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PRIVACY PRESERVING FOR SHARING SOCIAL NETWORKS DATA

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Abstract: Online social networks is a feature of social networks services which allows the users to create, comment, post the other information and then posting a useful information through the social networks such as Face book, Twitter etc. An online social network has become a de facto portal for web access with billions of users and then context of messages exchanging through the web. Today much of the content shared on the web is created by individual users. The online social networks offer the social interactions between many users and then information sharing, but also raise a number of security and then privacy issues.

1 INTRODUCTION

In recent years, Online Social Networks (OSNs) have seen significant growth and are receiving much attention in research. Social Networks have always been an important part of daily life, but now that more and more people are connected to the Internet, their online counterparts are fulfilling an increasingly important role. Aside from creating an actual network of social links, many OSNs allow their users to upload multimedia content, communicate in various ways and share many aspects of their lives. Because of the public nature of many social networks and the Internet itself, content can easily be disclosed to a wider audience than the user intended. Limited experience and awareness of users, as well as the lack of proper tools and design of the OSNs, do not help the situation. We feel that users are entitled to at least the same level of privacy in OSNs, that they enjoy in real-life interactions. Users should be able to trade some information for functionality without that information becoming available beyond the intended scope. For example, a user of a self-help OSN like PatientsLikeMe, who su_ers from a given medical condition might not want everyone to know about this, but at the same time the user would like to meet people with the same condition. This is the context of the Kindred Spirits project, and its aim is to provide users the ability to meet and interact with other (similar) people, while preserving their privacy.

This paper aims to provide insight into privacy issues and needs faced by users of OSNs and their origins. The insights gained help plot a course for future work.

2 ONLINE SOCIAL NETWORKS

Let us begin by framing the concept of Online Social Networks, and observe why OSNs are as widely used as they are today. This will help to understand the needs of OSN users, the environments they navigate, and potential threats as discussed in further sections.

2.1 Definition of OSNs

Boyd and Ellison's widely used definition captures the key elements of any OSN:

Definition 1. An OSN is a web-based service that allows individuals to:

1. Construct a public or semi-public profile within the service of the online social networks,
2. Articulate a list of other users with whom they share a connection and then the information.
3. View and traverse their list of connections and those made by others within the service.

The list of other users with whom a connection is shared is not limited to connections
like friend (Facebook, MySpace) or relative (Geni), but also includes connections like follower (Twitter), professional (LinkedIn) or subscriber (YouTube).

2.2 The Rise of OSNs

The first OSN to see the light of day was SixDegrees in 1997. SixDegrees allowed users to create profiles, list and message their friends and traverse friends listings, thus fitting the definition above. Even though there were millions of users, users did not have that many direct friends and SixDegrees did not much functionality besides messaging.

The website finally shut down in 2000. During and after this period other websites started adding OSN features to their existing content, essentially becoming OSNs, with

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various degrees of success. In the years that followed, new OSNs started from scratch and began to o_er functionality beyond simply listing and browsing friends. Ryze and later LinkedIn tailored to professionals looking to exchange business contacts, while Friendster focussed on dating and finding new friends. Friendster became a mainstream OSN and was experiencing technical (performance and hardware) and social (fake profiles and friendship hoarding) di_culties because of its rapid growth. The technical di_culties and actions to combat the social di_culties eventually led to users moving to other OSNs. Despite this, Friendster is still popular, particularly in the Phillipines, Indonesia and Myanmar .The popularity of Friendster encouraged the creation of other similar OSNs, like MySpace and Orkut. While Myspace has become popular among youth worldwide, Google's Orkut has attracted a predominantly Brazilian and Indian crowd . Aside from these clearcut "social OSNs", a wide variety of niche OSNs have come forward to, each catering to a particular taste. Adding the social structure of an OSN can often enrich the underlying services, making them more useful and attractive to
users, or binding users to providers. Currently OSNs are an integral part of the internet.

2.3 Data in OSNs

Boyd and Ellison's definition already suggests that OSNs operate on two types of userrelated data:

Profiles: A profile is tied to a user and is their representation to the outside world. Usually this is a self description, or the description of an alter-ego

Connections : A connection exists between two users and can be of several types, like friend, colleague, fan, etc. A collection of connections can be represented by a graph.

Behavioral information. Browsing history and actions undertaken by the user while performing tasks within the OSN. Benevenuto et al. note that this type of meta-data is particularly rich Information such as preferences, friendships or even implicit data such as physical location can be inferred from it. Behavioral data is also found
in traditional websites, although behavior there is not related to navigating a social network.

