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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.

MEDICATION INTAKE INTERFACE

![Image of medication intake interface](image1)

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.

REFERENCES


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.

THE ROBOT RITA

- 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.
- Detects 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 will already know 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 has shown that older people appreciate the classic look.
- RITA supports health care professionals to make sure they are able to provide their clients with maximum comfort and quality of life-reducing them of certain repetitive tasks and asking them in more complex tasks.

REFERENCES


