A Semantic Model for Friend Segregation in Online Social Networks

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Online Social Networks

- Online social networks (OSNs) have experienced exponential growth in recent years.
- OSNs are the top most visited sites on the Internet.[1]
- OSNs are the fourth most popular activity on the Internet nowadays.[2]
- OSNs are one of the most popular fora for self representation and user interactions.

[1] Alexa http:/www.alexa.com/topsites
[2] Nielsen http://www.nielsen.com/

Users as a Content Manager

- Tremendous growth of OSNs resulted in fundamental shift in status of end users
- Individual end users become content managers instead of just being content consumers
- Today, for every single piece of data shared on OSNs, the uploader must decide which of the users should be able to access the data
- This put huge cognitive burden on users and majority of users stick with default privacy
- Default privacy settings are very permissive in nature and expose data to unintended audiences

Problems with Existing Privacy Controls

- Multitude of privacy controls to manage access to uploaded content of OSN users
- Interfaces for privacy controls are too complicated to most of the normal users
- Current interface has limited visual feedback, and promotes a poor mental model of how the settings affect the profile visibility
- Privacy settings for uploaded content are often incorrect, failing to match users' expectations

Lists and Circles

- Some of the social networking sites have begun providing lists and circles features
- This help users in organizing a large friend network into groups
- Grouping several hundred friends into different lists is a laborious process
- What criteria should be used to construct the lists and circles?
- Are these lists meaningful for setting privacy policies?
- The responsibility of maintaining the appropriateness of these lists lies solely on the user.

Failure to Represent Diverse Social Relationship

- Online social networks fail to represent diverse social relationships of the users
- Most OSNs employ friendship as only type of bidirectional relationship
- This provide only coarse indication of nature of relationship between two users
- In reality social relationships are of varying tie strength, dynamic, asymmetric
- It is challenging task to model dynamism, asymmetry, and relationship strength in user relationships

Context Collapse

- In reality people play diverse roles and display their personal information according to the role
- OSNs place employers and romantic partners on the same communication plane
- It makes presentation of varied versions of self difficult for OSN users
- Difficulty in disclosing information selectively to various life facets can lead to **context collapse**
- The collapsing of social contexts has emerged as an important problem with the rise of online social networks

Research Questions

- The main question for this research is how to represent diverse social relationships of the users in online social networks
- More specifically, we want to explore whether a users' interaction pattern with his friends can be used as a basis for inferring relationship strength among users
  1. How interaction pattern and profile similarity attributes reveals strength and context of relationship among OSNs users?
  2. How to develop a semantic model for friend segregation depending on strength and context of relationship among OSNs users?
  3. How to evaluate the model for friend segregation in online social networks?

Our Approach

- Theoretical framework for privacy from social perspective
- User study to examine interaction pattern of OSN users
- An ontological model to represent diverse social relationships

Theoretical Framework for Privacy

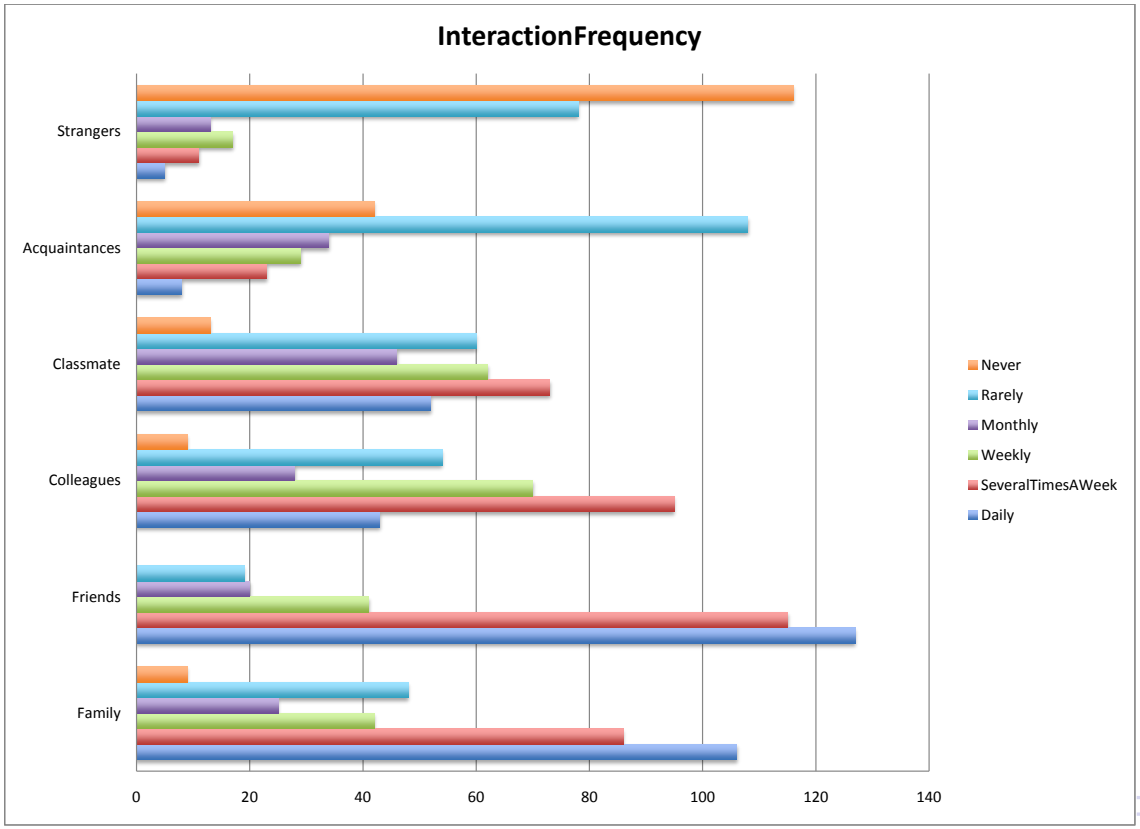
- Our theoretical framework for privacy address following three aspects:

