BrainBraille (#8088)

A device that translates muscle tension to braille-like phrases

Inventors from Georgia Tech have developed a tool and method for BCI communication that gradually teaches the BCI interface. The technology relies on tensing muscles in the feet, shoulders, and hands to activate six regions of the brain. These activation's can be caused by sensation, imagined movement, and attempted movement, and are detected by the wearable device. The movements can be combined to form letters, phrases, words, and shortcuts that are translated by the device. A haptic training method of repeated tactile stimulation lets users rapidly learn ‘muscle memory’ of all of the motions and their associated meanings. Although this technology is intended for disabled people, it may also be integrated into commercial BCIs for healthy users.

Benefits/Advantages

- Increased information bandwidth and speed for BCI devices
- Rapid learning of motions and associated meanings
- Enhanced accuracy

Potential Commercial Applications

- Wearable brain computer interface (BCI)
- Computer communication

Background/Context for This Invention

Braille is a simple example of how to encode all language using just 6 brain regions; any code can be developed using different brain regions that 'light up' in response to muscle tension. Researchers nationwide are developing brain computer interfaces (BCI) that allow silent communication for people with severe motor disabilities. The goal of BCI’s is to allow disabled people the ability to communicate with a mobile device without having to move or speak. Current technologies use vague brain signals relating to visual attention, gaze, and attention, and are limited to low information transfer rates.

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For more information about this technology, please visit:
https://industry.gatech.edu/technology/brainbraille