Robots That Care

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ABSTRACT

Many countries face pressure on their health care systems. To alleviate this pressure, 'self care' and 'self monitoring' are often stimulated with the use of new assistive technologies. Social robotics is a research area where robotic technology is optimized for various social functions. One of these functions is self care assistance. To foster progress in this area of 'social robotics for self care', coordinated efforts between research institutes, companies and end users are needed. This workshop focuses on bringing these stakeholders together and creating a shared research agenda.

Keywords

Healthcare, self care, assistive technologies, social robotics, research agenda

INTRODUCTION - TOPIC OF THE WORKSHOP

Many countries, especially in Europe and North America, are facing a growing pressure on their healthcare systems, both in terms of available staff and in terms of affordability. One of the ways to alleviate this pressure is by stimulating 'self care' or 'self development', i.e. facilitating and supporting people's self reliance in preventing or coping with their problems (further referred to as 'self care'). Self care is for example stimulated to be able to handle the increasing number of people with chronic diseases (e.g. diabetes), to support people with developmental disorders (e.g. some autism spectrum disorders) and to support people who stay long in the hospital.

In these self care efforts, technology can and does play a role, and one of the technologies that may play an important role is 'social robotics'.

Social robotics and social robots

Researchers naturally vary in their interests, positions, and definitions, yet there are some constant elements in descriptions of social robotics (Breazeal, 2007; Bartneck, 2003; Fong et al., 2003). Social robotics can be described as a multidisciplinary research area where robotic technology is studied and optimized for its potential in various social functions. Insights from, for example, psychology, sociology, and interaction studies are gradually being incorporated in the programming of robots to achieve various objectives in the overall interaction between people and technological systems (gaining trust, motivating, increasing technology acceptance, entertaining, drawing attention, etc.). Because the main function of these systems resides in (changes in) the attitudes, moods or beliefs of the people who interact with them, they can be considered *cognitive* systems.

A social robot typically posesses some level of autonomy and achieves its objective in part by following the behavioral norms expected by the people with whom the robot is intended to interact (Bartneck 2003). Social robots are often designed to mimick human-human interaction in their interaction with humans (because it often contributes to the objective). One aspect of this human imitation is that a social robot often benefits from a physical embodiment that allows the robot to communicate using 'human-like' social cues and signals. Higher technology appreciation through being socially and physically present is also predicted by the Media Equation of Reeves and Nass (1996) and supported by some initial results (e.g. Moreno et al., 2001, Goetz et al., 2003).

Examples of social robotics for self care

Despite the youthfulness of the area of social robotics, various robots and applications have already been developed that can be situated in the self care area. Many parties see a future of social robots in self-care, for example to lighten staff workload and/or provide 24/7 (home) support to a patient. To date, social robots have been studied in a variety of therapeutic application domains, ranging from using robots as exercise partners (Goetz 2002), using robots in pediatrics (Plaisant 2000), robots as pets for children and elderly people (Shibata 2001, Wada 2004) and robots in autism therapy (Werry 2001, Dautenhahn 2002).

Some examples of current and recent projects are SuperAssist (Henkemans et al. 2006), the European projects AuRoRa[1], IROMEC[2] and ALIZ-E, the projects

[1] http://homepages.feis.herts.ac.uk/~comqbr/aurora/

[2] http://www.iromec.org/

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Zorgkonijn[3], Probo[4], The Huggable[5] and the use of PARO in care-homes. The SuperAssist project studied digital assistants for diabetics (adults and children) using iCat, see figure 1. AuRoRa (succesfully) aimed to increase the social abilities of children with autism, which is further investigated in IROMEC and Keepon[6].

As with all technological developments the development and introduction should be coordinated with research institutes, companies and end users. Together they can provide the knowledge, capabilities and demands for social robots in self-care.

WORKSHOP OBJECTIVES

This workshop intends to stimulate progress in the area of social robotics for self care, for example by creating a shared research agenda. The main objective is to strengthen the interaction between the different stakeholders to stimulate efficient cooperation. To this end, the workshop aims to attract researchers, companies (e.g. companies interested in application areas for social robotics, companies interested in self-care and the possible application of social robotics in this domain) and end-users (e.g. hospitals, care-homes, health associations (e.g. diabetic associations), health insurance companies). To make this objective concrete, the workshop will produce a shared research agenda that will be published as a position paper.

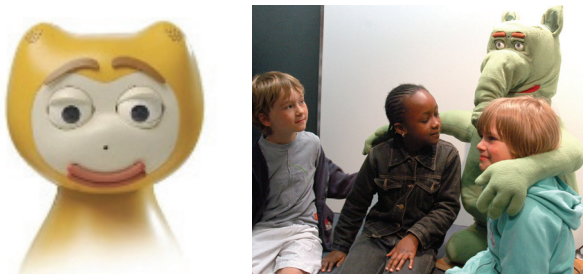

Figure 7 The Philips iCat and the VUB Probo

WORKSHOP FORMAT

This is a full day workshop. In the morning there will be short presentations by participants about their vision, ideas, or current projects. Ideas on, for example, the physical form, behavior, roles, and capabilities (e.g. memory, learning) of social robots and how their functioning should be evaluated are encouraged.

During lunch, some of the topics that came up in the morning will be selected. In the afternoon, small groups (preferably multidisciplinary) will discuss these. A short plenary presentation by each group is given, followed by a plenary discussion.

The workshop will have a website on which participant statements will be shown in advance.

Manner of participation

Interested people are invited to send in a short (1-2 page) statement containing their motivation to participate, ideas on the wokshop topic, what they can contribute and/or would like to learn or 'take home' from the workshop, and a short background about themselves.

[3] www.zorgkonijn.nl

[4] http://probo.vub.ac.be/

[5] http://robotic.media.mit.edu/projects/robots/huggable overview/overview.html

[6] http://beatbots.net/

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