RadioMe: Adaptive Radio for People with Dementia Living in Their Own Home

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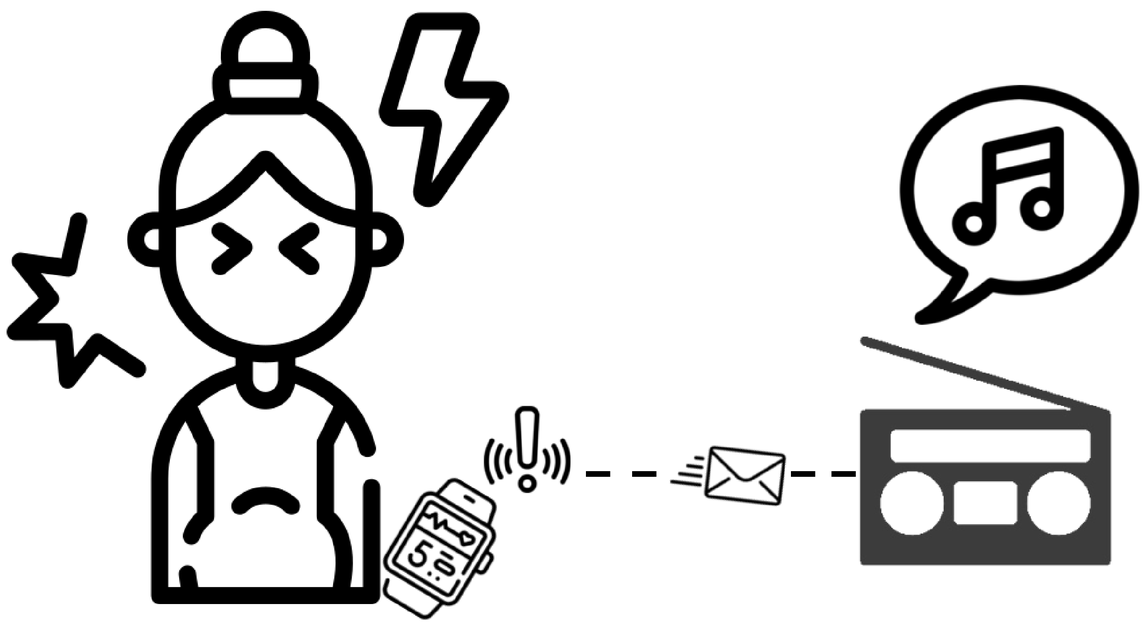
RADIOME

The RadioMe system aims to help People with Dementia (PwD) in early stages by detecting agitation in PwD in their own home with wearable sensors and presenting calming music to alleviate the stress. The calming music will be integrated into a running live radio stream and the system will also be able to present auditory reminders. The RadioMe project is a collaboration between the University of Glasgow, the University of Plymouth and the Anglia Ruskin University in Cambridge with specialists in dementia research, music therapy, musical computation and human computer interaction.

Introduction

Like other older adults, people with dementia (PwD) prefer to age comfortably in a familiar environment, such as their own home. But they might struggle to remember daily activities and could get agitated more easily, lacking the near constant assistance they would get, for example, in a care home facility. Assistive technologies could alleviate the issues and support PwD while still living in their own home.



The RadioMe approach combines a reminder system and detection of agitation in PwD with direct intervention with calming music, adjusted to each individual person, and could aid PwD to stay more independent and ultimately keep them in their own homes longer.

Reminder System

Reminders will be imported from a digital calendar and presented as audio notifications during the live radio stream. The system will identify the current content of the radio show and use machine learning to identify a good time to present the reminder, for example when the moderator is not speaking. The best way to present the reminders with regards to introduction sounds, voice and content will be determined in discussions with PwD.

Agitation Detection

Agitation will be detected with wearable sensors monitoring the heart rate of the PwD while in their own home and sending real-time data to the computing system controlling the radio component. A machine learning model is used to detect the agitation state from the heart rate data and trigger the calming music when needed.

Music Integration

The music is selected for each individual in several sessions with the music therapist, the PwD and the carer, as reactions and preferences for music vary between individuals and there is no one size fits all approach. A playlist of the calming songs for each individual is created and shared with the system.

RadioMe Project:
Academic partners: University of Plymouth, Anglia Ruskin University, University of Glasgow, and University of Sussex
Industrial partners: Bauer Media, BBC, and CereProc Limited
Charities: Alzheimer's Society, MHA Care Group, Sussex Partnership, and NHS Foundation Trust