Privacy user interface for social networks based on the in-situ notifications feedback

Today, most social networks(SNs) have faced multiple privacy challenges. For example, posts on online websites such as Facebook end up getting shared with the audience for whom it wasn't meant to be, which get noticed when that person either likes or comment on the post. Privacy settings have failed to accommodate these features despite increased calls for their implementation [10]. Users have multiple challenges when they also try to withdraw posts created on some social media websites, with others criticizing Facebook's news feeds of ranking top posts and organizing them in ways that may be of interest to individuals [11]. Users are not aware of these algorithms, with the website having almost total control of feelings and occasions in the site.

From the above statement, it is apparent that most individuals do not have control over any of the privacy and feedback effects from their SN websites [12]. Majority of the users seek to change the privacy settings to produce the predicted and desired expectations, with these sites providing very little of these changes to the user's satisfaction. Some wish that SN websites had more options to change their privacy settings to change and predict their outcomes and goals while using social media [13]. Researchers insist that more should be done to ensure that these privacy settings are improved and adjusted to the user's wish and specifications depending on what they want to show or present in their pages [14]. The research proposes a new approach of in-situ feedback on social media notifications for privacy settings adaptations [1]. Furthermore, the in-situ based ranking will give users the flexibility to change their settings to see what they wish for themselves rather than the fixed algorithms by media sites such as Facebook.

In-situ feedback has applied in other domains, mobile phone notification being a good example. There has been a study on predicting web search results based on the in-situ feedback, Users are given an opportunity to provide a binary thumbs up or thumbs down judgment and text feedback when they search a query [7]. Another example is the In-situ study of citizens engagement by triggering notifications about nearby engagement opportunities, The finding of this research was that users found the in situ proactive notification application to be more desirable and pragmatic than an official city website that offers the same information about engagement opportunities[9].

Research has identified the need for in-situ feedback and their possible solutions to problems affecting social media site privacy [3]. The in-situ feedback on the SN notification will be used for calculating the friendship rating score to manage privacy settings and elicitation of all content in the proposed dashboard. Users also have the option to react to unwanted comments in regards to the audience's personal wishes. In-Situ feedback has also proven effective in automatic audience selection in regards to tie strengths, with daily and direct feedback relying on close, close tied friends [5]. These applications have also been useful in eliminating future junk notifications, with more privacy and adaptive settings allowing users to restrict friends, with posts and content only being made available to only a few selected friends. Having a general knowledge about the audience can help one to decide on the kind of content that can be shared on social platforms at a time when it is more likely to be seen by many

people. Having the right kind of an audience can guarantee one that his/her information is in the hands of the right people [3].

Research questions(RQs):

RQ1. How do context and individual factors influence the desired change in privacy settings when giving feedback on a privacy violation?.

RQ2. How many in-situ feedback options should be there? Which are the options needed?.

RQ3. Does a friendship dashboard allow users to manage their SN privacy settings faster or with a lower error rate compared to now?.

RQ4. Is there a difference in the above mentioned questions between SN providers (facebook, twitter, youtube..)

Below Research questions can be explored along with main RQ's:
1. What are the problems, issues, as well as the effects of these privacy violations on social media users?
2. What are the current friendship rating and grouping systems?
3. What are the ethical issues involved in a friendship score dashboard?

Research methods:

- Stage 1: For the RQ1, We will need to create a questionnaire consisting of questions in regards to context and individual factors influence the desired change in privacy settings when giving feedback on a privacy violation. We will need to survey with the students and if possible then with online privacy-related groups. Instead of surveys, we can also conduct individual semi-structured interviews asking the questions from the questionnaire related to RQ1 and generic questions regarding the privacy violation. Then record these interviews and transcribe them to conclude the results.
- Stage 2: After finishing stage1, we will move forward to conduct focus groups for determining how many and which in-situ options will be needed.
- Stage 3: To conduct the research studies and data collection for RQ3, we will need to build an application with desired functionalities like notifications feedback options, friendship dashboard and content elicitation. Also, Need to explore existing social media API's and find out its limitations for implementing desired functionalities like custom notifications feedback actions. If possible, then I will create an app using social media public API. One more option I can think of is using open source social media platforms similar to major social media sites like Facebook, Twitter, to build the app. All feedback data will be collected and analyzed to draw concrete conclusions in regards to the research questions of the main study.
- We will need to include RQ4 related questions while conducting studies in each stage.

