An always-with companion agent for the isolated elderly

*H -H. HUANG, Y. TAKEDA, K. KIYOSHI, K. KAWAGOE. **A framework of an always-with companion agent for the isolated elderly.** Gerontechnology 2014;13(2):212;* doi:10.4017/gt.2014.13.02.361.00 **Purpose** With advances in medical technology, many older adults find themselves feeling isolated. If they do not maintain their social lives, they may feel lonely and anxious. In order prevent them from mental health problems, it is important for them to maintain active social lives. For example, they may have conversations with their caregivers or their peers[1]. Active listening is a communication technique in which the listener listens to the speaker carefully and attentively by confirming or asking for more details about what they heard. This kind of support helps to make the elderly feel cared about and to relieve their anxiety and loneliness. This paper presents our in-progress project that aims to develop a framework of a virtual companion agent who can engage active listening and maintain a long-term relationship with elderly users (*Figure 1*). **Method** In order to achieve the agent's companionship with the user over a long period of time, we believe that it is essential for the agent to understand the user as best as it can. This kind of user-fitted conversation is not addressed in previous companion agent work[2]. Our approaches try to acquire the memory of the user's daily life in two situations: at-home and outside-home. In the former one, Microsoft Kinect depth sensors were utilized. The information gathered from multiple Kinects is integrated to detect the user's position and posture and then to estimate the user's daily activity. In the outside-home configuration, the prototype application is an Android smartphone application that recognizes the user's moving status with the information from the on-board three-axis accelerometer as well as the location of the user from GPS information. These data are then used to estimate the user's outside-home activity. All estimated daily activities are recorded in an activity history database. In future work, the user's activity database will be utilized by a companion agent in its conversation with the user and probably by medical institutions or the user's family from remote. **Results & Discussion** The at-home activity estimation is developed and evaluated in a laboratory environment at moderate accuracy. The outside-home activity estimation is currently developed and evaluated with a college student user. The interface of the companion agent is being developed and evaluated. After the technologies are more matured, we would like to conduct real-world experiments.

References

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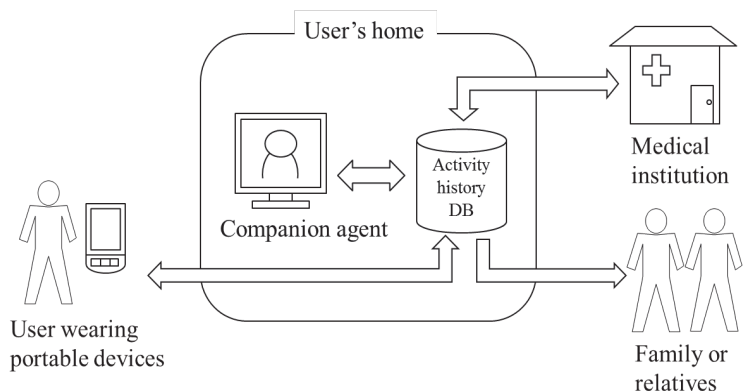
Figure 1. The concept diagram of the proposed Always-with Companion Agent for the Isolated Elderly (AWCAIE) framework