POSTER ABSTRACT

Transforming care for people with dementia using the Internet of Things

19th International Conference on Integrated Care, San Sebastian, 01-03 April 2019

Ramin Nilforooshan[1], Helen Rostill[1], Payam Barnaghi[2], Shirin Enshaeifar[2], Andreas Markides[2], Severin Skillman[2], Mark Kenny[1]

1: Surrey and Borders Partnership NHS Foundation Trust, United Kingdom;
2: University of Surrey, United Kingdom

There are currently around 46.8 million people living with dementia around the world and this number is estimated to increase to 74.7 million by 2030 and to 131.5 million by 2050. Currently there is no definite cure for dementia and the cost of care for this condition is around £26 billion a year in the UK and soring dramatically. Being able to slow the decline and maintain independent living are very important goals for supporting people with dementia. At any given time in the United Kingdom, 1 in 4 hospital beds are occupied by a person with dementia, while about 22% of these hospital admissions are due to preventable causes.

In this paper, we discuss the TIHM (Technology Integrated Health Management) for dementia study, which uses Internet of Things (IoT) technologies and in-home sensory devices and monitors in combination with machine learning techniques to remotely monitor the health and well-being of people with dementia. This will allow us to provide more effective and preventative care and reduce preventable hospital admissions.

One of the unique aspects of this work is combining environmental data with physiological data collected via low cost in-home sensory devices and monitors to extract actionable information regarding the health and well-being of people with dementia in their own home environment.

In this presentation, we collected data and on how machine learning algorithms have been used to detect different conditions such as Urinary Tract Infections (UTIs) and Agitation, Irritability and Aggression (AIA) in this group of people.

The current model of care for people with dementia is heavily reliant on paid carers visiting people with dementia on a regular basis. The frequency of these visits is based on an initial assessment by Social Services. But the needs of a person with dementia can change suddenly and these changes can be missed by a carer, visiting for only short periods of time, perhaps only once a day. As a result, the person with dementia may not receive the support that is needed quickly enough and this can lead to hospital or even care home admission.

TIHM for dementia continuously collects and analyses data about a person's vital signs, their patterns of behaviour, and movement inside and outside of the home, and also environment. If the technology identifies an issue, an alert is triggered on a digital dashboard and followed up by a Clinical Monitoring Team.

TIHM offers a new way of providing timely care for this group of people that is adaptable and based on their needs.