

Abstract

Ambient assisted living aims to support the well-being of people with special needs by offering assistive solutions. Systems focused on dementia increase the autonomy of people living with dementia by monitoring their activities. Topics such as activity recognition and specific solutions such as reminders and tracking users by Global Positioning System offer great advances in user safety and help them preserve a healthier lifestyle. However, these solutions are often addressed to secondary parties, providing them activity logs or alerts, but excluding the main user, the person living with dementia. Although the primary users are taken into consideration at some design stages using user-centred design frameworks, the final products tend to not fully address user needs. This paper presents an ambient intelligent system aimed at reducing this limitation by providing reminders and advice to the person living with dementia in the first instance. The system still involves caregivers if unusual or unhealthy behaviour continues. The solution is deployed in order to be validated by professionals from London city boroughs who work in housing and dementia related services, with an emphasis on enhancing healthy lifestyles by empowering the user in the early stages of dementia with autonomy. Through continued activity monitoring in real-time, the system can provide reminders and warnings to users to keep healthy routines. Continuous monitoring provides user behaviour tracking, and the context-aware logic used involves caregivers through alerts when necessary to ensure user safety. This article describes the process followed in developing the system, and covers previous concerns and practical feedback from health professionals over the deployment of the system in a real environment. Our approach also includes a novel indoor localization system to distinguish users and allows a more specific delivery of services in multi-occupancy scenarios.