A Cross Interaction Framework For Protecting Online Social Networks: Challenges & Practices

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Abstract: Social networking sites such as Facebook, twitter and orkut have millions of users. Millions of people are posting articles, photos to interact with other people. Visual representations of the social networks are important to understand the network data and convey the result of the analysis. Visualization often also facilitates qualitative interpretation of network data. But the sharing and interaction are limited within a same social network site. In this paper we have discussed to rectify the problem using a cross-site interaction framework. In future we are going to propose an algorithm to enhance the performance of the correlation of two wireless intrusion techniques (WIDTS) in detecting Denial of Service (DOS) attacks.

Keywords: Social networks, Cross-site interaction, Collaborative filtering, Social network site.

I. INTRODUCTION

SOCIAL networking sites such as MySpace, Facebook, Twitter, and Orkut have millions of registered users, and the effecting social graph structures have millions of vertices like users or social actors and edges like social associations. A social network is patterned by a graph [2], where the nodes describe individuals, and an edge between nodes shows that a direct relationship between the individuals has been discovered.

Social network sites as web-based services [1] that allow individuals to (a) build up a public or semi-public profile within a bounded system, (b) articulate a list of other users with whom they share a connection, and (c) view and traverse their list of connections and those made by others within the system. The nature and nomenclature of these connections may vary from site to site.

While we use the term "social network site" to describe this phenomenon, the term "social networking sites" also appears in public discourse, and the two terms are often used interchangeably. We chose not to employ the term "networking" for two reasons: emphasis and scope. "Networking" emphasizes relationship initiation, often between strangers. While networking is possible on these sites, it is not the primary practice on many of them, nor is it what differentiates them from other forms of computer-mediated communication (CMC).

The improvement of the social networks usage also increases the security issues twice. The following are some of the more common risks to network security [14].
  a) Network can be danger to itself.
  b) Network is physically vulnerable.

II. SOCIAL NETWORK ANALYSIS

Networks can be composed [11] of anything from families, project teams, classrooms, sports teams, legislatures, nation-states, disease vectors, membership on networking websites like Twitter or Facebook, or even the Internet.

SNA software produces these features from raw network data formatted in an edge list, adjacency list, or adjacency matrix (also called sociomatrix), often combined with (individual/node-level) attribute data.

Network analysis software [9] generally consists of either packages based on graphical user interfaces (GUIs), or packages built for scripting/programming languages.

Commonly used and well-documented scripting tools used for network analysis include: Net Miner with Python scripting engine, I graph, which has packages for R and Python, the network library for Python, and the SNAP package for large-scale network analysis in C++.

A. *Collaborative Filtering*

The progress of the Internet has made it much more not easy to effectively extract useful information from all the available online information. One of the techniques used for dealing with this problem is called collaborative filtering [6]. Collaborative filtering algorithms frequently demand,

  a) Users' agile participation
  b) An easy way to represent users' interests to the system
  c) Algorithms those are able to match people with their interests.

The workflow of a collaborative filtering system:
  a. A user expresses their preferences by rating items (e.g. books, movies or CDs) of the system. These ratings can be viewed as an approximate representation of the user's interest in the corresponding domain.
  b. The system matches this user's ratings against other users' and finds the people with most "similar" tastes.
  c. With similar users, the system recommends items that the similar users have rated highly but not yet being rated by this user.

B. Cross Site Framework:

Current social network architectures only allow users to compose localized policies that control access with respect to users subscribed on the site where the objects are posted.

Users are not able to share the posted objects across social network sites in a control manner. We propose the x-mngr framework [7].

Cross-site scripting (**XSS**) is a type of computer security vulnerability. A cross-site scripting vulnerability may be used by attackers to bypass access controls such as the same origin policy.

Cross-site scripting [3] uses known vulnerabilities in web-based applications, their servers, or plug-in systems they rely on. Exploiting one of these, they fold malicious content into the content being delivered from the compromised site.

The expression "cross-site scripting" originally referred to the act of loading the attacked, third-party web application from an unrelated attack site, in a manner that executes a fragment of java script prepared by the attacker in the security context of the targeted domain.

C. Background Study:

Soo Ling Lim and Anthony Finkelstein [10] have proposed the main contribution of the work is the development of the Stake Rare method, which supports requirements elicitation in large software projects. The method is one of the first applications of social networks and collaborative filtering to identify and prioritize stakeholders and their requirements.

A second important contribution of the work is the extensive empirical evaluation of the methods using a real large-scale software project. This work pioneered three significant forms of evaluation: the comparison with existing elicitation methods used in the project, the comparison with the ground truth built from post project knowledge, and the use of standard statistical measures from the information retrieval literature. This substantial empirical study using real data is one of the first in requirements elicitation research. Approximately 200 face-to-face interviews were conducted with the project stakeholders, and more than 1,000 pages of project documentation were reviewed.

Sudipto Das, Omer Egecioglu and Amr El Abbadi [12] Anonymization of edge weights in a social network graph is important to enable the analysis and mining of social graphs by computer scientists as well as social scientists. Such mining has significant impact on the management of social networks as well as the understanding of various social behaviors. We proposed Anonymous, a technique for the effective anonymization of weighted social network graphs by modeling linear properties and formulating them as an LP problem. The Anonymous approach can be applied to preserve linear properties by generation of inequalities corresponding to decisions made by the algorithm during its execution. As a proof of concept, we considered the shortest paths problem and showed how off-the-shelf LP packages can be used to effectively anonymize the graphs.

