Practice-oriented Development of a User-centered Assistance and Safety System for Supporting People with Dementia
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Motivation
- According to Alzheimer’s Disease International, worldwide an estimated number of 46.8 million people were affected by a dementia disease in 2015. By the year 2050, the number of sufferers is expected to have tripled [1].
- Since human resources in healthcare decrease, the integration of technically assisting systems can be an approach to mediate the supply gap developing due to the demographic change.
- The AUXILIA research project develops a user-centered assistance and safety system to support people with dementia. The system bases on intelligent behavioral analysis, which enables users to live a self-determined life for a longer time.
- To achieve these goals, support and security features must be aligned with the needs of users.

Research Status
- Currently, numerous AAL-systems were developed from the technical perspective. Not all consider the needs or requirements of dementia patients.
- Only few models of needs of dementia patients were researched so far. The methodical basis of existing models is divers and documentation partially insufficient. Examples of previous methodological approaches are:
  - focus groups [2]
  - expert survey [3]
  - theoretical derivations [4]
- However, the illness and age-related impairments of the user group require an alternative method [5] [6].
- The user-centered approach represents research gap.

Literature

The Approach of Critical Incident Technique [7] [8]

Cluster
Behaviour according to similarity in content to requirements

Evaluate
Assessing of trainability and compensability

Requirement

First results from preliminary study

Dementia user

- support for independence
- increased sense of security
- prolonged stay in one’s own home
- participation in social life

Caring relatives

- technically supported informative participation
- creating a sense of security by setting up automations for emergencies

Professional caregivers

- technically supported informative participation
- optimization of the care process

n = 10 caregivers

First Findings and Outlook

Structured collection of the needs of dementia users as a basis for the development of specific, weighted technical assistance functions

aspired goal: structured needs model

Implementation of the derived needs-based assistance functions in the AAL-system

Evaluation of the limitations of the method and approaches

Data Collection

- Situational, direct recording of events that deviate from the normal
- Survey starts at critical events, which show the need for help of the dementia sufferer through signaling.

Method of Needs Analysis

• Compile situations and habits
  - context
  - result

• Value
  - Frequency of result (typical)
  - Criticality
  - Relevance for good performance in the agitating solution (important)

• Cluster
  - Behaviour according to similarity in content to requirements

• Evaluate
  - Assessing of trainability and compensability

• Requirement
  - First results from preliminary study
    - Dementia user
      - support for independence
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      - participation in social life
    - Caring relatives
      - technically supported informative participation
      - creating a sense of security by setting up automations for emergencies
    - Professional caregivers
      - technically supported informative participation
      - optimization of the care process
  - n = 10 caregivers

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