

Grown-ups with supportive robots

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Credit: Jorge Manuel Miranda Dias

Robots will be a necessity with the ageing population needing assistance to improve their mobility. On the long road to help seniors maintain their life quality, EU researchers have developed a unique prototype robot.

In 2016, Eurostat, the statistical office of the European Union, estimated that nearly one fifth of Europe's population was 65 years or older. To tackle this continuing massive demographic change, the [GrowMeUp](#) project has developed affordable robotic technology. The aim was to connect the elderly to a virtual care network and provide support for personal and care tasks to ensure their well-being and safety. The result is the robot GrowMu. "While there are other autonomous robots and systems, GrowMeUp research results have advanced well beyond those of other predecessor projects," comments project coordinator, Professor

Jorge Dias.

GrowMu grows and develops as it supports

GrowMeUp developed advanced algorithms so GrowMu can adapt to changes and behaviour of the elderly to capture their routine. This means the robot can detect situations that could be improved upon and act in the case of danger such as a call for appropriate help. Scenarios needing attention range from suggestions for new recipes to a warning that a step is likely to cause a fall.

"Adaptive learning and multi-objective decision-making algorithms work so the robot can learn from the user's speech and behaviour patterns and recognise when circumstances require action," explains Prof. Dias. For example, through facial recognition and oral dialogues, GrowMu can remember a person's needs such as the week's planned events and remind the senior accordingly.

As GrowMu 'grows' with the senior cared for as well as other users, the [robot](#) can suggest modifications to lifestyle that help to sustain, and even improve [life quality](#). Examples could be to outline an exercise regime and arrange events for socialisation purposes.

Cloud connection—the ultimate in network services

All the functions of GrowMu are linked to the cloud. The seemingly infinite amount and type of downloadable data that can be accessed includes patient's reminders to take the correct medicine at the right time. The social care network accessible is composed of other [older people](#), family, friends, neighbours and formal carers. Not only does the cloud knowledge base integrate the older person with their social network and supporting care, it supplies a set of daily activity services

designed to fit the specific needs of the individual.

The technology and seniors, are they ready for each other?

As Prof. Dias points out, "We have definitely brought [social robots](#) closer to society. With intelligent dialogue, older people can effortlessly and intuitively interact with the system using natural speech." The GrowMeUp project has shown that robots can use contextual information to adapt its interaction and discourse. Moreover, the results show the increasing acceptance of social robots by the elderly.

As Prof. Dias recalls at one test with a group of older people, "Well, they were not just ready; they got involved and started making suggestions." Thrilled, the researchers went back to the labs to redesign, redevelop, retest and returned with an improved system for a much more positive reaction.

Robots step towards society's door

Major technological barriers are mobility safety and the speech-based interaction. Other confounding issues are high cost and the legal framework that is still in its infancy. Realistically speaking, it will be four to six years before the first commercial robots can really support people in their daily life in a robust and completely safe way.

Doubtless there is a market if economic health agents can be convinced that this technology can profitably address the challenges of the elderly at home. The European Commission and the European Innovation Partnership on Active and Healthy Ageing have been working on ideas and solutions to tackle issues like standardisation, legislation and certification. Summing up, Prof. Dias notes, "We hope we can swiftly

progress on these matters, because robots are knocking on society's door."

Provided by CORDIS

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