  Context Segregation keeps audiences separate and compartmentalize social life of OSN user

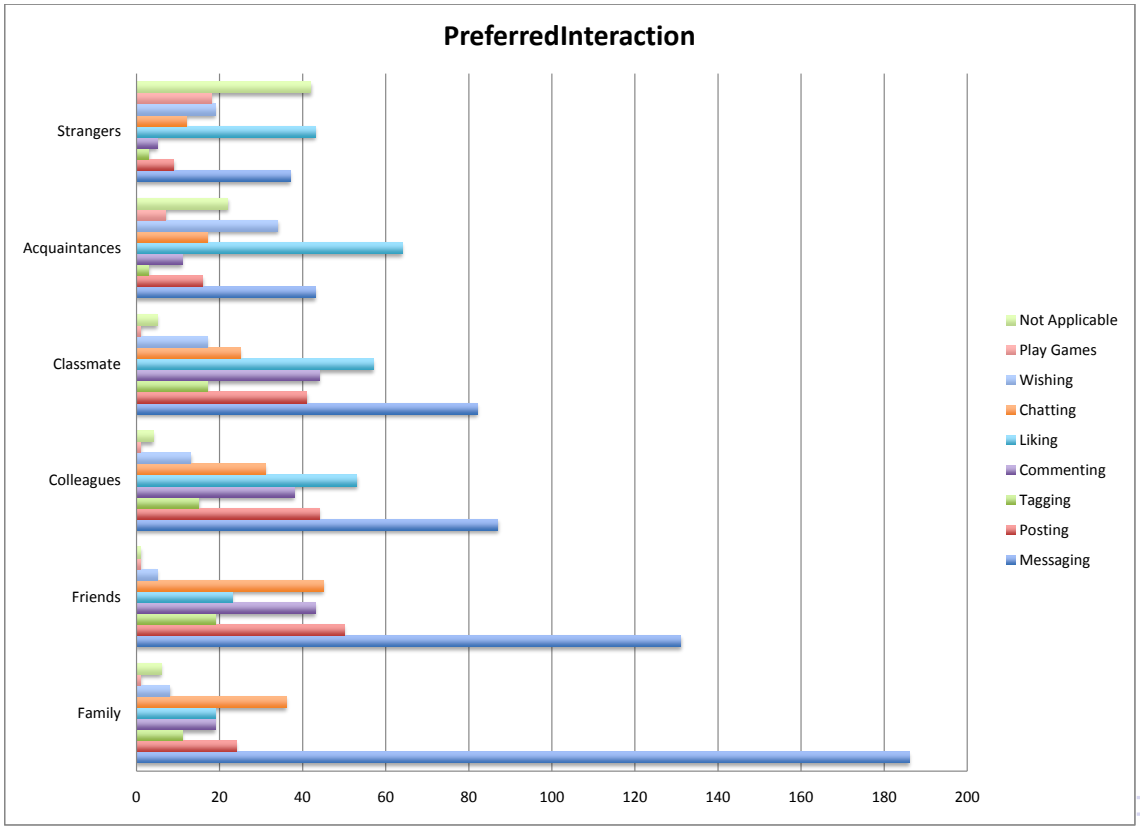
  Disclosure Minimization The relationship strength plays vital role in disclosure minimization

