

# Socially Assistive Robotic Architecture for Elder Care

<https://neurodegenerationresearch.eu/survey/socially-assistive-robotic-architecture-for-elder-care/>

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### Country

USA

## Title of project or programme

Socially Assistive Robotic Architecture for Elder Care

## Source of funding information

NIH (NIA)

## Total sum awarded (Euro)

€ 396,100.92

## Start date of award

15/08/2016

## Total duration of award in years

1

## The project/programme is most relevant to:

Alzheimer's disease & other dementias

## Keywords

Acquired Cognitive Impairment... Aging... Alzheimer's Disease... Alzheimer's Disease including Alzheimer's Disease Related Dementias (AD/ADRD)... Behavioral and Social Science... Bioengineering... Brain Disorders... Caregiving Research... Clinical Research... Clinical Research - Extramural... Dementia... Mental Health... Neurodegenerative... Rehabilitation

## Research Abstract

**PROJECT SUMMARY / ABSTRACT** The aging population with its concomitant medical conditions, physical and cognitive impairments, at a time of strained health care resources, establishes the urgent need to design and implement technologies that enhance or maintain physical and cognitive function and improve quality of life among older adults. Robotic technologies in the form of socially assistive robots (SAR), with capabilities for autonomously detecting and meaningfully responding to older adults' engagement and behavior, have the potential for addressing physical, cognitive, and/or social conditions. The field of SAR is still in early development. We propose to introduce SAR for not only one person – one robot interaction, but also to utilize the robot to foster interactions between two people. The specific aims of this two-year pilot study are: 1) design and validation of an autonomous robotic architecture for older adults with and without cognitive impairment or apathy and 2) assess the feasibility, acceptability and tolerance of the robot-mediated intervention. To accomplish Aim 1, we will refine our current robotic architecture ARIA (Adaptive Robot-Mediated Intervention Architecture) to create several new engaging cognitive, physical and social tasks suitable for older adults and extend the ARIA's capability to include more than one person in the robot-mediated activities to foster human-to-human interaction. We will conduct laboratory experiments involving 30 older adults (10 without cognitive impairment, 10 with mild cognitive impairment, and 10 with mild to moderate dementia) in which we will test the individual capabilities as well as integrated functioning of the robotic system. In Aim 2, we will conduct two pilot feasibility studies at an independent living, assisted living and dementia care senior center. In Pilot Study 1, we will enroll 12 adults, 4 with no cognitive impairment, 4 with mild cognitive impairment, and 4 with mild to moderate dementia, to participate three times weekly for 4 weeks in a series of physical, cognitive and social activities. Pilot Study 2 will include 6 pairs of older adults (2 with no cognitive impairment, 2 pairs with MCI, and 2 pairs with dementia) to attend three sessions a week for 4 weeks. This will allow us to expand the robotic capabilities to monitor more than one person and to encourage social engagement between the older adults. All study procedures will remain the same as in Pilot Study 1. Aims 1 and 2 experiments will be videotaped. Older adults' reactions to the robotic interactions will be gathered by survey, and observation using observer-rated tools. In addition to informing future clinical trials of SAR effectiveness, the information from the proposed study will contribute to the long-term goals supporting the development of robotic strategies to enhance physical function, cognition and socialization of older adults in the community setting.

### **Lay Summary**

**STATEMENT OF RELEVANCE** Socially assistive robots hold promise in addressing the needs of older adults to maintain or enhance function and quality of life. This study aims to continue the development of an innovative socially assistive robotic framework, examine the feasibility for use in the community, assisted living and nursing home, and examine older adults' acceptance and tolerance. Results will be used to design a trial of socially assistive robot to promote or maintain function, promote social interaction and enhance engagement.

**Further information available at:**

### **Types:**

Investments > €500k

### **Member States:**

United States of America

### **Diseases:**

Alzheimer's disease & other dementias

**Years:**

2016

**Database Categories:**

N/A

**Database Tags:**

N/A