Press Release

TECNALIA PRESENTS A SMART HOME ABLE TO DETECT SYMPTOMS OF NEURODEGENERATIVE DISEASES

The world population is rapidly ageing, which means the number of disabled and dependent people is increasing since these rates increase with age, particularly after the age of 80. This is the context in which the Tecnalia Research Innovation centre for applied research has designed a system of sensors which when fitted in a home, allows a person's habits and activities to be monitored and any changes in his/her habits and activities that could be a symptom of disorders relating to neurodegenerative diseases like Alzheimer's to be detected.

Since the symptoms of diseases like Alzheimer's are linked at an early stage to changes in behaviour in the carrying out of activities in everyday life, an early diagnosis will allow the disease to be tackled right from the early stages of cognitive deterioration, thus delaying its effects and improving the patient's quality of life. To this has to be added that according to data of Imserso (Spanish Institute for the Elderly and Social Services), 70% of people over 70 prefer to go on living in their own homes rather than go into a care home.

To tackle these new challenges, Tecnalia is working on initiatives based on assistive technology like a system of sensors that allows a person's activities and habits to be monitored and any changes and activities that could be a symptom of disorders relating to neurodegenerative diseases like Alzheimer's to be detected. Through a broad network of sensors distributed throughout the home, this system is capable of detecting the presence of the user in different rooms, the opening and closing of doors, windows, drawers, the switching on and off of lights, the use of household appliances, the television, time spent in bed, on the sofa, the use of taps, etc. From the more technological point of view, one feature in the system is the use of sound sensors to pick up, for example, the ringing of the phone or the doorbell.

The system records, in real time, the information from the sensors and identifies the activity that the person is doing, like preparing a meal, watching the TV while sitting on the sofa or having a shower. This monitoring allows the person's habits or routines to be learnt in order to subsequently be able to spot any changes in them which could point to memory problems or disorders, disorientation in time and space, giving up activity, or becoming isolated; in many cases these may be symptoms of a neurodegenerative disease, and that way a relative or carer could be alerted about them. For example, this monitoring can detect changes in sleep patterns, in eating habits like stopping eating hot meals,

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inactivity when more time is spent sitting or watching TV, wandering around the house, etc.

The system also enables people to receive assistance in carrying out everyday activities, for example, by means of alarms or domestic robots. These devices could remind them that it is time for them to take their medication or to do some activity.

Future steps

Following three years of research, the prototype of the system has now been fitted on the premises of Tecnalia in Zamudio (Bizkaia, Basque Country). The aim is for care homes for the elderly or supervised flats to install this system and thus improve the care of the patients and their quality of life.

It should be pointed out that the following consortium has collaborated on the initiative, known as RUBICON and partly funded by the European Commission through its 7th Framework Programme: University College Dublin; Consiglio Nazionale Delle Richerche; Örebro University; the TECNALIA centre for applied research; Robotnik Automation SLL; University of Ulster; Università Di Pisa; Pintail LTD and the Fondazione Stella Maris.

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