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ICT and assistive robotic technology for elderly care

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Abstract

With the increased aging population, and declined support from the families, societies will need new tools to ensure the well-being of the elderly. Many of them prefer living at home, but they need help and assistance from someone. ICT innovations in the field of robotic systems can make a significant difference in the lives of the elderly and their caregivers. Robotic assistants can enhance the autonomy level of older people thus prolonging the nursing home admission. They have the potential to assist and support elderly in certain daily activities, such as: eating, drinking, reminding of scheduled appointment or taking medication, maintaining a shopping list, emergency notification etc. Some robotic systems can collect medical data about patients' vital signs, that can be later meaningfully used by doctors and caregivers. However, elderly people require not only service support but also social support. Many researchers agree that social support is beneficial to a person's physical, mental and emotional health.

In light of these needs of the elderly, we have designed a low-cost assistive telepresence robotic system, for facilitating the health care and for improving the quality of life of the elderly, creating conditions for more independent living at their homes. The developed robot, along with its functionalities, permit various interactions in a remote environment, like navigation, fetch and carry small objects, measuring vital parameters of an elderly person, reminder, calendar, and interpersonal communication. The potential users of the robot system are not only the elderly but, also professional caregivers. The robot can be remotely controlled by a distant person and can perform some activities as if he/she was physically present at the elderly's residence. The developed assistive telepresence robot was tested in, both, simulation and experimental environment.

Keywords: assistive robotics, elderly care, mobile robot system, telepresence robot.