SMOOTH: Seamless human-robot interaction for the support of elderly people

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Application area: Elderly Care Facilities
We will develop a generic multi-modal, highly adaptable proactive robot control and a modular mobile robot platform. These three use cases solve time-intensive problems currently performed by care givers and lead to significant cost reductions.

The 3 Use Cases

Transport of Laundry and Garbage: The robot can be called by the care giver once the laundry/garbage is ready for collection. Closed bags with material are put on a modular device designed for the collection by the caregiver.

Guidance: The robot will be used to guide elderly people to navigate in an elderly care institution. The generic proactive controller will allow the robot to seamlessly and friendly interact with elderly people.

Serving fluids: This component can be simply installed on the robot to expand its function for serving drinks. The robot will provide water and other drinks to elderly people and encourage them to drink more.

The SMOOTH Robot

Our Latest Experiments on Persuasive Dialog

Overall research question: How can we get the elderly to drink more?

Background: When we get older, we lose our sense of thirst. Dehydration is a considerable problem in elderly care. In both experiments our simple robot prototype guide participants through a lab and collect all they need to set up a table. When participants pick up a glass the robot informs them about the importance of water intake. But especially the second sentence is of our interest and is different in these experiments.

Experiment 1: The second sentence was either “Most participants drink half a liter after this game” or “Most male/female participants drink half a liter after this game”.

Experiment 2 (in collaboration with the municipality of Sønderborg, DK): The second sentence was either “You as expert know how important it is to drink enough water” or “Research has shown how important it is to drink enough water”

Results: It turned out that people drank significantly more when the sentence was tailored based on their gender, or when it was tailored based on them as experts.

Department of Design and Communication

We contribute to SMOOTH by research in the subsequent areas:

1) Persuasive dialog: Our results so far show that the more the robot is taking the communication partner into account, the more persuasive the dialog.
2) The effects of responsivity of robot behavior: For example, we investigate the interactional effects of contingent robot response.
3) The role of incremental speech processing and synthesis: Our experiments show, for instance, that interactions are more efficient when using incremental speech synthesis.

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