Personal Informatics and HCI:
Design, Theory, and Social Implications

Ian Li

HCII

Carnegie Mellon University

Pittsburgh, PA 15213 USA

ianli@cmu.edu

Anind Dey

HCII

Carnegie Mellon University

Pittsburgh, PA 15213 USA

anind@cs.cmu.edu

Jodi Forlizzi

HCII

Carnegie Mellon University

Pittsburgh, PA 15213 USA

forlizzi@cs.cmu.edu

Kristina Höök

Mobile Life

Stockholm University

164 40 Kista, Sweden

kia@sics.se

Yevgeniy Medynskiy

GVU Center

Georgia Institute of Technology

Atlanta, GA 30332 USA

eugenem@gatech.edu

Abstract

Personal informatics is a class of systems that help people collect personal information to improve self-knowledge. The development of personal informatics applications poses new challenges in human-computer interaction and creates opportunities for collaboration between diverse disciplines, including design, ubiquitous computing, persuasive technology and information visualization. This workshop will continue the conversation from the CHI 2010 workshop [6] and extend the discussion of personal informatics to include behavioral theories that can guide the development of such systems, as well as the social implications of self-tracking.

Keywords

Personal informatics, reflection, awareness, behavior, life logging, visualizations, study methods

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Design, Experimentation, Human Factors

Web Page
More information about this workshop is available at http://personalinformatics.org/chi2011/.

Introduction
Personal informatics systems are interactive applications that support users in collecting personal information about various aspects of their life, behaviors, habits, and thoughts. These systems help their users improve self-knowledge by providing a personal history and tools for its review or analysis. Self-knowledge has many benefits, such as fostering insight [5], increasing self-control [8], and promoting positive behaviors such as energy conservation [9].

At CHI 2010, we organized a workshop about personal informatics systems [7]. The workshop was successful in getting a diverse group of people from multiple disciplines to discuss the many challenges and opportunities in this growing field[1].

This year, we will extend the discussion to important topics that emerged from last year's workshop. First, we will include discussions of new technologies and designs for personal informatics systems. Second, we will add a discussion about different behavioral theories to guide the development of personal informatics systems. Several research papers have discussed self-tracking in the context of goal setting [3] and the stages of behavior change [4]. Many personal informatics systems are used to guide users towards healthier lifestyles and to motivate behavior change. What other theories can direct researchers and

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[1] Position papers from the CHI 2010 workshop are available at http://personalinformatics.org/chi2010/.

developers towards improved designs of personal informatics systems. Lastly, we will discuss the social implications of self-tracking. Can sharing improve the gaining of self-knowledge? What are the differences in information needs between people collecting the data and those to whom data is shared?

Approach
Design and Development. We will continue last year's discussion about the different issues in supporting self-tracking and self-reflection with personal informatics systems. To maintain continuity from last year, we will use the stages of personal informatics systems [6] to organize the different issues. We will encourage submissions about collecting new types of behavioral information, facilitating the collection of multiple types of behavioral information, making it easier to understand information about oneself, and helping users take action on their newfound knowledge. We will also discuss encouraging collaborations between different disciplines to study personal informatics systems, engaging with commercial entities to collaborate on projects, and developing a platform for people to use as infrastructure for their personal informatics projects.

Behavioral Theories. Behavioral theories can help guide the design of personal informatics systems. Several theories have been used to describe the information and feedback needs of people who are looking at their own information for behavior change [3][4]. What other existing theories can provide different perspectives at self-tracking for behavior change?

Another aspect of personal informatics systems that behavioral theories can guide is how to keep users

engaged in collecting and reflecting on their personal data. Personal informatics systems are often used for long periods of time to collect as much data about the user. However, a common problem is users stop using them. How can the technology acceptance model [1] guide the design of personal informatics systems so that users will keep using them over a long period of time?

Social Implications. Many personal informatics systems have social components where people can share with others the data that they have collected about themselves. There are definite opportunities for using data from social media sites for personal informatics, exemplified by WhereDoYouGo for FourSquare, TwitterAnalyzer for Twitter, DeliciousDiscovery for Delicious, and LastHistory for Last.fm. While there are many benefits, there are also several questions to the role of social technologies on personal informatics. Can sharing data improve self-knowledge? What are the privacy concerns with sharing of personal data and how do we address them?

Workshop Goals and Themes

One goal of this workshop is to define opportunities for exploration of human-computer interaction in personal informatics. Discussing design, behavioral theories, and social implications will help participants direct the future of the development and research in this field.

Another goal is to share expertise between different disciplines to better tackle the many challenges that personal informatics poses on interaction with computers. Researchers need to study how personal informatics can benefit people's daily lives as well as develop the technologies that will make personal informatics available in daily life.

Lastly, we want to get more researchers and practitioners interested in this burgeoning field. Design guidelines and infrastructures need to be created to help more people build personal informatics systems and applications.

Topics of Interest

We invite contributions from various disciplines on topics including but not limited to:

- New and current personal informatics applications and systems on desktop, web-based and mobile platforms
- Sensor and life-logging technologies that monitor various personal behavioral information
- Effective feedback techniques that help users become more aware of their own behaviors, such as visualizations, virtual agents, and persuasive technologies
- Interaction techniques that engage users in personal informatics tasks, such as data collection, visualization and reflection
- Effects of self-knowledge and self-awareness on behaviors and daily life
- Methods of conducting long-term studies to determine effects of personal informatics on user behavior

Participants & Expected Community Interest

The workshop will invite technologists, behavioral scientists, designers, and artists working on topics related to personal informatics. In particular, we will recruit participants who are developing personal

informatics applications on the desktop and online; who develop sensor technologies, life logging applications, visualizations, and effective feedback techniques; who have expertise in testing and evaluating self-knowledge.

While few human-computer interaction researchers have tackled personal informatics explicitly, many have contributed to different aspects of personal informatics. More personal informatics applications and systems are being created that require users to be engaged with the interface during collection and reflection. Personal informatics poses many challenges and opportunities to pursue.

Additionally, the mainstream media has become interested in personal informatics with articles in The Wall Street Journal [2] and Wired [10]. These articles describe the current technologies people are building and using to learn their own behaviors, but we do not know how effective these current tools are in helping people. This is an opportunity to start the discussion on research issues that will lead to better personal informatics systems in the future.

We are currently pursuing personal informatics research in the Human-Computer Interaction Institute at Carnegie Mellon University. We have developed several systems and applications that facilitate manual and automated monitoring of user behavior and that allow users to explore their behavior using visualizations. We have also conducted long-term studies on the effects of personal informatics on users' daily lives. These works will inform the activities and discussions during the workshop. Beyond the

workshop, we will continue discussing our work and the participants' research.

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