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A Novel Architecture for Sharing Messages On Heterogeneous SNS

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Abstract— Social networking sites are effective way of communication and data sharing all over the world with various users. All this social networking sites allows communication over their site only that is homogeneous communication. For example a gmail user can communicate with other gmail user. So there is need of integrating these social networking sites so that user from one social network can communicate with other social network user. So here we are proposed an integrated social network application which integrates heterogeneous social networks by identifying global relationship among registered users over heterogeneous SNSs. The main advantage of this integrated heterogeneous social network site is to provide different services of different SNSs over a single platform. We are using here I-search mechanism to find online users and also provide efficient path establish feature with low time complexity.
Index terms—SNS , GRM , OpenID , GlobalID, i-search.

I. INTRODUCTION

Today Social Networking Sites (SNS) have become an important part of our daily life. On these sites on daily basis we shares lot of data with our friends. We can say that with these sites around us helped to make the world smaller and always stay connected with different users. Currently so many SNS available today and many more are piling each day. So different users uses different social networking sites. Thus users use many SNSs to share data with friends and family.

A consequence of this a single user registers with multiple SNSs for different social network applications and each having different SNS accounts. As we know each SNS offers different services to users, one key feature shared among SNSs is how they are built around users and users' existing social networks. Each social network is isolated, therefore users manage their profiles and build relationship separately on different SNSs. Sometimes it happens that the content for the same user in different SNSs may overlap and it becomes a burden for users to manage contents across different SNSs. With growing influence and importance of SNSs many researchers have been working on different methods to connect users and aggregating data across SNSs, Means each SNS no longer stands alone. Consider an example there is an study presented in [1] how social networks connect services allow users to leverage their information on multiple SNSs by using single unique ID to access multiple SNS accounts to publish their contents simultaneously on multiple SNSs. In this context the aggregation of social relationship data has not been well studied. That is the motivational point to proposed this work. Here in our proposed work we are presenting system architecture to integrate heterogeneous SNSs and investigate a model to characterize the social relationships among a large number of users across heterogeneous SNSs.

Here in this work we have an Peer node and second is index peer node. A peer node is initiated on an end device (e.g. desktop) for a user to access different social networks, the main functionality is to integrate heterogeneous SNSs. From the peer node a user can register with more than one social network on his end-device as well as login to one or more SNSs at the same time. Another important point to be mentioned is, to associate these different accounts of the same user from heterogeneous SNSs we are using a unique user ID. This point known as Open ID in [2] can serve this purpose although any other uniquely identifiable ID can be used. We can say that a unique ID can be some kind of authenticated information like user's cell phone number or verifiable email address that is common on all social networking sites. Secondly index peer node is responsible for maintaining the status of user (i.e., online or off-line) and the routing information (i.e., IP address) of each peer node.

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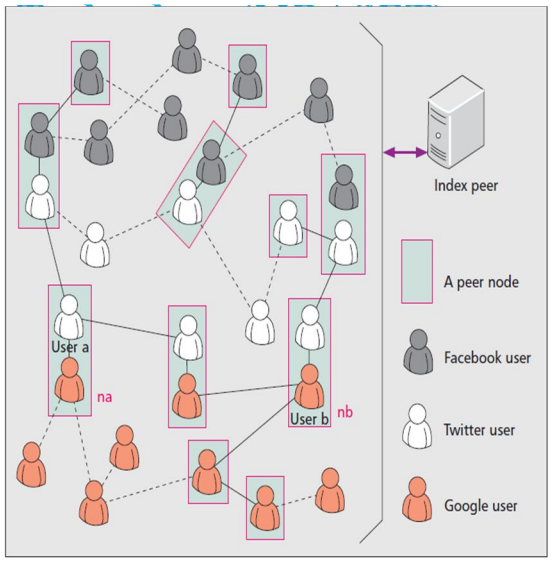

Fig. 1 System architecture of the proposed P2P-iSN.

In above figure the operations of our proposed work are shown. When a peer node is turned on first it reports to the index peer node his online status by using his unique ID of the peer node. Then based on this unique id a index peer node updates the online status of that peer node.

