PAPER

Technology for Independence

S. TOKUNAGA, M. NAKAMURA, M. OTAKE. Using a smart ICT system for supporting elderly at home. Gerontechnology 2018;17(Suppl):145s; https://doi.org/10.4017/gt.2018.17.s.140.00 **Purpose** We are facing a super-aged society, and Japan is forecast to become a society with a 39.9% aged population by 2060. As a result of population aging, the number of people with dementia is increasing, which is a social problem. On the other hand, many welfare and nursing care facilities suffer from a chronic shortage of workers. Dementia care will therefore take place increasingly at home, which imposes a burden on family as caregivers. Under these circumstances, assistive technologies, which support elderly people at home, are attracting considerable attention. Although a wide variety of assistive technologies have been developed, we focus here on assistive technology designed for elderly people living at home. Specifically, elderly people with dementia living at home have some risks (e.g., falling, heat disorder). Hence, we think the use of current ICT assistive technology would reduce such risks. This is the motivation for our research. In this paper, we introduce our research result within the last few years[1,2,3]. **Method** We focus on three kinds of services: remote monitoring service (RMS), smart reminder service for people with dementia, and personalized care service for elderly people living at home. For RMS, we provide a guideline for the relationship between sensor accuracy and sensor reliability in our proposed model. Concretely, we construct a theoretical three-actor model which consists of RMS. Then we conduct a simulation to show the relationship between sensor accuracy and reliability of RMS[1]. Secondly, we design and develop a new reminder service that provides situational reminders for elderly people with dementia at home. The proposed reminder provides sympathetic and intuitive interaction with a chat 3D agent. We also have conducted a preliminary experiment with 17 people with dementia in the hospital[2]. Finally, we design and develop a new concept of care system which is called VirtualCareGiver that provides care for elderly people instead of actual human[3]. Our key idea is to abstract general care as a template which enables providing care for each elderly person. As a concrete example, by using the proposed system, virtual caregivers (*Fig1*) can play a video based on the hobby of elderly people. To demonstrate the feasibility of the proposed system, we conducted an experimental evaluation with 11 participants (*Fig2*). After the evaluation, we also have administered some questionnaires to the participants. Some participants answered the positive comments "I am glad to be called by my name by the agent system." Another subject answered the negative comment "In the future I felt a lonely feeling that I had to talk to machines instead of people". **Results & Discussion** We have designed and developed a method that achieves home care for the elderly using smart ICT. Especially in the research,[3] we have confirmed that the interaction between elderly and robot has some meaning and an emotional aspect. Delegating some of elderly care to the proposed smart agent, we expect that the burden to the caregiver is relieved, and the quality of the human care will be increased.

References
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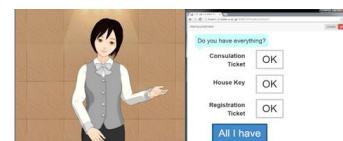
Fig1: Screenshot of VirtualCareGiver

Fig2: Experimental Scene