Editorial

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The global population of persons aged 60 and over is rising dramatically. Between 2006 and 2050, the number of people aged 60 and over will double from 650 million to 2 billion people representing 22% of humanity. One group of the ageing population that is particularly vulnerable to loss of independence is those affected by dementia. It is estimated that around 820,000 people in the UK have dementia. Recently, emerging computing and assistive technology has been used to attempt to improve the quality of life for people with dementia. To provide a forum for discussion on challenges and opportunities in bringing technology to support people with dementia, we organised a workshop featuring the theme of 'engaging people with pervasive technology' in dementia research. The first workshop, entitled 'Pervasive care for people with dementia and their carers' (PCPDC), was held on May 23rd, 2011 in Dublin, Ireland, in conjunction with the 5th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth-2011). Our call for papers attracted academic and industrial researchers in the communities from Ireland, UK, Switzerland and China, with a total of five papers accepted and presented at the workshop. In this special issue, we included three papers that were selected from the original workshop submissions and were accepted after rigorous peer reviews of their substantially expanded version of the manuscripts. We also included two papers that were submitted to this special issue general call and were accepted after review. Below, we briefly summarise these papers in this special issue.

Mild cognitive impairment (MCI) is has been associated with risk for Alzheimer's disease. Reaction time tests are considered to be sensitive tests for measuring cognitive efficiency, cognitive decline, early attention complaints, and memory impairments. Cinaz et al. evaluated a wearable watch-like reaction test tool they designed to measure measurement of cognitive efficiency during daily routine tasks. The tool could overcome the limitation of the existing computer-based reaction time tests. Findings from the case study of the 15 days continuously measurements showed that the wearable reaction test tool could be applied to monitor the reaction time for elderly people with cognitive impairment in future study.

A loss of cognitive ability including memory has a significant impact on people living with dementia. Piasek et al. explored a new approach of combining SenseCam technology in the cognitive stimulation therapy (CST) framework to supporting people with early dementia in, for example, memory recall. The study involved both people with dementia and their carers. A large amount of image data were recorded and analysed, and a few research questions were tackled, as such 'are the images derived from SenseCam meaningful and enjoyable for the person with dementia?' and 'how to use SenseCam with CST framework as an intervention for people with dementia?'. Findings from their research showed that technology can be used as an aid to provide therapeutic intervention for such people.

Zheng et al. presented their work on monitoring sleep disturbances for people with dementia in ambient assisted living environment where a pattern analysis and visualisation system, PAViS, for sleep monitoring was developed and evaluated. The PAViS provided a user-friendly platform for telecare users to understand changes and trend of clients' sleep quality and quantity, which may be an aid to help monitoring and assess clients' cognitive ability or dementia stages.

While little attention has been given to facilitate social leisure activity for people with dementia as yet, Smith and Mountain reviewed the research of information and communication technology (ICT) in supporting people with dementia and summarised barriers and challenges to technology and ICT practice for people with dementia. A potential of new forms of ICT has been identified to engage people with dementia in enjoyable social and leisure life.

In the last paper, McDowell et al. focused on the sleep problem, which has a major impact on cognitive function, on their research. A non-contact method for sleep profiling using positioned accelerometers attached to a mattress was presented. The results show that proposed passive sleep actigraphy platform is a potential viable method for long term monitoring of sleep profile.