LIFE HACKS

“Exciting” Head-Tongue Controller Allows Paralyzed Patients to Use Smartphones & Drive Wheelchairs

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This new, wearable assistive tech controller that works using head and tongue movements may improve wheelchair management for patients with paralysis by enabling them to operate it, but also control other devices like computers and smartphones.

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The device is designed as a collab between the medical rehab firm Brooks Rehabilitation and Georgia Tech. The team consists of engineers, as well as physicians and therapists.

Innovative Device May Open New Opportunities for Paralyzed People

Tetraplegia is a type of paralysis that's a result of a disease or some injury that causes loss of motor control and sensation in the limbs and torso.

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Currently, patients with this paralysis control their powered wheelchairs with head motions or "sip-and-puff" that rephrases inhalations and exhalations down a straw-like device into electronic signals.

People with upper extremity mobility usually use specialized joysticks and switches. However, the issue with these controllers is that they were created decades ago and they've not been improved ever since, causing plenty of compatibility problems with another tech.

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What's more, as they're built into a power wheelchair, they can't be used to manage other devices when the user is elsewhere, for example in bed or on the couch.

The Need for Innovative Wheelchair Controlling Devices Is Pivotal

This is why the research team from the Georgia University of Technology in Atlanta devised this premium controlling device named MagTrack.

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It can be used for powering wheelchairs, but also to control other connected devices that include tablets, smartphones, computers, and even automatic door openers.

MagTrack, as described by the team, is wearable and wireless and the user can adapt it to their own needs and preferences. Its co-creator and engineer Nordine Sebkhi notes that this is innovative tech that gives chance to people with physical paralysis to access complex human-machine interactions.

Thanks to this ability, the users will maintain easier management of other devices in their daily lives that they can't easily access otherwise. MagTrack removes the necessity of various assistive

technologies and instills one integrated system with multiple models.

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The medical director of Brooks Rehabilitation, Geneva Tonuzi, explains that they met with the team from Georgia Tech years ago and this is when they first heard of the breakthrough they've reached for users of wheelchairs.

How Does the MagTrack Work?

The device incorporates a Head-Tongue Controller that measures head and tongue movements that are detected by a combo of specialized eyewear and a small sensor that's glued to the tongue with a biocompatible adhesive (temporarily).

The AR translates these motions into commands-whether it's to steer a wheelchair or do mouse operations on a computer like scrolling, dragging, dropping, etc.

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In the experiment conducted by the researchers, the device was connected to a power wheelchair and was taken through both simple and advanced driving tasks by 17 volunteers from Brooks Rehabilitation.

The subjects, according to the team, although they've never used the MagTrack before, finished all the tasks as fast (if not faster) than when they use their other controlling devices.

Sources:

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