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Supporting medication intake of the elderly with robot technology

Fokie Cnossen¹, Nikie Sweers¹ & Amir Shantia¹,²

¹Institute of Artificial Intelligence & Cognitive Engineering, Faculty of Mathematics and Natural Sciences, University of Groningen (f.cnossen@rug.nl)
²Enacer BV, Groningen (enacer.nl)

SHORTEST SUMMARY

• RITA is a robot to assist the elderly in daily activities.
• We developed and evaluated an interface for RITA:
  • to remind elderly about medication intake
  • on a touch screen
• The main findings were:
  • users understood the interface
  • users were able to take medication with the touch screen support
  • many were unable to perform slightly more advanced functions
• The main conclusions / recommendations were:
  • interfaces should be as simple as possible
  • usability tests should be routine in developing health technology for the elderly

AIM OF THE STUDY

• To develop a robot interface to assist the elderly with their medication intake.
• To investigate whether the target group is willing to accept medication intake assistance from a robot

BACKGROUND

• Medication intake can prove to be a complicated task for the elderly.
• Roughly 50% of all prescribed medication is taken incorrectly (MacLaughlin, et al., 2005).
• Simplification of this task might have beneficial effects on this group’s general health and society’s healthcare costs.
• Together with Enacer Company we developed an assistive robot for the elderly, called RITA (the Reliable Interactive Table Assistant).

DESIGN PROCESS

Interviews with caregivers

Main result:
• it is especially important to check whether the elderly actually take their medication

Focus group of elderly

• feedback on the clarity of the design
• requirements analysis

Main result:
• Font size should be increased for optimal utility

Interface development

• The interface was developed in HTML5

User study

• Usability test of the interface on the touch screen
  • subjects were asked to perform a number of tasks related to the intake of medication
  • basic task: supervision of medication intake
  • more advanced functions: change settings
• Acceptance questionnaire

MAIN RESULTS OF USER STUDY

Usability test

• The majority of participants in this study (17 out of 19) were able to take their medication with assistance of the interface.
• Participants found it difficult to work with more advanced interface settings.
• Setting notifications interval
• Changing pharmacy’s contact details.
• Post-Study Usability Questionnaire: User rate usability positively.
• Mean score of 3.9 (between ‘Neutral’ and ‘Agree’)

Robot Acceptance

• Robot Acceptance Questionnaire: User accepted help from the robot.
• Mean score of 3.5 (Neutral)

CONCLUSIONS & RECOMMENDATIONS

Conclusion

• The basic functionality of the interface was easy to use for the elderly for assistance with the medication intake task.
• Elderly are willing to accept assistance of a robot with this task.

Recommendations

• Interfaces for the elderly should really be as simple as possible.
• Testing of usability aspects during the design process is vital for a well-designed robot.

REFERENCES