Chapter 17

User Experience of Socially Interactive Robots: Its Role and Relevance

B. Alenljung
University of Skövde, Sweden

J. Lindblom
University of Skövde, Sweden

ABSTRACT

Socially interactive robots are expected to have an increasing importance in everyday life for a growing number of people, but negative user experience (UX) can entail reluctance to use robots. Positive user experience underpins proliferation of socially interactive robots. Therefore, it is essential for robot developers to put serious efforts to attain social robots that the users experience as positive. In current human-robot interaction (HRI) research, user experience is reckoned to be important and is used as an argument for stating that something is positive. However, the notion of user experience is noticeably often taken for granted and is neither described nor problematized. By recognizing the complexity of user experience the intended contributions can be even more valuable. Another trend in HRI research is to focus on user experience evaluation and examination of user experience. The current research paths of user experience of socially interactive robots are not enough. This chapter suggests that additional research directions are needed in order accomplish long-term, wide-spread success of socially interactive robots.

INTRODUCTION

Socially interactive robots are expected to have an increasing importance in the everyday life for a growing number of people. Robot technology has increased application in commercial products (Oh & Kim, 2010). For robots, like in all other interactive systems, products, and devices, positive user experience (UX) is necessary in order to achieve the intended benefits. User experience is about feelings that arise and forms internally in a human through the use of technology in a particular usage context (Hartson & Pyla, 2012; Hassenzahl, 2013). User experience is important for user acceptance of social robots (de Graaf & Allouch, 2013). If the usage of a robot entails a
negative experience of the user, it can have negative consequences, such as reluctance to use the current robot as well as robots in general, erroneous handling, or spreading bad reputation. Therefore, it is essential for robot developers to put serious efforts to attain robots that the users experience as positive. By designing a high quality interaction with the intended users and usage context in mind it is possible to positively influence that experience (Hartson & Pyla, 2012; Hassenzahl & Tractinsky, 2006).

Therefore, the user experience of social robots needs to be a central issue of concern. Positive user experiences underpin the proliferation of social robots in society (Weiss et al., 2009a). A positive user experience does not appear by itself. Instead, the positive user experience has to be systematically, thoroughly, and consciously designed for (Hartson & Pyla, 2012; Hassenzahl, 2013). Each specific robot development project needs to take the UX perspective into account during the whole development process. The field of user experience design (UXD) offers methods, techniques, and guidelines for creating a positive user experience for all types of interactive systems for human use (Anderson et al., 2010; Hartson & Pyla, 2012). However, the interaction between humans and robots differ evidently from interaction between humans and more traditional and passive computer-based artefacts (Dautenhahn, 2007; Young et al., 2011). Hence, a practitioner, i.e., a developer of robots for real-world use, needs research-based guidance of how to properly choose and apply UXD techniques and guidelines for the social robotic products.

In this chapter, the role and relevance of user experience of socially interactive robots is depicted. Based on that framing, additional research directions are addressed, including a wide range of different perspectives and attributes of user experience, the UXD process, and robot products. The rest of this chapter is outlined as follows. First, in the background section; the notions of human-robot interaction, socially interactive robots, and user experience are introduced. Next, the role and relevance of user experience of socially interactive robots is portrayed. Then, a section of call for additional research directions is presented. The chapter ends with some conclusions.

**BACKGROUND**

In this section, first, the field of human-robot interaction is introduced. Then, the type of robot in focus, i.e., socially interactive robots, is presented. Lastly, the notions of UX as well as UXD are described.

**Human-Robot Interaction**

Robots are increasingly becoming a part of the human world. In some domains, not least in industrial settings, they have been an important and natural part for many years. They are also entering other settings, professional as well as domestic. The purpose of robotic technology is to make it possible for a person to conduct something that he or she could not do earlier, facilitate a certain task, make it more nice, or provide entertainment (Goodrich & Schultz, 2007). Robots can bring different kinds of value (Dautenhahn & Sanders, 2011), for example, by conducting monotonous assembling tasks in manufacturing or keeping the lawn cut. In those cases, often humans do not need to continuously interact with the robot. Other types of robots and usage situations, e.g., assisting elderly persons, demand more frequent and multi-faceted interaction. This interplay between robots and their users’ has to be carefully taken into account when developing a robot in order for it to be valuable.

The problem of understanding and designing the interaction between human(s) and robot(s) is the core interest of the field of human-robot interaction (HRI) (Goodrich & Schultz, 2007). More precisely, “HRI is the science of studying people’s behavior and attitudes towards robots.
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