RECURSIVE ARTIFICIAL INTELLIGENCE NEUROMODULATION (RAIN) SYSTEM FOR TREATING CHRONIC PAIN

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Value Proposition: *New device that can alter sensory perception in a part of the body that is afflicted with chronic pain.*

Technology Description

Researchers at Washington University in St. Louis have developed a system that can create a non-pharmacologic approach to changing brain physiology to treat chronic pain by retraining brain to alter sensory perception in a part of the body that afflicted with chronic pain. Historically, brain computer interface (BCI) systems have emerged as a method to restore function and enhance communication in motor impaired patients. To date, this has been primarily applied to patients who have a compromised motor outflow due to spinal cord dysfunction, but an intact and functioning cerebral cortex.

This device utilizes a sensor that records neural activity, as well as a computational system that is capable of recording brain signals and computationally processing the signal in real time, and extracting features of the physiology, and artificial algorithm that dynamically controls sensory output based on extracted features, allowing it to be useful in treating a number of pathologies associated with pathologic or maladaptive physiology or network configurations including chronic pain, stroke, depression, Alzheimer's, and ADHD.

Stage of Research

Design Concept and submitted grant to fund research

Applications

- Treating chronic pain by changing brain physiology

Key Advantages

- Use a BCI to increase patients' theta rhythm to improve control of chronic pain

- Non-pharmacologic

Patents
Patent application filed

Related Web Links – Eric Leuthardt Profile; Leuthardt Lab