With this proposed architecture allows users from heterogeneous SNSs to communicate without involving any specific SNS and also the integration is independent of any specific social network. We can say that the integration does not incur overhead to the individual social network. Here we develop a Global Relationship Model to assess the strength of the global relationship between two users from heterogeneous SNS and by using this we propose a Searching mechanism which find the social path between two users from heterogeneous SNSs.

II. PROPOSED ARCHITECTURE

We are developing our project using Java, JSP and Servlets as a web project. We are using here Netbeans IDE to develop this application and the database that we are using is MYSQL.

In this section, we have given the details about our proposed system architecture, to integrate heterogeneous social networks. It consists of two kinds of nodes: first one is *peer node* and the other is *index peer node*. After this we are presenting a global relationship model and based on this model an isearch mechanism is presented.

A. Peer Node

A peer node is initiated on an end device for a user to access various SNSs, a user can register and login to multiple SNS from this node and its main functionality is to integrate heterogeneous SNSs. To associate these different accounts of the same user from heterogeneous SNSs we are using a unique user ID , we are using here users mobile number as a uniqueid. The concept known as Open ID can serve this purpose although any other uniquely identifiable ID can be used. The main functionality of a peer node is to integrate the heterogeneous SNSs through the Friend List maintenance can be done effectively. After this a Peer nodes can communicate with each other directly and form a peer-to-peer network. Other node is an index peer node which maintains the status of the online peer nodes. The info about index peer node is presented below.

B. Index Peer Node

The index peer node is responsible for maintaining the status (i.e., online or off-line status) and the routing information of each peer node. Whenever a peer node is turned on, first it reports to the index peer node the online status of it by sending the unique id of the peer node. By receiving this info the online status index peer node updates the online status for the peer node.

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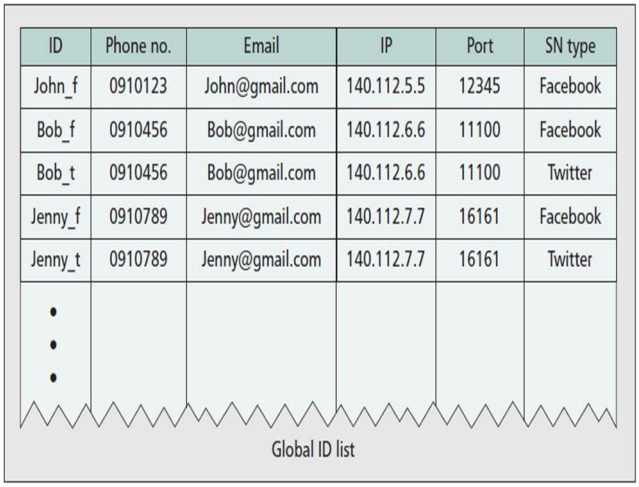

Fig. 2 An example of Global ID list.

An index peer node is a database that maintains the GlobalID list as shown in above figure. As show in the diagram for each online peer node an entry is created in the GlobalID List for the peer node. Just like the friend list GlobalID List consists of three kinds of information that is Personal Information second the Social Network Information and third, Address Information for an online user.
Next we have the Global Relationship Method to search for the global relationship between two users across heterogeneous social networks. Here first we find out the strength of two different users over heterogeneous SNSs and then based on this strength we present as i-Search method to find a meaningful directional path within two peer nodes in heterogeneous social networks. The I search algorithm is presented as follws

1) Algorithm 1:iSearch algorithm

Input:s,r,P,Z(P)
Output:P_{new},Z(P_{new})

a) foreach v: v $\in$ G - P do
b) if v = r then
c) $P_{new} \leftarrow P \cup \{s \rightarrow v\}$;
d) $Z(P_{new}) \leftarrow Z(P)F(s,v)$;
e) return;
f) else if v is online ,and $Z(P)F(s,v) > \Delta$ then
g) v.i-search(v,r,P $\cup \{s \rightarrow v\}$, $Z(P)F(s,v)$);
h) else if v is offline, or $Z(P)F(s,v) \leq \Delta$ then
i) quit;
j) end
k) End

II. CONCLUSION

In this paper, we have presented the integrated social network architecture to integrate multiple SNSs without incurring excessive overhead to the individual SNS. With this unique integrated model we have also worked on an effective approach named as Global Relationship Model which evaluates the global relationship strength between two users with more precision. With Global Relationship Model as the main module we propose the i-Search mechanism to find the social path with certain level of social relationship strength in a P2P social network. This research finding shows that by appropriately integrate users in heterogeneous social networks, the proposed integrated framework enable users to enhance their social connections over cyberspace and create more social and economic opportunities for the users.

