
Always-On + Adoption – a method for longitudinal studies

Mattias Jacobsson

Mobile Life @ SICS
Box 1263
16429 Kista, Sweden
majac@sics.se

Stina Nylander

Mobile Life @ SICS
Box 1263
16429 Kista, Sweden
stny@sics.se

Abstract

We will discuss an approach for conducting long term studies of companionship technologies – technologies intended for more intimate relationships with people. We draw from our work of conducting several qualitative long-term user studies of people's relationship with robotic companions and mobile devices in order to develop a methodology where the initial bond with the artifact is based on a more intense experience. After this initial phase referred to as Always On the relationship will fade over to the adoption phase where the more traditional long-term use can be studied. Most recently we are trying out this approach for studying people's experience of an online social game that features virtual agents.

Keywords

Robot companions, long-term use, long term study

ACM Classification Keywords

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

General Terms

Experiment



Figure 1. Pleo, the robotic dinosaur toy.

Introduction

Our take on longitudinal studies within HCI originates from a European project focusing on living with robots and interactive companions. Having robots in our homes or workplaces requires designing them to integrate in our everyday lives. Robot companions will be used over long time and might be used for personal tasks such as eating-aids for disabled [2]. In such settings it is important to design for longitudinal use and not only for initial novelty hype. However, gathering design input for long-term use can be rather challenging, in particular when research prototypes are involved.

In research we have seen examples of household robots performing tasks in homes and workplaces such as the Roomba vacuum cleaner [4] and the RobCab [3] transport robot as well as more mundane examples like Pleo the robotic dinosaur [1]. Our main motivations for conducting longitudinal studies are the resulting implications for how to properly design systems and technology that unfolds or reveals its complexity over time.

Conducting studies on long term use of research prototypes faces two types of problems: creating prototypes that are stable enough and functional enough for long term use, and finding methods for long term studies.

We have experimented with various method setups and how to combine them. Here, we will briefly present a few cases and propose a method setup that could work for studying long term use of a product or service.

Cases

Due to the difficulty of creating research prototype robot companions that are stable enough for long term use and thus enable studies of that use, we have sometimes resorted to using commercial robots in our studies. For example, we have in this case used the robot pet dinosaur Pleo to study how people would form relationships with their robot companions over time. The Pleo robot does not perform any practical companion chores such as fetching or carrying things or in other ways assisting the users. However, it is designed to function as a pet and reacts to users' behavior and has its own behavior. Therefore, we foresaw that studying peoples interaction with Pleo could shed some light on the process of integrating a robot in everyday life [2]. Here are the two methods that we used for the studies:

Adopt a Pleo – To focus on the long term relationship, the “adopt a Pleo” method setup was devised [1]. Families could have a Pleo in their home for about six months and use it as they pleased, and a series of interviews were conducted during this period. However, in many cases, family members did not find the Pleo engaging enough over time and it was rarely used after the novelty had worn off.

Always On – Since the “adopt a Pleo” method setup did not work very well in that users failed to build a relationship to the Pleo, we created the Always On setup. Here, users were asked to keep a Pleo close to their person for three days and then interviewed. If they were at home, Pleo should be in the same room, if they went somewhere they would bring it with them. Three days might not be considered a long term study, but in terms of exposure this setup created more time

with the Pleo than the six months study sometimes. In the Always on setup, users did create a relationship with the Pleo which made it possible to draw conclusions that were relevant for long term use.

Proposed method

Our conclusion from the two studies described above is that a combination of them could become a more balanced approach using *Always on* initially in order to engage users to create a relationship to the product or service and then switch to *Adopt* setting for continued use.

We believe this combination could be especially beneficial in research settings where prototypes often do not have a product finish and parts of the functionality can be unfinished. Many attempts to run long-term studies face difficulties in motivating participants to use the prototypes for long enough periods of time and the *Always on* approach can provide the necessary kick-start.

Applicability to other cases

We have been focusing on qualitative data since we are interested in people's experiences when forming long-term relationships with companionship technologies. That said, we have a strong connection with robotic companions but we would like to broaden our perspectives towards other areas of research facing similar issues and other technologies.

We believe that this method could be used for other types of long term studies such as health applications, education or gaming. The duration and intensity of the two phases would need to be adapted to each case. For diabetes management, the intensity of the always on

phase would be lower but in return it would be longer. For example, it could involve daily contact with health care professionals for a few weeks. The adoption phase would also be longer in many health care related cases since no effects might be seen in just a few months.

We are currently preparing a study of a social game with this method setup. This is a case where we have modified the always on part of the study. Instead of three days all the time, we are gathering groups of users to play the game together for two hours. Since it is a game that is intended to be played in short bursts over weeks or months we think that two hours of uninterrupted play provide the always on effect. The adoption phase will go on for two months where we will study the game logs to explore how participants continue to play the game, and interview them about their gaming experience.

Acknowledgements

We thank all participants who have participated in the studies that have lead to the results presented here. This work was funded by the EU FP7 ICT-215554 project LIREC (Living with Robots and Interactive Companions).

Short Bio

Mattias Jacobsson is a full time research assistant and Ph.D Student at Mobile Life @ SICS with a background in engineering physics and complex adaptive systems, currently focusing on human-robot interaction. In 2008 he worked with the American based robotics company Ugobe for three months based on a personal grant from Swedish Foundation for Strategic Research. In 2010 he worked in a small seed project with Wireless@KTH called Mobile ActDresses.

Stina Nylander is a senior researcher at the Swedish Institute of Computer Science and at the Mobile Life Centre of Excellence, both located in Stockholm, Sweden. Her main research focus is the design, and the real life use of mobile services. Most recently she has worked with for example Internet use from cell phones, mobile ICT for preschool parents, and entrepreneurs' use of social media.

References

- [1] Ferneus, Y., Håkansson, M., et al. How do you Play with a Robotic Toy Animal? A long-term study of Pleo. In Proceedings of IDC, Barcelona, Spain, (2010), ACM Press, 39-48.
- [2] Jacobsson, M. (2009). Play, Belief and Stories about Robots: A Case Study of a Pleo Blogging Community Ro-Man, IEEE.
- [3] Jiménez Villareal, J. and Ljungblad, S. Experience Centred Design for a Robotic Eating Aid. In Proceedings of HRI, Poster, (2011), ACM Press.
- [4] Ljungblad, S., Kotrbova, J., et al. Hospital Robot at Work: Something Alien or an Intelligent Colleague? In Proceedings of CSCW, (2012).
- [5] Sung, J., Grinter, R.E., et al. "Pimp My Roomba": designing for personalization. In Proceedings of CHI, Boston, MA, (2009), ACM Press, 193-196.