Theories, Methods and Case Studies of Longitudinal HCI Research

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Abstract

The interest in longitudinal studies of users' experiences and behaviors with interactive products is mounting, while recent methodological advances have enabled new ways to elicit as well as process longitudinal data. With this workshop we want to establish a forum for the exchange of knowledge and discussion on novel theories, methods and experiences gained through case studies of longitudinal HCI research. This is an effort towards the collection of best practices for an edited book publication.

Author Keywords

Longitudinal HCI research, field studies

ACM Classification Keywords

H.5.2. [User Interfaces]: Evaluation/methodology.

Introduction

Longitudinal studies have been traditionally seen as too cumbersome and labor-intensive to be of much use in research on Human-Computer Interaction (HCI). However, recent market and legislation developments in the consumer electronics industry highlight the economic importance of studying prolonged use (see [11]). As products are increasingly becoming service-centered the focus shifts from achieving initial acceptance (e.g. purchase) to sustaining prolonged use.

This trend is reflected by the many recent calls for longitudinal studies in HCI. For instance, Klasnja et al. [14] argued for the need of multi-year studies in assessing the effectiveness of technologies that motivate users to adopt health-promoting habits. Zimmmerman et al. [21], in their field trial of Tiramisu, a mobile application for crowdsourcing bus arrival times, highlighted the role for long-term deployments. The more ambitious the planned impact of interactive products on people's experiences and social practices, the stronger the need to study consequences of product use over longer periods of time.

This interest in longitudinal HCI research is threefold.

The recent shift to a more experience-oriented design led to a strong emphasis on the temporal dynamics of interactive product use [5,7,16], leading to new theories and conceptualizations of the temporal dynamics of users' experiences such as McCarthy's and Wright's [20] framework of the six sense-making process, from anticipation to reflection and recounting, as well as Karapanos' et al. [11] framework of the different phases in product adoption, from orientation to incorporation and identification.

At the same time, new methods enable new ways to elicit as well as process longitudinal data. For example, in-situ methods such as the Experience Sampling Method and the Day Reconstruction Method are increasingly employed in longitudinal settings, while retrospective techniques promise a cost-effective alternative to longitudinal studies [9,10,15,19].

Last, longitudinal studies are increasingly popular in domains ranging from information visualization (e.g.

[6]), to virtual agents (e.g. [2]), technologies for health and behavior change (e.g. [13,14]), technologies for children (e.g. [1]), awareness systems (e.g. [12]) and user experience (e.g. [8,19]), among others.

Previous related work leading to this workshop

One of the workshop organizers was involved in conducting a series of events to build a body of knowledge about longitudinal research practice. This workshop is a follow-on to our original CHI 2007 SIG on longitudinal usability [17], where over 60 attendees participated in an active dialogue.

After the CHI 2007 SIG, we established a wiki on longitudinal research [22] with the goals of sharing best practices, case studies, and lessons learned about longitudinal data collection and analysis.

At CHI 2008 [18], the authors organized a panel where researchers from industry and academia gave their viewpoints and case studies. Then, to provide a better venue for in-depth discussion, we conducted a workshop at CHI 2009 [3], where participants discussed the open issues raised at the SIG and panel.

Prior to the CHI 2009 workshop, the authors also conducted a workshop at the 2008 Usability Professionals' Association conference [3]. We generated alternative definitions of "longitudinal research," prioritized over 30 questions of interest, and began developing best practices. Although the UPA workshop yielded valuable insight from practitioners, we needed more in-depth exploration with experienced professionals from both academia and industry before promulgating best practices for longitudinal research. The CHI workshop was a suitable venue for such

exploration, where we gained a blended viewpoint as well as more research-based case histories.

At CHI 2011, we had a lively SIG [4] where the need for a methodological treatment for longitudinal studies by the CHI community was echoed. In particular, practitioners expressed a gap in techniques/tools that they could use for comparative data analysis of both quantitative and qualitative data; along with the need to conduct longitudinal research in an Agile environment. Thus we feel the need to organize an academically focused workshop where researchers from various domains and come together to discuss solutions for the methodological aspects of longitudinal research.

Workshop topics and goals

With this workshop we want to establish a forum for the exchange of knowledge and discussion on theories and methods in longitudinal research and their use for HCI. We welcome diverse submission with the aim of making links across different contexts, data, and methods. Submission might include, though not limited to, the following topics:

Theories of longitudinal HCI research
Discussion of theories, frameworks, and paradigms of longitudinal HCI research. How can theories of long-term experience and behavior inform the design of interactive systems? What are the crucial elements that these theories and framework should capture? Application domains may range across any area of HCI.

Methods for longitudinal HCI research
Discussion of state-of-the-art methods for longitudinal HCI research as well as making existing methods more appropriate to longitudinal work. Examples may include, but not limited to, the application of in-situ

methods in longitudinal settings, quantitative techniques for modeling dynamics in subjective judgments, instrumentation for longitudinal data logging.

Case studies of longitudinal HCI research
Discussion of longitudinal HCI studies and lessons learnt. What questions can longitudinal research address? What methods and data are more appropriate in longitudinal settings and how can we analyze them? How can we sustain participants' motivations? Application domains may range across any area relevant to HCI.

Organizers' background

Evangelos Karapanos is an Assistant Professor of Human-Computer Interaction at Madeira Interactive Technologies Institute and faculty member of Carnegie Mellon | Portugal. He has published on empirical studies and new methods for understanding long-term user experiences. In 2010 he received a PhD (cum laude) from Eindhoven University of Technology and has been a visiting researcher at Philips Research, Philips Consumer Lifestyle and the Human-Computer Interaction Institute at Carnegie Mellon University.

Jhilmil Jain is a Sr. UX Researcher at Google. Prior to that she led UX efforts at Microsoft and HP Labs. As a Sr. UX Strategist at Microsoft, she led user research and usability efforts for the speech@microsoft product group for products such as Xbox, Windows Phone 7 and Bing. At HP Labs, she was responsible for managing all UX initiatives for multiple business incubations in domains such as retail, entertainment, finance etc. She has several publications and patents in information visualization, user research, multimodal interaction

modeling, personal information management systems, and experimental evaluation. She has served as the program chair for CHIMIT 2009; on the program committees of various conferences such as CHI, HCII, and UPA; on the editorial board for the International Journal of Handheld Computing Research; on the review boards for two books "Handheld Computing for Mobile Commerce" and "The Psychology of Facebook"; and is currently serving a third term as the UX community chair for CHI 2012. She is a member of ACM, UPA, Phi Kappa Phi, and Upsilon Pi Epsilon.

Marc Hassenzahl is Professor for User Experience at the Folkwang University of Arts in Essen, Germany, and research manager at MediaCity, Åbo Akademi University, Vaasa, Finland. He is interested in the affective and motivational aspects of interactive technologies – in short: User Experience and Experience Design. He recently published "Experience Design: Technology for all the right reasons".

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