustrates the need for a social matching system that provides users with a list of recommended friends. A social matching system can be defined as a recommender system that recommends people to people instead of items to people.

Recommender systems have been commonly used over the last ten years to provide recommendations of products and services to users, based on their interests, preferences and online behavior. Such applications have gained popularity, especially due to the information overload problem, as they present the most relevant recommendations to users. The recommendations are based on implicit and/or explicit data obtained from the user. The implicit data are collected by recording the user behaviors while interacting with the system. These data include navigations, preferences and rating. The explicit data are usually obtained during the registration when the user is asked to answer a number of questions. Examples of the recommender systems are movie recommender systems, job search systems, news personalization systems, and advertisement delivery systems.

The increasing number of users in social networks, and the rich information they provide, illustrate the need for recommender system that helps users find their preferred matches. The task of recommending people is more complicated and sensitive compared to the task of recommending products. The reason behind this is the special nature of the relationships between the users in social matching systems like online dating networks. An online dating network is a web-based service that allows people to make contact and communicate with each other, and where the user is the sender and receiver at the same time. Therefore, social matching needs to consider both parties in the matching process

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(two way matching). Analysis of an underlying online dating network shows that it is not always true that, when two users share the same attributes (such as values that describe themselves, including age, personality, and smoking habit), they can be recommended to each other. However, if two users in a traditional recommender system are similar to each other in their interests, personalities and/or ratings then they will receive the same recommendations. As a result, the standard recommendation techniques may not be appropriate to match people in online dating networks.

II. LITERATURE REVIEW

In this paper [1], author implemented a privacy preserving trust-based friend suggestion plan for online social networks. It authorizes two outsiders to create the trust connections based on the current 1-hop companionships. For secure methods, systems first make for the mysterious close friend validation scheme to secure the communication within OSN clients. At that point, assign the secure kNN algorithm as the running protocol to derive the encrypted social direction coordinating results. To examine the objective trust level, author goal to answer for ascertain the normal trust level as the transitive general quality without bargaining every individual's trust level, Author sure for the security and feasibility of the proposed plan by security analysis and evaluation methods.

In paper [2] authors have created a method in which they have added one content feature of blood group, that is going to enhance the application of recommendation. In given technique, they are going to match the blood group of the searched friend and this matching will lead to help application search meticulously to stretch out to the desired person.

In paper [3] authors have implemented a geo location friend recommender system depending on 532 real LinkedIn data. They also utilized the data of LinkedIn users including skills, industry, connections, education, industry, and geo location information to propose a system for calculating best candidates for recommendation. They also make used of semantic similarity for finding closer relations as well as Euclidian distance to determine the geographical distance between the current user and the friendship candidates in the vicinity of the radius 1 km.

In paper [4] authors have presented the design and implementation of Friendbook, a semantic-based friend recommendation system for social networks. Different from the friend recommendation mechanisms relying on social graphs in existing social networking services, Friendbook extracted life styles from user-centric data collected from sensors on the Smartphone and recommended potential friends to users if they share similar life styles. Authors implemented Friendbook on the Android-based smart phones.

In paper [5] authors have developed a system which recommends companions based on the daily activities of users. In this system a semantic based friend recommendation is done depending on the user's life styles like as posting, chatting, searching, commenting etc. By using text mining methods, they display a user's daily life as life archives, from which his/her ways of life are separated by using the Latent Dirichlet Allocation algorithm. Here authors discover a similarity metric to quantify the similarity of life styles between users as an incremental way, and ascertain user effect as far as ways of life with a similarity matching diagram. Then calculate user impact ranking iterative matrix vector multiplication strategy in user incrementally, so that it would be versatile to vast scale frameworks.

In paper [6] authors propose a temporal-topic model for friend recommendations in Chinese micro blogging systems. The model first discovers users' latent preferences during different time intervals based on keywords extracted from the aggregated micro blogs through a topic model. Then, it calculates user similarities in each time interval based on temporal topic distributions. After that, an exponential decay function is used to measure interest drifts. Finally, users' potential interests on others can be predicted based on the sequence of users' interests along the timeline.

In this paper [7], they first acknowledge extraordinary substance of trust measurement differentiated and QoS-based directing measurement. They provide an organized examination of the relationship between trust measurement and trust-based distinguishing in order to keep conventions the important logarithmic properties that a trust metric must have putting in mind the final motive to work effectively and preferably with particular summed up division vector on the other hand connection state directing conventions in WANETs.

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How Confidentiality and data handling care of imperative issues for social network users proves in [8]. Author is sure about confidentiality and data handling. In a real world,access control generation depends not depend upon the large range social networking provider but rather depend to be under the control of the client. In this paper, author implemented a functional, SNS stage autonomous arrangement, for informal organization clientsto control their information. They generate the ideas that are sufficiently general to portray access control limitations for various SNS stages. Our construction modelling utilizes encryption to enforce access control for client's private data in light of their security inclinations. Creator have actualized model as a Firefox extension.

Table 1. Survey Table

Sr. No.	Title	Paper Details	Method Used	Advantages	Disadvantages
1.	A Trust-Based Privacy-Preserving Friend Recommendation Scheme for Online Social Networks	multi-hop trust chain	secure kNN	Secure and feasible	---
2.	Friend recommendation system based on lifestyles of users	added one content feature of blood group	going to match the blood group of the searched friend	application search meticulously to stretch out to the desired person	content features like DNA of a person can be taken
3.	Semantic geolocation friend recommendation system; LinkedIn user case	532 real LinkedIn data	data of LinkedIn users, Euclidian distance	increased the recommendation accuracy	Accuracy can be increase more
4.	Friendbook: A Semantic-Based Friend Recommendation System for Social Networks	implemented Friendbook on the Android-based smartphones	Friendbook extracted life styles from user-centric data collected from sensors on the smartphone and recommended potential friends to users if they share similar life styles	Recommendations accurately reflect the preferences of users in choosing friends.	Can implement the life style extraction using LDA
5.	Incremental iterative time spent based ranking model for online activity based friend-group recommendation systems	Concentrated on various factors for improve group and friend recommendation.	System gathered life styles from user driven information collected from daily activities	High accuracy and performance of the system	no mature theory or practical way of jointly assessing both the computational complexity and statistical efficiency in a latent variable model such as LDA

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III. PROPOSED SYSTEM

In the proposed friend recommended system, at firstly the anonymous close friend authentication scheme is designed to secure the communication between the OSN users. In proposed system OSN users make use of their attributes for finding matched friends, and establish social relationships with strangers via a multi-hop trust chain. The privacy is maintained through the help of Central Authority as well as the encryption of messages between the users.

IV. CONCLUSION

Today the online social network greatly extends OSN users' social circles by friend recommendations. Unfortunately, privacy concerns takes place in the recommendation process blocks the expansion of OSN users' friend circle. Some OSN users refuse to disclose their identities and their friends' information to the public domain. So there is need to present a technique for friend recommendation which provides high security.

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