Summary and Proposed friendship score dashboard:

Motivation

commented by friends not intended to

perceived audience **27%** of true size

users underestimate audience

62.5% unaware of algorithmic curation

In-situ feedback on smartphones

• mockup smartphone app

• used for discussion only

•binary feedback approach

11:08 TUE. JUNE 19
marius henkel liked your p...
Positive   Negative

• "positive" or "negative" feedback option according to perceived nature of notification

• feedback on social network status updates while on the go
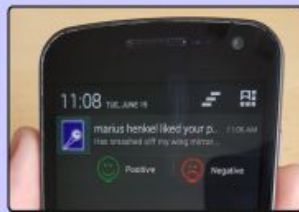
User study

• 4 focus groups

• 2 x 2 participants, 2 x 3 participants

• age between 19 and 31 (mean 25.6)

• discussion about:

  - possible soltuions to prevent unwanted disclosure

  - appropriateness of the binary approach

  - what changes in privacy settings users expect from the in-situ feedback

  - what other applications they can imagine

Friendship score dashboard

• In-situ feedback is accumulated to a friendship score

• Friendship score can be used to define disclosement settings

• Based on friendship score, friends are assigned three different groups:
  - "Show all" receiving all of the user's updates on the news wall
  - "Restricted" receiving only parts of the user's updates (e.g. without photos)
  - "Blocked" receiving no updates at all

• User can drag & drop friends to another group

• Or use the slider to move the boundary between groups

Show all
45 George R
23 Jules Huy   Jacky Daniels
19 Stephe-O
Restricted
17 Khalid
15 Jacques Lefrac
12 René Blaziér   Jonasey
Blocked
2 Alan Kay
-4 Mighty Mike
-9 Staniiii

Can be used for organizing news feed as well.

- Receiving all updates from "show all" users

- Receiving only infrequent updates from "restricted" users

- Receiving no updates from "blocked" users

Lessons learned & future work

There is no general opinion on which immediate effects the in-situe feedback should have, neither on the privacy settings for the commentator, nor for her close friends or friend groups. However, the feedback can be used to interactively manage the privacy settings in a friendship management dashboard. Content elicitation using the friendship score is another approach we would like to test in the future. Whether the binary design of the feedback mechanism is the best choice for this kind of task, has to be elaborated in future work.

References:

[1] Raber, F., & Krüger, A. (2019, September). Applications for In-Situ Feedback on Social Network Notifications. In IFIP Conference on Human-Computer Interaction (pp. 626-629). Springer, Cham.

[2] (PDF) Analyzing and Visualizing Emotional Reactions Expressed by Emojis in Location-Based Social Media. [accessed Jul 16 2020].

[3] Baccarella, C. V., Wagner, T. F., Kietzmann, J. H., & McCarthy, I. P. (2018). Social media? It's serious! Understanding the dark side of social media. European Management Journal, 36(4), 431-438.

[4] Wang, L., Fan, X., Tian, F., Deng, L., Ma, S., Huang, J., & Wang, H. (2018, April). mirror: Scaffolding Emotional Reflection via In-Situ Assessment and Interactive Feedback. In Extended Abstracts of the 2018 CHI Conference on Human Factors in Computing Systems (pp. 1-6).

[5] Voit, A., Mayer, S., Schwind, V., & Henze, N. (2019, May). Online, VR, AR, Lab, and In-Situ: Comparison of Research Methods to Evaluate Smart Artifacts. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (pp. 1-12).

[6] Norbert Seyff, Gregor Ollmann, and Manfred Bortenschlager. 2014. AppEcho: a user-driven, in situ feedback approach for mobile platforms and applications. In Proceedings of the 1st International Conference on Mobile Software Engineering and Systems (MOBILESoft 2014). Association for Computing Machinery, New York, NY, USA, 99–108.

[7] Kim, J. Y., Teevan, J., & Craswell, N. (2016, July). Explicit in situ user feedback for web search results. In Proceedings of the 39th International ACM SIGIR conference on Research and Development

[8] Jon Froehlich, Mike Y. Chen, Sunny Consolvo, Beverly Harrison, and James A. Landay. 2007. MyExperience: a system for in situ tracing and capturing of user feedback on mobile phones. In Proceedings of the 5th international conference on Mobile systems, applications and services (MobiSys '07). Association for Computing Machinery, New York, NY, USA, 57–70.

[9] Thore Fechner, Dominik Schlarmann, and Christian Kray. 2016. Facilitating citizen engagement in situ: assessing the impact of pro-active geofenced notifications. In Proceedings of the 18th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '16). Association for Computing Machinery, New York, NY, USA, 353–364.

[10] Such, J. M., & Criado, N. (2016). Resolving multi-party privacy conflicts in social media. IEEE Transactions on Knowledge and Data Engineering, 28(7), 1851-1863.

[11] Quinn, K. (2016). Why we share: A uses and gratifications approach to privacy regulation in social media use. Journal of Broadcasting & Electronic Media, 60(1), 61-86.

[12] Gelinas, L., Pierce, R., Winkler, S., Cohen, I. G., Lynch, H. F., & Bierer, B. E. (2017). Using social media as a research recruitment tool: ethical issues and recommendations. The American Journal of Bioethics, 17(3), 3-14.

[13] Rønn, K. V., & Søe, S. O. (2019). Is social media intelligence private? Privacy in public and the nature of social media intelligence. Intelligence and National Security, 34(3), 362-378.

[14] Fiesler, C., Dye, M., Feuston, J. L., Hiruncharoenvate, C., Hutto, C. J., Morrison, S., & Gilbert, E. (2017, February). What (or who) is public? Privacy settings and social media content sharing. In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing (pp. 567-580).

[15] Pielot, M., Church, K., & De Oliveira, R. (2014, September). An in-situ study of mobile phone notifications. In Proceedings of the 16th international conference on Human-computer interaction with mobile devices & services (pp. 233-242).