Robotic exoskeleton allows disabled people to eat or drink by themselves

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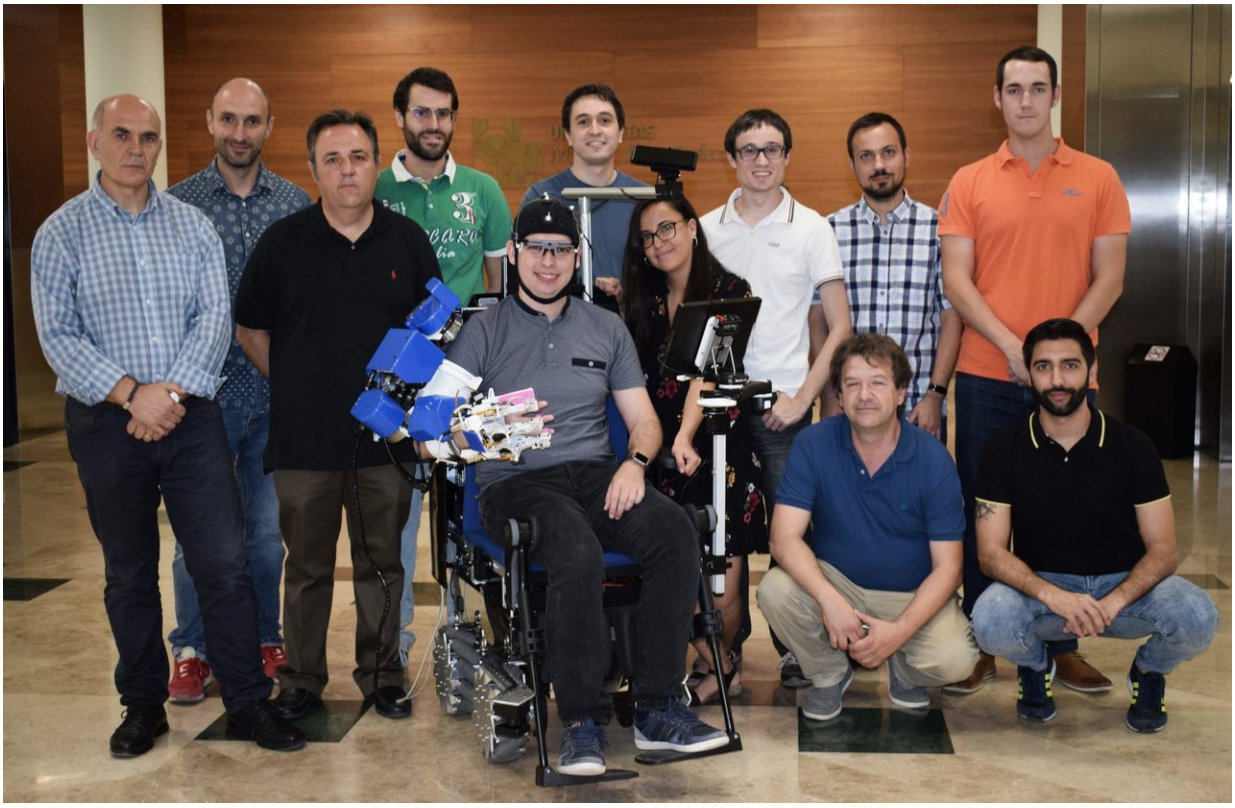

Credit: Asociación RUVID

Researchers of the Biomedical Neuro-engineering group of the Universidad Miguel Hernández (UMH) of Elche, Spain, have developed a robotic exoskeleton which, attached to a robotic wheelchair, helps people with varying degrees of disability carry out daily activities

including eating, drinking or washing.

The main goal of the project, which was carried out in collaboration with nine institutions and companies from Italy, Germany, Great Britain and Spain, is to contribute to improvement in the user-technology interface to increase the degree of self-reliance. To that end, a system has been developed that includes several modules designed to help disabled people cope with their daily activities.

A key element of the project is the development of an interface that allows the user to easily and independently control the technology. Thanks to this multimodal and adaptable interface, it is possible to combine the various devices to adapt the system to the user's needs. The artificial intelligence of the algorithms that control the AIDE system enable adaptive modification of the level of assistance provided by the robotic exoskeleton according to the specific needs of the user.

Furthermore, the AIDE system will allow people with disabilities to improve communication with their family and friends through the use of services such as the Internet, e-mail, Skype, WhatsApp and social networks. It can also allow them to turn on light switches, the television, make or answer a phone call.

The AIDE system has been evaluated by 17 people with varying degrees of disability at the Cedar Foundation in Belfast (United Kingdom) with excellent results. The project began on February 1, 2015 and was completed on May 31, 2018. Today, July 4, the official presentation of the AIDE system took place in Elche, with the user asking the exoskeleton to take him to the cafeteria, then asking for some water, and drinking it with help from the device.

Currently, the development of assistance technology to help with activities of daily living (ADLs) such as mobility or communicating is

geared toward merging the user's capabilities with the assistance technologies. However, current assistance devices do not adapt to users with different capabilities, and there are no robotic exoskeletons that enable the user to interact with their surroundings and carry out certain tasks by themselves.

Approximately 80 million people in the EU (a sixth of the entire population) have some sort of disability. This typically entails a series of physical, psychological and social barriers that hamper their participation in social and economic activities. According to article 9 of the United Nations Convention on the rights of people with disability, signed by the European Commission in 2010, "accessibility" is a basic right for all people with disability. The objective of accessibility is to enable people with disability to live independently and take part in all aspects of life.

Provided by Asociacion RUVID