

# User Identification across Multiple Social Networks

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## ABSTRACT

Multiple social networks have become a way to connect with people they know and share their opinions on news and events with friends, colleagues and relatives etc. With the source of picture and video media, multiple social networks are a great way of passing time. Some of the most popular social networks include Facebook, Twitter, Instagram, Whatsapp, YouTube, Snapchat etc. There are number of social network networks to connect more number of people around the world. All social network networks different from each other based on various components such as Graphical User Interface, functionality, features etc. Many users have virtual identities on multiple social network networks. It is common that people are users of more than one social network and also their friends may be registered on multiple social network networks. User may login or sign in to multiple social network sat different timing, so user may not find his friends online when he logins to the particular social networking website. To overcome this issue their proposed system will bring together their online friends on multiple social networks into a single integrated environment. This would enable the user to keep up-to-date with their virtual contacts more easily, as they'll as to provide improved facility to search for people across multiple social networks.

**Keywords:** Online Social Networks, Identity search, Identity resolution, Privacy, Digital activities, User Identification, Cross-Media Analysis, Social media net work, Friend relationship, Anonymous identical users.

## I INTRODUCTION

In this article, they propose a method to identify users based on profile matching. To match profile they evaluate the importance of fields in the web profile and develop a profile comparison tool. By using this profile comparison tool user can easily find out other friends who are available on multiple social networks. This system is a web application where user will register himself and will login to the system using his user id and password. User can view his friends who are online on multiple social networks in a single integrated environment. User can search for friends who are on other social networking networks using profile comparison tool. This system will help many people to connect with each other. The effectiveness and efficiency of profile comparison tool is that it identifies and finds duplicate users on different social networks.

In this article, we propose a method to identify users based on profile matching. To match profile we evaluate the importance of fields in the web profile and develop a profile comparison tool. By using this profile comparison tool user can easily find out other friends who are available on multiple social networks. This system is a web application where user will register himself and will login to the system using his user id and password. User can view his friends who are online on multiple social networks in a single integrated environment. User can search for friends who are on other social networking networks using profile comparison tool. This system will help many people to connect with each other. The effectiveness and efficiency of profile comparison tool is that it identifies and finds duplicate users on different social networks.

### (a) Features

- (i) User can see his friends who are online on other social networking networks in a single integrated environment.
- (ii) This system allows finding user who is registered on multiple **social networks**.

- (iii) This system uses profile comparison tool to find out user's friends who are available on multiple **social networks**.
- (iv) This system will evaluate the importance of fields in the web profile and develop a profile comparison tool. These important fields in the web profile will be used to search duplicate users on multiple social networks.
- (v) This system helps many people to connect with each other.

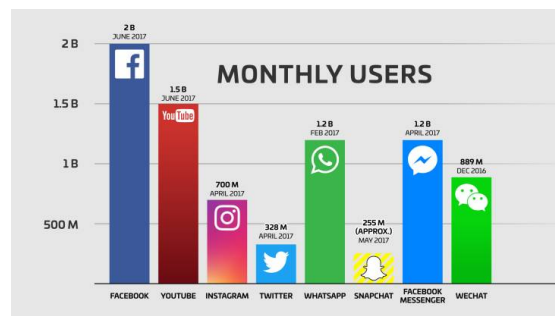


Fig. 1: Users activities in multiple social networks

## II STUDY AREA

Many people use more than one social network. They create accounts for sharing both private and public information. This information is digital footprints that can be used to identify the owners. To identify the account identities, it is necessary to gather user information regarding their online behaviours. In this paper, the architecture for matching accounts across multiple social networking networks was proposed. It is designed for extensibility and configurability so that, given an account of a user on a social networking networks, it can be used to find other accounts belonging to the same user on any social networking networks. The system collects account information, such as username, friends, and interests from accounts on multiple social networking networks. User may login to different social networking networks at different timing, so user may not find his friends online when he logs in to the particular social networking website.

## III METHODOLOGY

To approach the earlier mentioned problems, one has to first identify users across multiple social networks. Our methodology for identifying users across multiple social networks is based on unique behavioural patterns that individuals exhibit on social media. Our methodology has direct roots in behavioural theories in sociology and psychology. These behaviours are due the environment, personality, or even human limitations of the individuals in the content and link individuals generate on social media. Our methodology performs feature discovery to capture traces that these behaviours leave in social media for user identification. Before introducing our methodology, we discuss the types of information that can help us identify users across networks. Network structure and friendship information is known to carry information that could prove useful in many tasks, such as link and attribute prediction, spam detection, Behavioural analysis and group behaviour. Recent studies have indicated that link-based Methods outperform many other techniques on various tasks.

