Research on Social Engagement with a Rabbitic User Interface

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Abstract: Companions as interfaces to smart rooms need not only to be easy to interact with, but also to maintain long-term relationships with their users. The FP7-funded project SERA (Social Engagement with Robots and Agents) contributes to knowledge about and modeling of such relationships. One focal activity is an iterative field study to collect real-life long-term interaction data with a robotic interface. The first stage of this study has been completed. This paper reports on the setup and the first insights.

Keywords: Robotic User Interface, Smart Room, Natural Language Interaction, Long-term Social Relationship

1   The Challenge: Sociability

Much research and development is dedicated to virtual (agents) and embodied (robotic) devices that should serve as assistive technology especially to elderly or homebound people. One interesting field of application for agents and robots is their use as an interface to smart rooms and homes. Conversational interfaces would be the most natural and easy way to communicate with them, but they raise users' expectations in their scoial capabilities [6]. They should
- be aware of the user's world, both physical and social
- respect social norms and individual habits
- be useful and helpful where needed without indebilitating the user
- gain social status so that advice is accepted

and all that not just once, but day after day. Practical experiences with today's conversational interactive systems show the deep gap between the utopian companion and today's clumsy attempts [4, 7]. We are still far away from what, taken together, we could call "sociability", the skill, tendency or property of being sociable or social, of interacting well with others (http://en.wiktionary.org/wiki/sociability). Sociability involves elements of culture, situation, status, identity, task, communication, emotion, personality, and body, all at once and as an integrated whole.

New insights are being gained in nearly each of these domains individually (cf. [3]), but they will not add up to sociability automatically. The project SERA (Social Engagement with Robots and Agents) has set out to study how systematic progress towards sociability as a complex whole can be made. We realized that we need to know more about how users of companions actually interact with them in the real world, i.e. their homes, and over a period that is long enough to let novelty effects wear off.

Apart from toys like Pleo or Aibo, most interactive robots and ECAs have not left the lab yet. The majority of tests and evaluation studies with them are done in short, task-oriented interactions. The studies of the FitTrack system [2] are a notable exception, in that they comprised several weeks of continuous use of the system with its embodied agent Laura, and in that the system was intended to render real service to the user (as contrasted with toy robots or chatbots). However, the FitTrack system is PC-based. Laura has no connection with or perception of the user's world except the task-related information the user discloses. Its use is completely set apart from the user's everyday world and activities.

2   The Field Study: Scenario, Setup and Data Collection

The application scenario for the SERA field studies has been defined in the context of health and fitness support for elderly people [3]. The intention was to provide enough functionality and interaction situations for approximately six conversations to take place every day in the first test phase.

The hardware consists of a (hidden) desktop computer with broad-band mobile internet connection. The periphery consists of the Nabaztag (a rabbit-like WIFI device marketed as a slightly animated talking Internet interface, see http://www.violet.com), a passive infrared (PIR) motion detector, a micro-switch on a hook for the house keys, a webcam (for data collection) and the array microphone. Video data are collected on a voluntary basis: subjects are invited to start and stop the recording whenever they want. The users are briefed about the companion and are encouraged to interact with it, but are otherwise free in their choice of when, how, and how often they do so. The first iteration has involved three subjects. There will be three iterations of the field study, with increasing functionality of the companion and number of subjects. The first round of data collection and in-depth interviews with the has been completed recently.

3   First Insights and Future Research

As expected for this first iteration, the limited capabilities of the robotic interface [1] made interactions with it repetitive and reduced its perceived usefulness for the participants. However, they kept using it, although to varying degrees. The data have not been fully analysed yet, but first observations show that incorporating a robotic interface into the everyday environment both presents extraordinary challenges and awards novel insights. For example: even though, in this first phase, speech recognition was not implemented, and users instead had to press "yes" and "no" buttons to answer, and thus to approach the rabbit physically, they continued to carry out their everyday household activities at the same time. After a few days, they did not stop to listen to what the rabbit said. Repetitiveness may then have not only the negative effect of boredom [2], but possibly also the positive side of redundancy and habit-building which makes communication especially with familiar persons easier. The challenge, on the other side, is to improve not only the perceptive capabilities of the robot, but also to interpret perceptions in accordance with the user's everyday activities and lifestyle.

Currently, the second iteration of data collection is being prepared. In this phase, ASR should be implemented, which is a challenge in itself, given the noisy, unpredictable environment. The functionality of

the setup will be extended so as to foster more and more interesting interactions with it. Furthermore, we will experiment with the first functions that implement sociability directly.

The new insights we are currently gaining encourage us to proceed with the field study as planned. They confirm the project's two basic assumptions that a) today's technology indeed allows to conduct such field studies, and b) data about long-term use in a real-life setting are necessary to make progress towards sociable companion technologies.

Acknowledgments

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