  User Control enhances user control over shared resources among several users

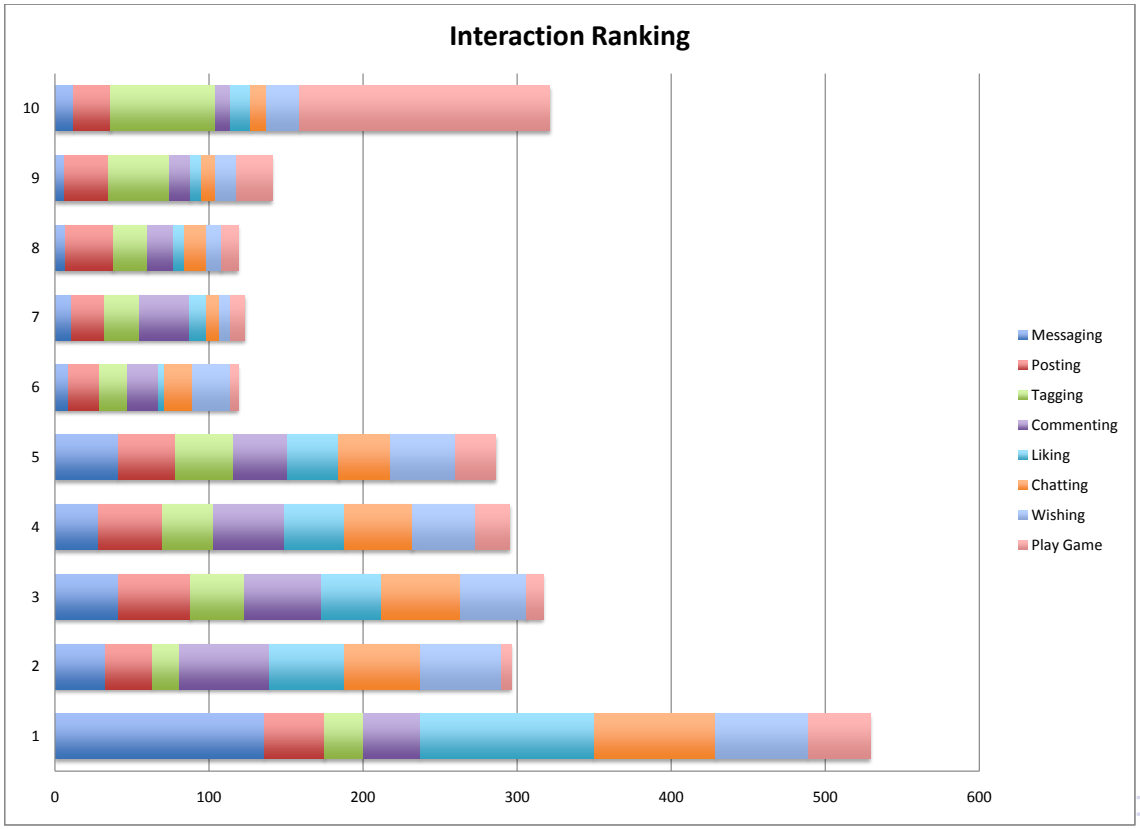
Results of User Study: Interaction Pattern



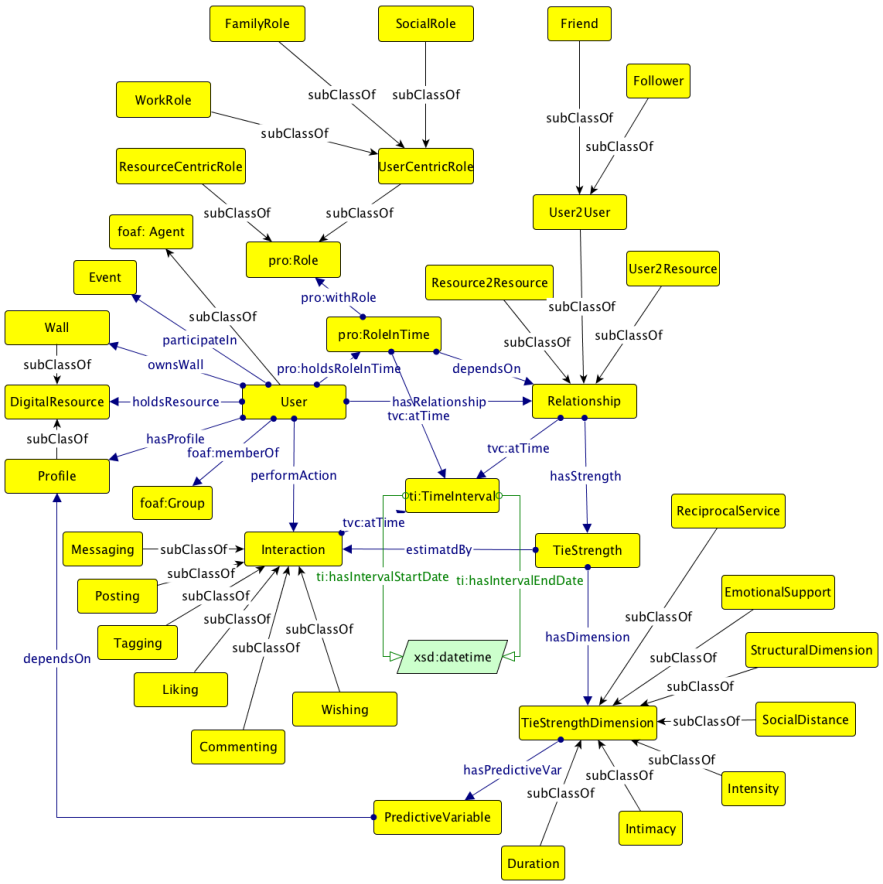
Results of User Study: Preferred Interaction



Results of User Study: Interaction Ranking



Ontological Model



Conclusion and Future Work

- We address social aspects of privacy that are ignored by existing solutions to larger extent
- The model is inspired by well known social theories of Erving Goffman, Helen Nissenbaum and Granovetter
- It is first step towards formalizing social theories.
- The main challenge is evaluation of such model