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Publication date:
2016

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA):

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Supporting medication intake of the elderly with robot technology

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SHORTEST SUMMARY

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.

MEDICATION INTAKE INTERFACE

The interface was developed in HTML5 and supports health care professionals to make sure they are able to provide optimal utility of all prescribed medication is taken correctly.

THE ROBOT RITA

• 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

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 (Likert 5-point scale)
  • Users rated usability positively
  • mean score of 3.9 (between ‘Neutral’ and ‘Agree’)

Robot Acceptance
• Robot Acceptance Questionnaire (Likert 5-point scale)
  • 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.

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

REFERENCES