Design Considerations for Socially Sharing Quantified Self Data

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Abstract

Social sharing has been widely integrated into self-tracking tools. By aggregating design recommendations from the prior work on these tools, we can offer general design principles for sharing personally collected data. In this work, we break down sharing into a series of dimensions and offer design considerations for each. From these considerations, we can prescribe how applications in new, unexplored areas can effectively integrate social sharing.

Author Keywords

Personal informatics; social sharing

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Devices and applications for collecting and monitoring personal data have become ubiquitous. From their inception, many of these tools have included features for sharing with others. Even when sharing has not been technically supported, users of these systems have found other ways to share their data [1]. The data collector can benefit by sharing their data, getting encouragement, support, recommendations, and feedback from experts or friends [6]. Tool developers are also heavily incentivized to make social sharing as
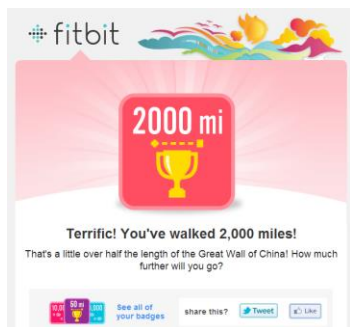
Figure 1. Sharing a badge gained with a *FitBit*, a commercial pedometer.
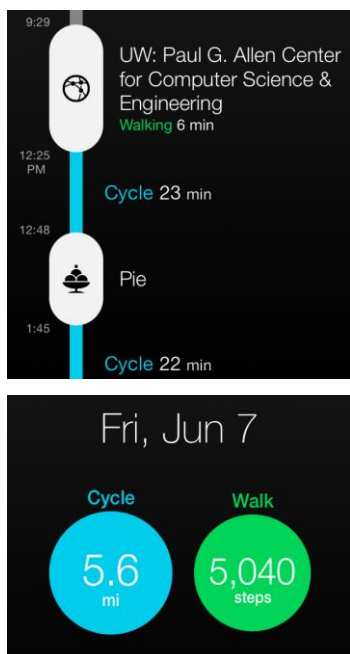

Figure 2. A fine-grained lifelog and corresponding summary collected from the commercial application *Moves*.

easy as possible, as any posts about their tools to social networks serve as free advertisements.

With the potential benefits of social sharing, it is unsurprising that there has been extensive prior work in this area. However, most studies consider a single point in the design space, either examining how a preexisting community shares or developing a novel way to share. As two examples, Teodoro & Naaman explore how Twitter has been used to share physical activity information with a wide-reaching, multi-purpose social network site [7], while Curmi et al. developed a new tool to share heart rate data in real time [2]. Each publication in this space provides design knowledge specific to the domain or sharing modality, while offering suggestions for how to extend to other related systems. By examining the prior work, we can start to offer more general design recommendations for sharing personally collected data.

In this workshop paper, we present the beginnings of a formalization and review of this design space. We analyze the literature on sharing to develop a series of dimensions that describe what has been tried, what has been successful, and what areas need more attention. While the constraints of a workshop paper do not allow us to fully elaborate on all of dimensions and requires us to focus on a few examples of the prior work, it provides a short explanation of what we are exploring. We hope that this workshop will serve as a forum to discuss design choices and provide additional points in the literature space with which we are less familiar.

Type of Data Collected
Quantified Selfers track in a wide variety of domains, often going so far as to create their own tools for

recording and reviewing data [1,5]. Sharing of manually collected records occurs in meetups in the Quantified Self community [1] or one-off posts to social networks [7]. While automatic tools are less flexible, they potentially create more reliable records and require less overhead. These tools often make the process of sharing simple, as seen by the "tweet" and "like" buttons prominent in figure 1.

The domain of data collected is also relevant to sharing. Location sharing has been researched extensively [4], and is integrated into the Google+ and Path social network sites. Sharing of biometric data such as heart rate is an emerging field [2], but has not reached mainstream adoption.

Design Considerations
When discussing whether a domain is appropriate to share, an important question to ask is "*Will the recipient find the information interesting or useful?*" While this question is subjective, a survey could provide insights into the interest level of recipients.

Another question to ask when considering a domain is whether the data is too private to consider sharing. Much work in location sharing [4] and physical activity [3] has asked this question. Munson et al. present a literature review surrounding privacy concerns when sharing personal data [6].

Preprocessing of Information Shared
Current tracking applications can record data constantly, gathering heart rate, location, or physical activity on a minute-by-minute basis [2,3]. Prior to sharing, this data can be aggregated in any number of ways. Figure 2 shows two such options from data collected by the commercial application *Moves*: a
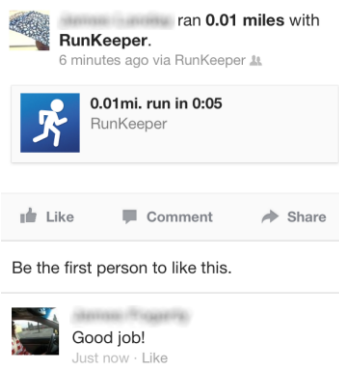
ran **0.01 miles** with
RunKeeper.
6 minutes ago via RunKeeper

0.01mi. run in 0:05
RunKeeper

Like   Comment   Share

Be the first person to like this.

