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Supporting medication intake of the elderly with robot technology

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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.

MEDICATION INTAKE INTERFACE

- RITA is an intelligent moving wooden table.
- Accompanies people in their own home.
- Assists in activities of daily living.
- RITA continuously monitors the client.
- RITA analyzes behavioral patterns to detect uncommon situations.
- Alarms healthcare personnel to check the situation.
- RITA can serve food and drinks to clients and visitors.
- RITA functions autonomously.
- Clients have no need to give direct orders to RITA.
- RITA already knows what to do.
- RITA can be operated directly by using the touch screen on the front of the robot.
- RITA was designed to blend in with existing furniture and not to stand out.
- It does not have a futuristic look but is instead a wooden table.
- Market research showed that older people appreciate the classic look.
- RITA supports healthcare professionals to make sure they are able to provide assistance the elderly for assistance with the medication intake task.

THE ROBOT RITA

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.

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


