Human Robot Interaction Research with Older Adults

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Human Factors & Aging LABORATORY

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Program Background

Student Aging Researchers in Training (START)
- Undergraduate research program for Applied Health Science students focusing on aging research
- Involves weekly group seminars and research experience in laboratories

My Lab Experience
- Human Factors & Aging Laboratory (HFA)
- Lab Theme: the fundamentals of human behavior in the context of technology interactions.

My Team in HFA
- Human Robot Interaction team
- Project focus: robot acceptance, design, and potential health and well-being related implications of robot usage among older adults

Research Activity 1

Robot Deep Dive

Objective: To learn from robot centered focus groups among older adults that live in an assisted living facility about their perspectives on ethical concerns about robots and artificial intelligence.

Methods:
Focus group with older adults in an assisted living facility was conducted. Participants were asked to read a chapter of *I, Robot*, a robot science fiction by American writer Isaac Asimov, featuring ”Robbie”, a sympathetic robot. The participants then watched several videos of commercial robots in use. The presenter lead a following discussion with participants. The discussion is mainly focused on Isaac Asimov’s Three Laws of Robotics and ethical concerns with robots and artificial intelligence. Three researchers were taking notes during the discussion without interrupting the discussion.

My participation:
- Read the book chapter and watched the videos along with the focus group
- Assisted with note-taking during the discussion session
- Acquired first-hand contact with the target population and learn about their perspectives directly

Research Activity 2

Participatory Design in Human-Robot Interaction Study with Older Adults

Objective: To study the benefits of participatory design in human-robot interaction study with older adults and how to apply the technique in research design

Methods:
A Preliminary Scoping Review was conducted (N=43). We perceived some common methods used in participatory designs and analyzed how the methods add to researchers’ understanding on the need of the older adult population for assistive robots.

My participation:
- Assisted the team to perform the literature review
- Developed conceptual as well as data-driven charts and figures for the study, where we analyzed the importance of the participatory design and mutual learning approach in developing robots for older adults (A portion of the graphic is shown in Figure 2)

Search Strategies
Engine: Google Scholar
Database: IEEE, ACM, Springer
Keyword: “older adults” + “participatory design” + “human robot interaction”

Inclusion Criteria
Date: 2009 – 2019
Exposure of Interest: The participants must be exposed to socially assistive robots/domestic robots

Figure 1. Criteria of Literature Search

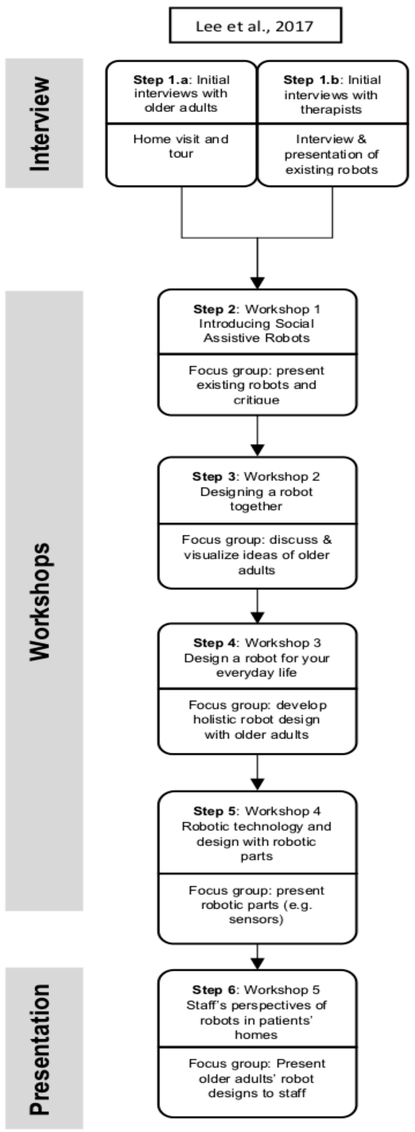

Figure 2. Diagram of Common Methods in Participatory Design (partial)

Research Activity 3

Accessing the Social Characteristics of Socially Assistive Robots

Objective:
To study people’s perspective on the socialness of socially assistive robots.

Methods:
A pilot study was conducted with subject matter experts. Each expert were asked view 10 randomly ordered videos of socially assistive robots that and rate the level of socialness of each robot. Each video last 1-2 minutes and each robot performed Instrumental activities of daily living (IADL) tasks in the video. The level of socialness is accessed using a variety of criteria including whether the robot showed personality, learning ability, emotions, etc. A following discussion was conducted.

My participation:
- Participate as a subject matter expert
- Provided valuable results for the researchers
- Give feedback during the discussion and learned about study design process in the laboratory

Conclusions

- Gained experience of conducting literature review, interacting with focus groups among older adults, and participating in subject matter expert study
- Acquired first-hand knowledge of human factors and its implication on health technologies
- Moving forward, I hope to gain more experience working on data collection and data analyses procedures, as well as learn about ways I can apply my computer science background to applied research contexts.

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