Medical Body Area Networks: An ambulatory EEG system for the treatment of disruptive mental states

Greg Jackson, Paul Ritvo, Jeff Daskalakis, Joseph Cafazzo

Problem Statement

Can a medical body area network platform provide ambulatory monitoring of patients to assist with treatment and self-care of disruptive mental states?

Method

The development of an ambulatory EEG headset that can be connected to an MBAN system using a handheld device platform will allow patients who experience disruptive mental states to better manage their conditions and to be monitored more closely by healthcare providers.

There will be development of a smartphone-based system to acquire, analyze, and explain the data to the patient, as well as transmit it to the appropriate healthcare professionals.
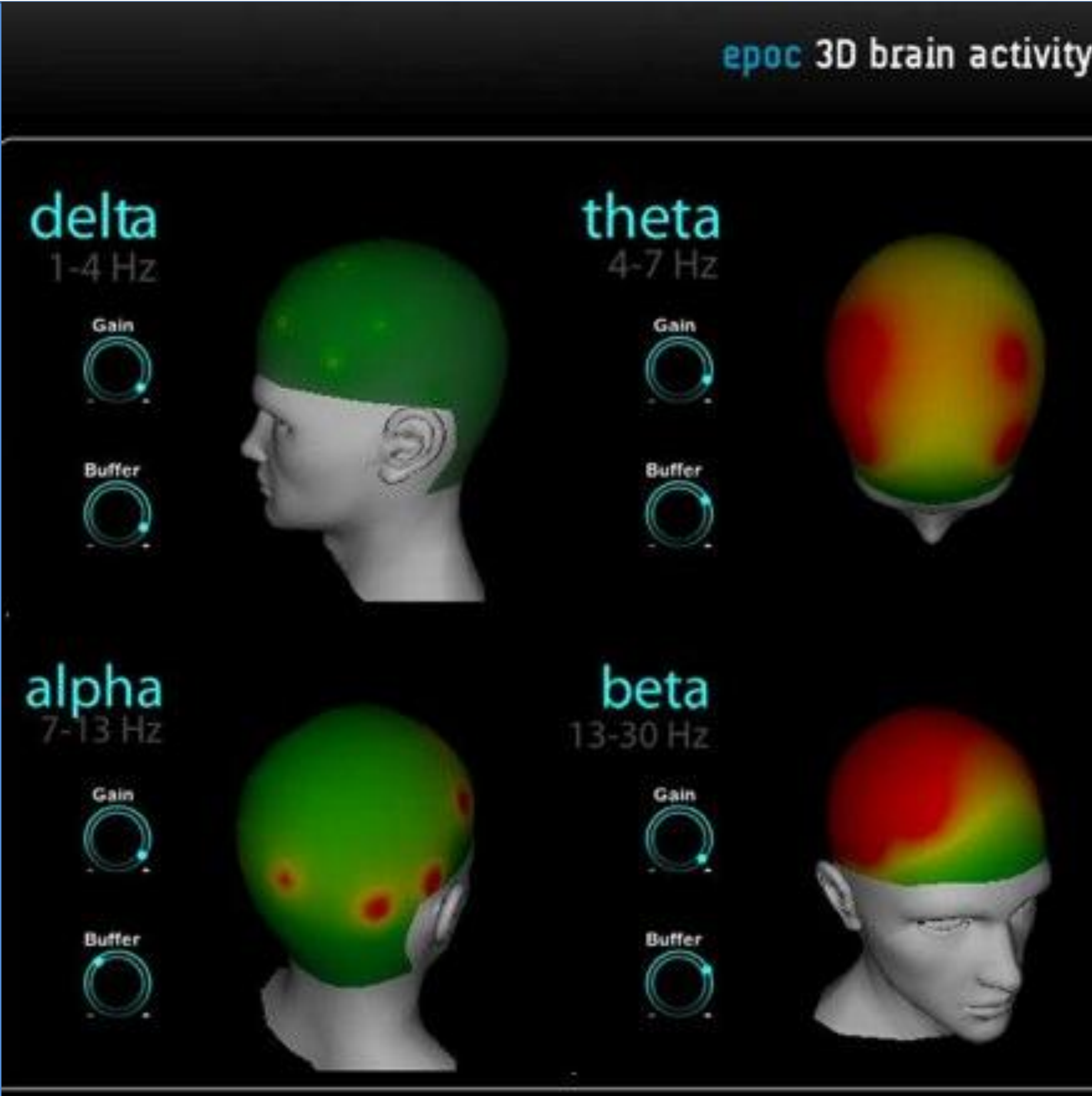
Development

By investigating existing commercial EEG headsets and working with researchers to develop and leverage new technology, a wearable, unobtrusive ambulatory system will be developed, likely using fabric-based sensors and antennas.

This will allow the patient to wear the headset in any situation and be comfortable both ergonomically and aesthetically.

Intended Results

This novel system will allow 24 hour assessment and immediate response, which is a shift from the current state of weekly, biweekly, monthly or crisis-driven appointments.

The system could be expanded to include sensors for vision, breathing, heart rate, blood pressure, toxins, movement, and more. This allows for the possibility of more complete remote patient care down the road.