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:
  - 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 (‘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