



# **Socially Assistive Robots for the Aging Population: Are we trapped in Stereotypes?**

## **HRI2014 Workshop**

[http://workshops.acin.tuwien.ac.at/HRI2014\\_Elderly/](http://workshops.acin.tuwien.ac.at/HRI2014_Elderly/)

Organizers: Astrid Weiss, Jenay Beer, Takanori Shibata, and Markus Vincze

# Socially Assistive Robots

- Robots caring for the older population in care facilities and at home are an ongoing theme in HRI research.



- All of these projects have the overall ambitious goal to increase the well-being of older adults and to enable them to stay at home as long as possible.
- Research projects on this topic exist all over the globe in the USA, Europe, and Asia.

# Organizers and Participants



Astrid Weiss



Jenay Beer



Takanori  
Shibata



Markus  
Vincze

- Who are you and why is this workshop of interest for you?

# Workshop Goals

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- It is the aim of this workshop to reflect on existing assistive robots and ongoing research on HRI with older adults in the domestic and the care facility context.
- A lot of work has already been done to understand user needs and desires for “elderly care robots”, as well as to build platforms and evaluate them in terms of acceptance and usability...
  - But what have we actually learned overall as an HRI community?
  - Are we all working with the same “stereotypes”? Where are the communalities and differences in our work?

# Invited Speakers

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- Wendy Rogers – Human Factors and Aging Georgia Tech
- Kazuyoshi Wada – Tokyo Metropolitan University
- Marcel Heerink – La Salle University
- Birgit Graf – Fraunhofer IPA
- Selma Šabanović – Indiana University
- Elizabeth Broadbent – University of Auckland

# Agenda

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- Organizer Statements

- Astrid Weiss
- Jenay Beer
- Takanori Shibata

- Invited Talks

- Poster Presentations

- Maartje M.A. de Graaf
- Maren Schorch
- Frank Broz
- Sean A. McGlynn,
- Willy Barnett
- Jorge Gallego-Perez
- Candy Sidner
- Miguel A. Salichs

- Break-out sessions in two different groups (robot-centered and user-centered)

# HOBBIT Project: Closing the Gap

Independent Living



Support in care settings



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Support at home

# Target User Groups

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- Primary users
  - 70 plus, living alone
  - Age-related moderate impairments (recruitment criteria)
  - Possibly receive home care, help in household
- Secondary users
  - Regular contact with primary users (relatives, caregivers, ...), person to call
  - Familiar with user reactions (user trials)
  - Actual customer

# HOBBIT Approach

- Acceptance: Mutual Care Concept
  - Create helper/helped relationship for increasing acceptance
  - Make the user feel in charge
- Affordability: S&T towards acceptable price
  - User interface, small platform, safe arm, 3D sensors
  - Modular and extendable system
- Usability: User-centred approach
  - Multi-modal user interface



# Evaluation Plan for HOBBIT in Real Homes

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- Main goal: Do older adults experience the Hobbit robot as a suitable mean to maintain independent living in their private household?
- Challenges for the trials
  - Exploring HRI with older adults
  - Exploring HRI “in the wild” (insurance aspects)
  - Exploring various quality factors over time
- Method triangulation: qualitative (interviews & cultural probing) and quantitative (questionnaires, logged data) methods
- Multi-informant approach: robot logging data, data gained by self-reporting from primary and secondary users

# Quality Factors & Methodology

| Quality Factors | Indicators  | Used methods  |
|-----------------|---|---|
| Usability       | Ease of Learning<br>Flexibility<br>Utility  | qual & quant (log data)<br>qual & quant (log data)<br>qual            |
| Acceptance      | Attitude towards robots<br>Perceived Safety<br>Self-efficacy<br>Emotional Attachment<br>(Perceived) reciprocity | quant<br>qual & quant<br>qual & quant<br>qual & quant<br>qual & quant |
| Affordability   | Producer Affordability<br>Customer perceived value  | No empirical approach<br>qual   |

# Evaluation Timeline

| Pre-Phase                                 | Week 1   | Week 2                                    | Week 3   | Post-Phase (voluntary)                          |
|---|--|---|--|---|
| Household Check                           | Initialisation Phase   | <b>Questionnaires</b> Acc1; Acc2;<br>Acc3 | <b>Questionnaires</b> Acc2; Acc3; Acc5                   | <b>Questionnaires</b> Acc1; Acc2;<br>Acc3; Acc4 |
| <b>Questionnaires</b> Acc1; Acc2;<br>Acc3 | Safety Check   |   | <b>Conjoint analysis</b><br>Aff2                         | <b>Interview</b><br>Usab3;<br>Acc2; Acc3; Acc4  |
|   | <b>Questionnaires</b> Acc2; Acc3; Acc4;<br>Acc5              |   | <b>Interview</b><br>Usab2; Usab3; Acc2; Acc3; Acc4; Aff2 |   |
|   | <b>Cultural Probing</b><br>Usab1; Usab3;<br>Acc2; Acc3; Acc5 |   |  |   |
|   | <b>Logging</b><br>Usab1; Usab2;<br>Acc4; Acc5                |   |  |   |

# Are we trapped in stereotypes?

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- Do older end users in all countries have similar needs and desires when it comes to assistive robots?
- Are our results suggesting similar interaction scenarios/ technical solutions?
- What are the challenges and opportunities for future assistive robots (maybe for those we develop for ourselves when we belong to the older population...) also on an ethical and legal level?
- Can socially assistive robots solve the aging population problem on a societal and individual level?
- Will robotic helpers be accepted in the home as long as they pretend to be social actors?

# Wrap-up

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- Big thank you to
  - all invited speakers
  - for all submissions, posters, and discussion contributions
  - all reviewers
  - my co-organizers
- Potential next steps
  - Survey papers, book chapters, journal Special Issues...
  - Follow-up workshop next year
  - Check the website in one week for updates 😊