### (a) Definitions

- (i) **User identity:** A user identity of a user on a social network is composed of three dimensions of attributes Profile, Content and Network. Profile is describes such as username, name, age, location, etc. Content is describes the content creates or is shared by user such as text, time of post, etc., and Network is describes the network, which user creates to connect to this users such as number of friends. A

real-world user is denoted by  $I$  and his user identity on a social network  $SN_A$  is denoted by  $I_A$ .

- (ii) **Problem Definition:** Given an identity  $I_A$  of user  $I$  on social network  $SN_A$ , and his correct identity  $I_B$  on social network  $SN_B$ :

$$I_A \rightarrow \{I_B\}$$

The process of user identification in social networks follows two sub-processes **user identity search** and **user identity matching**. User identity search process is a set of user identities on  $SN_B$ , which are similar to given identity  $I_A$  and belong to user  $I$ . User identity matching process then calculates the similarity score between  $I_A$  and every user identity returned by user identity search process, on certain metrics. User identities are then ranked on the basis of similarity score, and the user identity with highest match-score is returned as  $I_B$ .

**User Identity Search:** For a user  $I$ , given his identity  $I_A$  on social network  $SN_A$  and a search parameter  $S$ , and a set of identities  $I_{Bj}$  on social network  $SN_B$  such that

$$S(I_A) \cong S(I_{Bj}).$$

$$\{I_A, S\} \rightarrow \{I_{B1}, \dots, I_{Bj}, \dots, I_{BN}\}$$

Any search method takes a source and a set of search parameters as input and retrieves a set of user items which hold similar values for the search parameters. For a user identity search algorithm, source can be given identity  $I_A$  and search parameters can be  $I_A$  attributes defined on her three identity dimensions namely profile, content, and network. Identity Search by profile implies searching for user identities on  $SN_B$  by profile attributes as search parameters extracted from  $I_A$ . The user identities  $I_{Bj}$  returned are similar to  $I_A$  in terms of profile attributes as username, name, gender, school, education, etc. Identity Search by content implies searching for user identities on  $SN_B$  with content attributes of  $I_A$  as search parameters. The user identities  $I_{Bj}$  returned are similar to  $I_A$  in terms of content creation, URLs posted, platform used for content creation, timestamp, etc. Identity Search by network implies searching for user identities on  $SN_B$  by network attributes of  $I_A$  as search parameters. The user identities  $I_{Bj}$  are similar to  $I_A$  in terms of friends, network in-degree, network out-degree, etc.

- (iii) **User Identity Matching:** Given a user identity  $I_A$  of user  $I$  on social network  $SN_A$ , a set of user identities:

$$Q = \{I_{B1}, \dots, I_{Bj}, \dots, I_{BN}\}$$

On social network  $SN_B$  and a match function  $M$ , locate an identity pair  $(I_A, I_{Bj})$  such that

$$M(I_A, I_{Bj}) = \text{Max} \{M(I_A, I_{B1}), \dots, M(I_A, I_{BN})\}$$

$I_{Bj}$  with highest match score is inferred as  $I_B$ .

$$\{I_A, Q, M\} \rightarrow \{I_A, I_{Bj}\} \rightarrow I_B$$

## IV RESULTS AND DISCUSSION

Nowadays, more and more people have their virtual identities on the multiple social networks. It is common that people are users of more than one social network and also their friends may be registered on multiple web networks. A facility to aggregate our online friends into a single integrated environment would enable the user to keep up-to-date with their virtual contacts more easily, as well as to provide improved facility to search for people across multiple social networks.

In this article, we propose a method to identify users based on profile matching. To match profile we evaluate the importance of fields in the web profile and develop a profile comparison tool. By using this profile comparison tool user can easily find out other friends who are available on multiple social networks. This system is a web application where user will register himself and will login to the system using his user id and password. User can view his friends who are online on multiple social networks in a single integrated environment. User can search for friends who are on other social networking networks using profile comparison tool. This system will help many people to connect with each other. The effectiveness and efficiency of profile comparison tool is that it identifies and finds duplicate users on different social networks.

## V CONCLUSION

This system will be useful for user who use social networking networks and likes to use multiple social networks. In this article, we have provided empirical evidence on the existence of a mapping between identities of individuals across the social media networks and studied the possibility of identifying users across multiple social networks. Both link and content information were used to identify individuals. In the link section, we found that when an individual is present on both networks, there are not relationships between the numbers of friends that the individual has on each network.

It was also shown that when the same individual had some friends shared across the two networks, no correlations were observed regarding what percentage of friends on each network was shared? Furthermore, we found that the target-node is not very likely to be connected to the crossed-over friends of the base node, and even in the cases that it is found to be connected, it is challenging to identify it among all connected nodes. These findings and evaluation results of the proposed method show that counter-intuitively, link information is not sufficient to identify individuals across social media networks. However, content information and in particular usernames can be used quite successfully to identify corresponding usernames on various networks. We demonstrated

a content-based methodology for connecting individuals across social media networks.

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