Project No.	Project Title	
2021-1-006	Towards design of SARs for the elderly; mapping needs and preferences	
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Abstract

The field of assistive robots is evolving with an increase in human-robot interaction of older people with robots. Future robots should be able to complement or partially replace the caregiver workforce, which is growing significantly due to the aging population of the world. Solutions are necessary to help the elderly, especially considering Covid-19 (need for social distancing) and the anticipated shortage in caregivers for the elderly. However, assimilation of assistive robots into the population is not yet wide and many robot systems available now are not fit for eldercare. One of the ways to make robots that can support older adults maintain their independence is to use participatory design techniques to identify the essential characteristics and use cases of the robots. Participatory design is an approach that involves the user in the design process even before the robot exists. The inclusion of older adults in the design process is iterative, aiming that at the end of the design process effective results will be achieved in designing robots that fulfil the needs of the elderly. One of the main goals of this research is to understand the needs and requirements of older adults and to create tools so that older adults can express themselves and their needs in the design process together with the designer. We would like to create the mechanism through which it is possible to perform a joint user-centered design so that in the future we would be able to integrate robot well among the elderly.

This research project will continue into a master's thesis. The project included 2 stages. In the first stage, 24 participants of 3 groups – older adults (mean=77.57), relatives and caregivers. Each of the participants was interviewed in order to understand the elderly's daily routines and habits from all three perspectives, including questions whose purpose was to understand what the challenges and difficulties they may have. In the second stage, a focus group that included 5 elderly people living alone was conducted. The focus group was aimed at understanding design features of the robot in two ways: First participants were asked about the features that the robot should convey and they were encouraged choose a robot that meets these requirements from an existing repository of off the shelve robots. Then the participants required to design the ideal robot by themselves with the assistance of our toolkit which is still in a prototype phase. The results of the interviews reveled differences in the robot's perception between men and women. The needs of woman from the robot were related to compassion and warmth, compared to the men who required actual activity. Another result that emerged from the interviews is differences in the requirements between the groups examined. The needs of the elderly from the robot were related to physical or social assistance however the needs of the relatives presented needs of supervise and care for the elderly from a health point of view. The analysis of the focus groups is ongoing.

Keywords: assistive robots, human-robot interaction, participatory design