Computer science helping the aged stay home

EurekAlert!

University of Adelaide computer scientists are leading a project to develop novel sensor systems to help older people keep living independently and safely in their own homes.

The researchers are adapting radio-frequency identification (RFID) and sensor technologies to automatically identify and monitor human activity; to be able to determine if an individual's normal routine is being maintained so that timely assistance can be provided if it is needed.

Although RFID technology has been around since World War 2 and is in common use today in applications such as anti-shoplifting and vehicle identification at toll road collection points, its potential use in interpreting human activity remains largely in the laboratory.

"Our work will be among the first few projects in the world conducting large-scale common-sense reasoning in automatic human activity recognition," says Chief Investigator and University of Adelaide Senior Lecturer Dr Michael Sheng.

Dr Sheng says the technology and system they propose has huge potential value in an aging population.

"This is becoming a significant problem for most developed countries where the proportion of older people is rapidly increasing and the labour market is tightening – there are more elderly people to be looked after but less people to do it," Dr Sheng says.

"We are trying to solve this by developing a system using a network of sensors attached to objects that the person is interacting with in the home; using software to interpret the collected data to tell us what someone is doing."

The system will be low-cost and unobtrusive and without the privacy issues and intensive monitoring of video surveillance. There will be no need for older people to wear anything or turn anything on or off.

The research is being funded under the Australian Research Council's Discovery Project scheme over three years, in a collaboration with the University of Queensland and the University of Washington.

The researchers will construct an RFID sensor network for human activity recognition; develop an algorithm to allow the interpretation of collected data into recognised activities; and develop context-aware, commonsense-based automatic reasoning so that changes in activity patterns make sense and can produce an alert for timely intervention.

The technology will be first investigated in a laboratory setting and then in hospital trials with geriatric patients.

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