The composability of Anonymous for preserving multiple properties in a single anonymized graph was demonstrated using the all pairs shortest paths problem.

Xiongcai Cai, Michael Bain, Alfred Krzywicki, Wayne Wobcke, Yang Sok Kim, Paul Compton and Ashesh Mahidadia [13] have proposed an approach for people recommendation by collaborative filtering. Their experimental results show that the novel SocialCollab recommender performs well in people to people recommendation on social network data from a commercial online dating site. The proposed algorithms SocialCollab and CF+both outperform standard CF as measured on both Precision (SR) and Recall,with SocialCollab being the best. A general framework for ranking in the context of the SocialCollab algorithm is the subject of further work.

III. EXISTING METHODS FOR SOCIAL NETWORKS IN CROSS SITE FRAMEWORK

A. Cross-domain Collaboration Recommendation:

Jie Tang, Sen Wu, Jimeng Sun, and Hang Su [8] described the problem of cross-domain collaboration recommendation. They precisely define the problem and present three models for ranking and recommending potential collaborators. A cross-domain topic modeling approach has been proposed to learn and differentiate collaboration topics from other topics. Experimental results in a coauthor network demonstrate the effectiveness and efficiency of the proposed approach.

As for the future work, it is intriguing to connect cross-domain collaborative relationships with social theories. For example, how cross-domain relationships correlate with strong/weak ties and how such correlation can help spread knowledge from one domain to another domain. It would be also interesting to apply the proposed method to other networks, e.g., software development.

B. A Cross-Cultural Framework for Protecting User Privacy in Online Social Media:

Blase Ur, Yang Wang [4] has proposed first, there are questions concerning cultural norms and other general aspects of a culture's traditions. Next, we suggest legal issues and other jurisdictional or structural considerations that are likely to impact how a society at large expects data to be protected and providers to be accountable. Finally, we identify user expectations borne from precedents set by the media, prior services, and generally anticipated behaviors.

With the goal of helping researchers and providers of social networking sites better support privacy across many different cultures; we surveyed the literature on cross-cultural privacy issues in online social media. We highlighted areas of concern raised by each study, synthesizing these ideas into an extensible, three-part framework comprising cultural norms, legal issues, and user expectations.

IV. IMPLEMENTATION AND DISSCUSSIONS

Social network analysis [5] is the application of methods to understanding the relationships among actors and on the patterns and implications of the relationships.

After careful analysis the system has been identified to have the following modules:

A. Social Network Module.
B. Profile Mapping Module.
C. Cross Site Framework Module.

D. Supervised Learning Module.

A.   *Social Network Module:*

Social Network services provide users with different sets of services and experiences, for example, Facebook and MySpace allow users to create photo albums, fan clubs, and post feeds along with sharing all this content with friends, and LinkedIn enables users to connect with other users for professional purposes. As users have multiple social network accounts, users start to connect social network accounts to interact with friends in different social network services. For instance, a user can connect his Twitter feed to his Facebook status such that his Facebook status will be updated automatically whenever he updates his Twitter feed. Sharing content with friends in different social network services allows users to interact with friends across sites.

B.   *Profile Mapping Module:*

The profile owner provide a small set of user's identity mappings across the different sites, which is used to generate the training set for the supervised learning algorithm. The training set leverages both profile attributes and network metrics for each user to capture their similarity across different sites. Furthermore, we explore the fusion of mapping decisions generated by user's neighboring friends or other trusted users in the social network to enhance the accuracy of the supervised learning approach. We implemented our proposed framework as a photo sharing application, which allows users to share photos between both Facebook and MySpace platforms. Our experiments indicate that our approach provides high accuracy in performing profile matches.

C.   *Cross Site Framework Module:*

Enabling cross-site interactions beyond social network site boundaries is a challenging task that is related to both the semantics and the policies of the involved sites. In this paper, we propose a cross-site framework x-mngr for social network sites. The goal of this framework is the management of content sharing and access control across social network sites. We provide a cross-site access control policy, which enables users to specify policies that allow/deny access to their posted objects across social network sites. To enable cross-site interactions, the x-mngr should be able to mediate access between sites and map user's identities across social network sites. Cross-site identity mapping is required to enable x-mngr to easily identify friends that should be blocked and others that should be given access to shared content across social network sites.

D.   *Supervised Learning Module:*

The steps involved in the learning-based profile matching process are described. The first is a data collection stage in which the x-mngr retrieves the focus user friends' profile and network attributes from sites SNA and SNB. The collected user profiles might be missing some attributes, we use heuristics to estimate such missing attributes, for example a user's missing age could be estimated as the average of all their friends' ages In second step, the x-mngr presents the focus user with her friends from SNA, SNB and requests the user to indicate at least a user's in both sites.

V.   CONCLUSION

We provided an implementation of our proposed framework to enable secure interactions between users across social network sites such as Facebook and MySpace. We developed a cross Album application that enables users to share photo albums with their friends across social network sites. Our cross Album application uses to Facebook Connect and MySpace ID to authenticate users in both Face book and MySpace, respectively. Using the Facebook and MySpace API framework enables our application to request user authorization to access their profile. In addition, we presented the users with a consent form highlighting the data collection and aggregation practices adopted. The Facebook API and Open Social API were used to enable our cross Album application of retrieving the users' profile, friend list, and friend information in both Facebook and MySpace.

In future we also proposed an algorithm to enhance the performance of the correlation of two wireless intrusion techniques (WIDTS) in detecting Denial of Service (DOS) attacks.

VI.   REFERENCES

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