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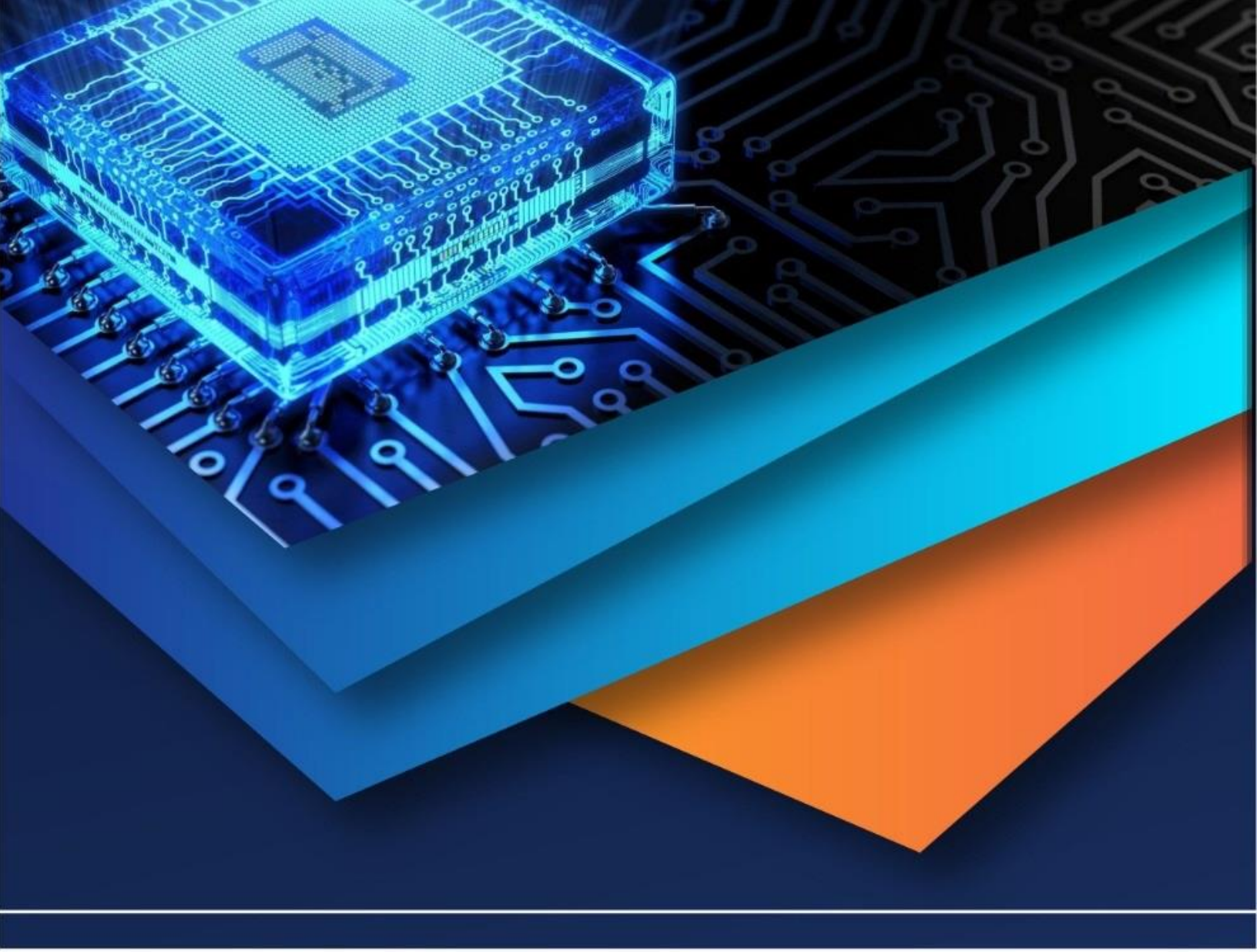

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