Login credentials. Most OSNs require, or allow, the user to login to make use of the service. This login information is contained in the login credentials. This is something that can also be found in traditional websites.

As said, not all OSNs involve information from all of the categories. This mostly depends on the media-richness of a particular OSN, the functionality it o_ers to users, and its business model. Some information is only available to the OSN (i.e. its software or operators), while other information is also available to (a subset of) the OSN users. Furthermore some information is implicitly supplied to the OSN, by actions taken within the OSN, while other information is explicitly supplied, by providing this information.

2.4 Types of OSNs

Hardly any classifications for OSNs exist in scientific literature, although some pseudoscientific blogs and marketing resources users relevant thoughts on the matter. Some sources look at topical focus, others at topical specificity (or breadth of the user base) Yet other sources classify OSNs based on the openness of the network or the type of networking that goes on OSNs mean to their users. We will look at the purpose or functionality that an OSN aims to o_er to its user base. Examples of OSNs are given and these are named by the way they advertise themselves, some explicitly add .com. A broad distinction can be made between OSNs that focus on connections and those that focus on content.

Connection OSNs Connection OSNs focus more on the connections users have and exploit this mainly by (re-)connecting users and by providing a social contact book. Dating sites are websites that aim to help users find the life of the online social networks, many of which incorporate OSN aspects those days. Each users has a login credentials and usually a profile to attract potential lovers. Connections are typically in the form of love interests, but friendship links are also common; groups may also exist. Traversing the OSN is often based on searching or recommendations rather than through navigating existing connections. Messages exchanged between users are often kept private to these users, although in some cases comment sections, viewable by connections,are o_ered. Behavioral information can be kept by the OSN to provide better recommendations. Examples are PAIQ, Match.com and Plentyo_sh.com. Business. These OSNs aim to provide professionals with useful business contacts.

Searching for profiles does not always require signing up. Profiles display a users capabilities and work field as well as a means to contact that user. This is usually done through the OSN via messages. Users can also add other users to their network (connection) so that other professionals can see who the user is working or has contact with. An example of this class is LinkedIn, which requires a subscription for premium services.

Enforcing real-life relationships. These OSNs are not aimed at finding new friends, but (re)connecting with existing friends or acquaintances. Examples include familyoriented OSNs, college or ex-classmate focussed networks, such as MyLife, Oddnoklassniki and Plaxo.

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Socializing. Fitting the more traditional view of social networks. Here users can connect with current friends and find new ones. All types of information found in an OSN are also found in this class, often a lot of this information is public. The
revenue for the OSN provider often comes from advertisements and selling information about the OSN, but can sometimes be combined with a subscription for additional functionalities (as with Hyves). In order to attract and keep users this type of OSN usually has a lot of additional functionalities such as social and competitive games. For a user the value of such an OSN is often largely determined by the number of friends on the OSN. Some wellknown examples of this class are
Hyves, Facebook, Orkut and MySpace. Content OSNs Content OSNs focus more on the content provided or linked to by users.
Content sharing. Sharing of user-generated content can happen within a selected group, such as friends or family, or a far wider audience. Content that is shared is usually multimedia, because this is too big to e-mail to all parties involved. Uploading content most often requires users to sign up and log in; sometimes viewing content also requires logging in, or knowledge of a hard-to-guess obfuscated URL. Sometimes messages or tags can be added to the shared content, and especially in more open systems, content recommendation may be an integral part of the system. User profiles, if any, are usually brief. Examples are Picasa and Photobucket.
Content recommendation. In some cases users do not upload (multi-medial) content, but focus more on recommending existing (usually professional) content. Bookreview sites like WeRead.com, and URL-tagging communities like Delicious are prime examples where content is discovered and tagged or rated, but not created or uploaded.
Entertainment These OSNs are tied to a gaming community. The profile usually depicts a gaming avatar and connections to gaming friends. Messages can be passed to other users and sometimes groups can be formed. Behavioral information is mostly used to track games played and achievements unlocked within these games, this information is then displayed on the profile. Entertainment OSNs might make money by selling games and game add-ons, or through subscriptions. Examples are Xbox Live and Playfire. Advice sharing. O_ering a place for people to share their experience or expertise in a certain area with others, or to seek help and advice can be a focus for some OSNs.
For example mothers-to-be (BabyCenter), medical patients (PatientsLikeMe) or students (TeachStreet) can help one another. Other examples include Advogato, the now discontinued Cake Financial and ScienceStage. Hobbies. Many OSNs focus on audiences that have similar interests and hobbies. This may involve recommendation and advice sharing elements, but the main di_erence is that the audience is more homogenous and the topic of the OSN mainly makes up its character and appeal. Examples are AthLinks and Care2.“News” sharing. Blog-related OSNs, or ones that focus on world news or gossip. Examples are Buurtlink.nl, Twitter, Blogster and GossipReport.com.

