Privacy for Healthcare Social Networks

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Abstract and Objective

There has recently been an increase in both industry-specific social networks, such as Sermo and PatientsLikeMe in the healthcare domain, and an increase in the membership and activity levels of these networks. Privacy concerns are of more importance in these networks than general-purpose social networks, such as Facebook, Orkut and MySpace. In this work, we present the results of our work on developing privacy technology for social networks.

Keywords:

Privacy, Internet

Introduction

The intense media coverage of the privacy debacles being faced by social network providers and application developers underscore the heightened awareness of the fact that people are disclosing more information than they believe and are not aware of the consequence of their actions. Though, this phenomenon has been isolated to generic social networking platforms, the rise of healthcare social networks will further bring this issue to the fore.

Methods

We started exploring the space of privacy enablement in social networks, devised technology to enable privacy as a fundamental construct in the development of a social network [1], constructed a model that enables privacy interoperability between social networking platforms and social network applications [2] and created techniques to enable privacy-preserving analytics on anonymized social network data [3]. We have deployed prototypes of the technology and verified the usefulness and efficiency of the technologies [1-3].

Results

Our first result was a model for privacy interoperability (Figure 1). Our second result was a privacy risk score calculation method that calculates the sensitivity of profile attributes as a pre-processing step. Figure 2 shows that Mothers Maiden Name is the most sensitive attribute for the study of Facebook users that we carried out.

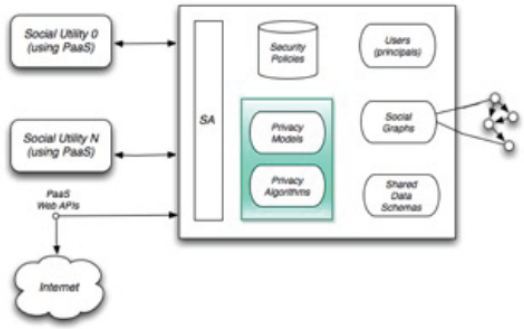

Figure 1-Privacy-as-a-Service Model

Figure 2-Sensitivity Calculation for Facebook profile attributes

In this work, we will show how this all applies to healthcare social networks

References

[1] Maximilien, EM, Grandison, T, Sun, T, Richardson, D, Guo, S and Liu, K. "Enabling Privacy As a Fundamental Construct for Social Networks". The Proceedings of the Workshop on Security and Privacy in Online Social Networking (SPOSN09), Aug 2009, Vancouver, Canada.

[2] Maximilien, EM, Grandison, T, Sun, T, Richardson, D, Guo, S and Liu, K. "Privacy-as-a-Service: Models, Algorithms, and Results on the Facebook Platform". In Web 2.0 Security and Privacy 2009. Oakland, California. May 2009.

[3] Liu, K and Terzi, E. "A Framework for Computing the Privacy Scores of Users in Online Social Networks". To appear in the Proceedings of the IEEE International Conference on Data Mining (ICDM 2009). Miami, Florida. USA. December 6-9, 2009.