Good job!
Just now · Like

Figure 3. A post automatically shared by *Runkeeper* to *Facebook*, with a mocking response.

115727 plays since 28 Nov 2004
97 Loved Tracks | 6 Posts | 0 Playlists | 5 shout

Add as friend
Send a message
Leave a shout

Your musical compatibility with

Recently Listened Tracks

Frightened Rabbit – Footshooter
Frightened Rabbit – Not Miserable
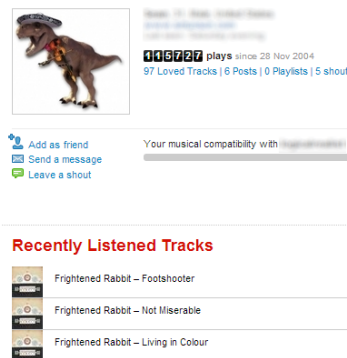Frightened Rabbit – Living in Colour

Figure 4. The public profile of a *last.fm* user, which reports recently listened to tracks.

detailed lifelog showing exact locations and durations can be shared directly, or only the total distance traveled and mode. Other applications enable detailed sharing of a specific activity, such as the *Strava* application reporting a bicycling route.

Some systems designers have considered editing data prior to sharing (or choosing to share less granular information, such as *at the grocery store* instead of a specific location) to prevent disclosure of potentially private information [3,4]. In these systems, privacy is in tension with honesty when sharing, as the use of these features may be viewed as lying to recipients.

Design Considerations
With a continuum of sharing granularities, there is a tension between providing enough details to meet the goal of sharing and oversharing. With just a high-level summary, finding opportunities for shared events such as carpooling or going for a walk when both parties are available become difficult, but providing a more detailed log may overwhelm the recipient [3].

Temporality of Sharing
Social network sites use a broadcast model for posting, where an action, either automatic by an application or initiated by the user, triggers making a post. Both automatic and manually triggered posts exist in applications, such as the accidental post in figure 3.

Another approach is to constantly stream data to a dedicated page, and let recipients give feedback at their discretion. While HeartLink uses this approach for sharing fine-grained data about a specific event [2], this is akin to providing information in a personal profile. Figure 4 is one such profile, combining standard information about the user with their latest data.

Design Considerations
Temporality of sharing is relatively underexplored. We hypothesize that automatically shared posts, such as figure 3, are less likely to generate feedback from recipients than self-curated posts.

Recipients of Information
The target audience of a post can vary widely. Sharing to general social network sites provides social accountability and enable sharers to reach a large audience [7]. This contrasts with sharing on a social network site dedicated to a specific device or type of data tracked. These recipients have a baseline understanding of and interest in the data being shared.

People also express interest in sharing with a smaller group consisting of close friends or family members [3,4]. This may be preferable if the data is beneficial to share, but personally sensitive.

Design Considerations
Different recipients offer different potential benefits. By sharing with a general social network site, more people are likely to see a post, but they may be more inclined to ignore it or may not receive value from reading it. Close friends or family members often provide opinions that matter more to the recipient, but the breadth of expertise is more limited. Using a dedicated social network site can serve as a compromise, but requires that recipients check an additional social network.

Sharing Motivation
People choose to use social features for a variety of reasons. Many commercial applications, such as *FitBit,* gamify activity, such as by having friends compete against one another to see who can walk the most

steps. However, some groups within the *FitBit* community collaborate to reach a team goal.

Sharing socially can give the sharer a sense of accountability, such as resolving to lose weight [7]. Recipients can in turn provide social support by encouraging the sharer or suggesting ways to help them accomplish their goal. Additionally, the sharer may share a specific achievement or success. In this case, the sharer may be looking to receive praise or simply notify their recipients.

Design Considerations
Sharing motivation directly influences the kind of post that is made and the kind of feedback received. A system that is aware of users' sharing motivations could guide the user to create posts that add to the activity descriptions (e.g., figures 1 and 3) by making the user's intent in posting explicit. This could help users receive positive responses.

Future Work
While prior work has highlighted a number of points in this design space, very little is understood about what does or does not motivate people to share and respond to posts. To begin to answer this question, we are preparing a survey of experienced self-trackers to understand their positive and negative sharing experiences. We anticipate that people have particularly positive experiences when their posts receive substantial feedback, and are conversely disappointed when a post made receives no feedback.

Workshop Participation
We hope that this workshop will provide us the opportunity to discuss the different dimensions to consider when socially sharing this data. We hope that the other attendees will have experiences with and thoughts on socially sharing tracked data to share with us. While this submission highlights only a small fraction of the prior work in this domain, we want to learn about related literature from other workshop participants. Finally, the workshop will give us the opportunity to discuss design considerations with other researchers who are familiar with the space, and receive feedback on our opinions.

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