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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 (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 (‘Agree’)

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