TAKING BACK CONTROL: NEW 3D PRINTED BRACELET EMPOWERS THE HAND-IMPAIRED TO PLAY VIDEO GAMES

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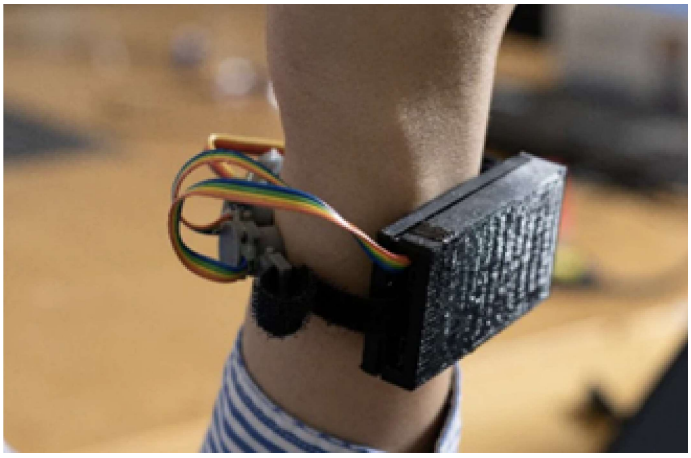
Researchers at the University of Sydney have developed a 3D printed sensor bracelet that allows those with hand impairments to more easily use computers and play video games.

By detecting vibrations in users' wrists as they move their fingers, the wearable is said to be capable of picking up inputs, before relaying these to a machine learning (ML) program that converts them into computational commands. Once they've perfected this process, the team intends to make the bracelet open-source, with the aim of improving smart device access for disabled people across the world.



Picture shows 3D printed sensor bracelet on a hand . Photo via the University of Sydney.

People with disabilities such as cerebral palsy often suffer from muscle stiffness and variations in muscle tone, which leave them vulnerable to jerky involuntary movements or give them exaggerated reflexes.

Given the intricacy of the inputs now required to operate computers, mobile phones and gaming pads, the hand-impaired are therefore faced with being frozen out of the modern world. To combat this, Professor Nadia Badawi, who supervised Lin on the bracelet project, says that the rapid development of advanced assistive technologies is vital, but they must be attainable enough to meet demand.

“We know that assistive technology holds the key to a brighter future for many children with cerebral palsy and similar disabilities, with the potential to transform communication, mobility,and participation in society,” adds Badawi.

“Cerebral palsy is the most common physical disability in childhood globally,meaning it is vital that these tech advancements are accessible, customizable and as widely available as possible.”

Lin and Badawi's solution to the technological barriers faced by hand impairment sufferers takes the shape of a unique, sensor-packed bracelet. 3D printed using an everyday Formlabs system, the device is designed to pick up subtle finger movements via vibrations in the carpal tunnel, a wrist area that contains the tendons which control the hand.

Once these inputs have been detected, they can be sent via blue tooth to a program the researchers have designed, which is capable of identifying patterns and communicating them with a given device.

As this process is carried out instantaneously, the bracelet enables wearers to input the commands needed to play games, something that ordinarily requires using a handheld controller.

Image shows PhD student Stephen Lin using the 3D printed bracelet to play a video game. Photo via the University of Sydney.