Docket #: S23-408

Apparatus and method for efficient wireless synchronization of multi-site non-invasive stimulation for the treatment of disorders of the nervous system

The Tass Lab has invented non-invasive, Vibrotactile Coordinated Reset (vCR) stimulation devices and methods to safely and efficiently treat brain disorders characterized by abnormal neuronal synchrony such as Parkinson's disease.

This invention involves both hardware and firmware components, exemplified by two wirelessly connected vibration gloves. While the synchronization of stimulated fingers within the same hand is straightforward, extending this synchronization to separate hands poses challenges. Using a wiring harness between hands is one solution, but it is impractical for everyday use and poses safety risks. The preference is for a wireless bimanual connection to ensure safety. The key technology is this wireless solution, combined with dedicated stimulation algorithms that achieves and maintains synchronization between gloves, enhancing patient safety, usability and therapeutic efficacy. Precise synchronization, in the sub-millisecond range, is crucial for optimal treatment, especially when employing various excitation patterns that may simultaneously stimulate fingers on separate hands.

Stage of Development
Prototype

Related Technologies:
17-270: Safe and efficient vibrotactile multi-channel stimulation for the treatment of brain disorders
23-357: Apparatus for efficient vibrotactile stimulation, especially vibrotactile

fingertip stimulation
23-359: Apparatus for efficient vibrotactile and electrotactile fingertip stimulation
23-360: Apparatus and method for efficient long-term multi-channel non-invasive stimulation for the treatment of disorders of the nervous system
23-373: Apparatus and method for efficient multichannel vibrotactile stimulation with compound pulses
23-406: Apparatus and method for efficient combined vibrotactile and electrotactile stimulation for the therapy of disorders of the nervous system
23-407: Apparatus for efficient electrotactile fingertip stimulation for the treatment of disorders of the nervous system
23-409: Method and apparatus for autonomous parameter adaptation of non-invasive multichannel stimulation

Applications

- Glove (fingertip stimulation) for the therapy of Parkinson's Disease and other movement related disorders
- Can work with and connect to invasive devices such as deep brain stimulators and/or spinal cord stimulators and/or epicortical stimulators etc.

Advantages

- Non-invasive
- Easy implementation with current prototype described
- More precise vibrotactile and/or electrotactile stimulation - stronger physiological effects with less vibration power/amplitude
- Avoids interhemispheric inhibition
- Delivers wireless multisite stimulation to remote and/or bilateral stimulation sites at highest temporal precision

Innovators

- Peter Tass
- John Dring
- Greg Gengarelly

- Eric Wurtz

Licensing Contact

Seth Rodgers

Licensing Manager, Life Sciences

Email