New And Integrated Method For Continuous Auditory Brain Stimulation

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BACKGROUND

Various examples of delivering continuous auditory stimulation of various kinds (sometimes referred to by the term “entrainment”) have been proposed to modulate brainwaves for therapeutic effect. Current methods of delivering continuous auditory stimulation typically present noises (in the form of clicks, tones, pulses) embedded in music. By modulating the user’s existing audial environment to embed continuous auditory sound stimulation, this technology creates a more tolerable and user-friendly experience that enables prolonged therapeutic stimulation for such neurodegenerative disorders as Alzheimer’s, Parkinson’s and Chronic Traumatic Encephalopathy (CTE).

TECHNOLOGY DESCRIPTION

Researchers at UC San Diego have developed a method comprised of receiving ambient acoustic information in proximity of a user, modulating a portion of the received ambient acoustic information and delivering an acoustic signal to the user. The acoustic signal comprises the modulated portion of the received ambient acoustic information. The use of such methods, while promising, has been fairly limited by the nature of stimuli used (e.g. recorded or generated sounds that interfere with a user’s life). The present method represents a breakthrough that solves this problem by allowing for continuous brain stimulation over long periods without distracting or disrupting the user.

APPLICATIONS

The invention has a large number of applications. For example, a more clinical version of the method could be used in hospitals through set of specially designed headphones with built in processing or an external processing unit. This device would function to amplitude modulate the often intense sounds in the hospital environment to either prevent hospital delirium from developing (a pervasive problem with hospitalized elderly) or to help calm anxious patients without isolating them from others.

ADVANTAGES

This invention is unique in two ways. First, it uses ambient sound as carrier signal for the stimulus. This has never been done and is radically different from existing methods. Second, the method integrates a number of other unique or otherwise innovative methods including injection of sound stimuli when ambient noise is low and use of naturalistic stimuli to drive more naturalistic brain rhythms. While the first point, above, is itself very novel, taken together, these features comprise a comprehensive and potentially transformative new method.

STATE OF DEVELOPMENT

The current state of development has a fully functioning software version in operation. The current iteration performs all of the functions described above but is limited to use on personal computers, tablets or smart phones. Future iterations will be device-specific with next target devices being hearing aids and ”hearables” connected to hi-fidelity Bluetooth earbuds.

INTELLECTUAL PROPERTY INFO

The invention is patent-pending and is available for licensing and collaborations.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

KEYWORDS

Auditory Brain Stimulation, acoustic signal, sound stimuli, brain therapy, brain activity device, neurodegenerative disorders, brainwave patterns, chronic traumatic encephalopathy

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Communications**
  - Other
- **Medical**
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