3. PROPOSED SYSTEM

In proposed system we implemented a proof-of concept for online social networks such as facebook, twitter, orkut etc. This is the application for the collaborative management of shared information with others is called as MController. Our prototype application enables multiple associated end users to specify their authentication and authorization policies and privacy references to co-control the shared information. In our current implementation was restricted to handle photo sharing in the online social networks. Our approach can be generalized to deal with other kinds of sharing information and comments in online social networks as long as the stake holder of shared data are identified with effective methods like tagging the photos and then searching the information. In a proposed system shows a novel solution for collaborative management of sharing informations with the users in online social networks. We formulated a multiparty policy specification scheme and corresponding policy evaluation mechanism. In a flexible access control mechanism in a multiuser environment like online social networks should allow multiple controllers, who are associated with the shared information, to specify the access control policies. A group of users could collide with one another so as to manipulate the final access control decision.

4. MODULE DESCRIPTION

1. Owner Module
2. Contributor Module
3. Stakeholder Module
4. Disseminator Module
5. MPAC Module

4.1. Owner Module

In Owner module let *d be* a information in the space and m of a user *u* in the online social network such as face book , twitter etc. The user *u* is called the owner of *d*. The user *u* is called the contributor of *d*. We can analyzing the three scenarios profile sharing, relationship sharing and content

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sharing is to understand the risks posted by the users and then the lack of collaborative control in OSNs. In this the owner and the disseminator module of the multiparty access control mechanism can specify the access control policies to restrict the sharing of profile attributes and the the sharing of information. Thus, it enables the owner module to discover the potential threads and then the malicious activities in collaborative control of the sharing information. The detection of collusion behaviours in collaborative systems has been addressed by the recent work of the online social networks of the sharing information.

4.2. Contributor Module

In Contributor module let *d* be a information published by a end user *u* in the online social networks of sharing information someone else's space in the social network. The contributor publishes content to other's space and the content may also have multiple stakeholders (e.g., tagged users). The memory space for the end user will be allotted to the information of the online social networks according to user request for content sharing and then the information sharing. A shared content is Published by a contributor.

4.3. Stakeholder Module

In Stakeholder module let *d* be a sharing information in online social networks in the space of a user in the social network. Let *T be* the set of tagged users and then the searching users associated with *d*. A user *u* is called a stakeholder of *d*, if *u 2 T* who has a relationship and then the information with another user called *stakeholder*, shares the relationship and then the sharing information with an *accessor*. In this scenario, authorization requirements from both the owner and the stakeholder should be considered. Otherwise, the stakeholder's privacy concern may be violated an d then to be restricted. A shared content has multiple stakeholders.

4.4. Disseminator Module

In Disseminator module let *d be* a information shared by a user *u* from someone else's space to his/her space in the social network. The user *u* is called a disseminator of *d*. A content sharing and then the sharing information pattern where the sharing starts with an *originator* (*owner* or *contributor* who uploads the content) publishing the content and then sharing information, and then a disseminator views and shares the information. All access control policies defined by associated end users and then the information should be enforced to regulate access of the content in disseminator's space. For a more complicated case, the disseminated content may be further *re-disseminated* by disseminator's friends, where effective access control mechanisms should be applied in each procedure to regular *sharing* behaviours. Especially, regardless of how many steps the content has been re disseminated, the original access control policies should be always enforced to protect further dissemination of the content.

4.5. MPAC Module

MPAC is used to prove if our proposed access control model is valid in the online social networks. To enable a collaborative authorization management of data sharing in OSNs, of the sharing information it is essential for multiparty access control Policies to be in place to regulate access over shared information, representing authorization requirements from multiple associated end users. Our policy specification scheme is built upon the proposed and then the sharing information on the MPAC model. *Accessor*

Specification: Accessors are a set of users who are granted to access the shared information a. Accessors can be represented with a set of user names and then the group names of sharing information, asset of relationship names or a set of group names and then the users names in OSNs.

5. CONCLUSION

In our multiparty access control system for model and mechanism, a group of users could collude with one another so as to manipulate the final access control decision. Attack scenarios, anywhere a set of malicious users may want to make a shared photo available to a wider audience. Suppose they can access the photo, and then they all tag themselves or fake their identities to the photo.

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