

News

EU project develops intelligent wheelchair

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Researchers in MAIA, an EU funded project, have shown how a person can control, using only their brain, the wheelchair on which they are sitting.

This requires tapping into the person's neural network, interpreting the cerebral signals in real time and then developing a mechanism that could respond to these instructions and steer the wheelchair with a high degree of accuracy.

Funded under the Information Society Technologies (IST) programme of the Sixth Framework Programme (FP6), the wheelchair is one of several non-invasive applications that could be controlled by the brain interface software developed by the researchers. Other applications include a robot for reaching and manipulation tasks, and handling emergency situations such as when the wheelchair or robot arm breaks down.

Human thoughts create impulses in specific areas of the brain. Simply thinking about moving left, for example, creates such an impulse. Using a portable electroencephalogram and electrodes placed on the scalp of a user, the brain interface picks up on these impulses, which are then digitised and analysed. The software is capable of distinguishing between different mental states that the user is experiencing. Sensors are also attached to the wheelchair in which the user is sitting, so that as it moves, it can perceive a doorway to its right or an obstacle ahead.

'The device combines the intelligence of human beings with the intelligence of the wheel chair,' José del R Millán, project coordinator, told CORDIS News. 'When a user executes a mental task, imagining for example the movement of his right arm, each of these tasks is associated with a high-level command on the wheelchair, for example, to turn left or go straight on.'

The project consortium has run several successful experiments, including two sets of trials involving users who were mentally able to drive the wheelchair in a maze-like corridor. 'But we need to be careful not to expect too much too soon,' warns Dr Millán. 'While the chair is working well in the lab, it may not be sufficiently robust to work outside.'

The goal of the project, which runs until the end of the year, will be to demonstrate the wheelchair through different trials with the hope of acquiring clinical validation.

While industry has yet to come knocking, Dr Millán is hopeful that the project's work will dispel the belief that mind-controlled wheelchairs are just the stuff of science fiction.

Instead, the brain interface software and accompanying applications could be what makes the difference for tens of thousands of people who are utterly paralysed, otherwise known as 'locked in'. While able to perceive the world, to feel, to dream, these people are not able to communicate without the help of interfaces such as those developed by the MAIA project.

For more information, please visit:

<http://www.maia-project.org/> [<http://www.maia-project.org/>]

Category: Projects

Data Source Provider: CORDIS News interview with project coordinator; press sources (Le Soir)

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