cBCI: Method and System for Diagnosing and Training Cognitive Fitness and Targeted Neural Network Function Underlying Cognitive Fitness in an Integrated Digital Approach

Tech ID: 30508 / UC Case 2016-043-2

INVENTION NOVELTY

The inventors have created a brain computer interface (BCI) that serves as a diagnostic and training tool of cognitive abilities and neural network function.

VALUE PROPOSITION

1. The invention provides synergistic benefits by combining cognitive training and neurofeedback. It integrates feedback from analyzing neural network function during a cognitive task to provide adaptive cognitive training.
2. Patients with neurological and psychiatric conditions can benefit from access to an engaging, immersive training approach that challenges their cognition along with specific aspects of their neurophysiology that limit cognition.
3. The invention allows more rapid, robust assessment of neural, cognitive and behavioral function.

TECHNOLOGY DESCRIPTION

The method comprises of presenting a cognitive task to a subject, monitoring neural activity of the subject during the presentation of the cognitive task, and determining the neural performance level of the subject based on the neural activity underlying the task; and adapting the cognitive task based on the neural performance level.

The system for neural activity detection and adaptive training comprises of a user interface; a neural activity detector [e.g. electroencephalogram (EEG)] and a computing device that can present the cognitive task to a subject, receive electrical signals from the neural activity detector, map the electrical signals in real-time onto a 3D model of the subject's brain to locate the neural activity. The computing device can measure the strength of the neural activity to determine a neural performance level of the subject. The next cognitive task

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OTHER INFORMATION

KEYWORDS

cognitive fitness, brain computer interface, video game, software diagnostic

CATEGORIZED AS

- Medical
  - Diagnostics
  - Software

RELATED CASES

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is then adapted based on cognitive performance and neurophysiological measurements.

APPLICATION

1. Brain computer interface video games developed from this invention that incorporate virtual reality, immersive audio and visual presentation, and in mobile/in-lab neurosensing technology would serve as a diagnostic / therapeutic tool for a wide range of neuropsychiatric conditions including ADHD, PTSD, Major Depressive Disorder and dementia associated with many neurodegenerative diseases.

2. These tools can also complement traditional educational approaches in classroom settings or used as an at-home or in-clinic service to build neural and cognitive fitness.

LOOKING FOR PARTNERS

To develop & commercialize the technology.

STAGE OF DEVELOPMENT

The invention has been reduced to practice.

RELATED MATERIALS

- US 2019/0159715 A1 - Methods of cognitive fitness detection and training and systems for practicing the same - 05/30/2019

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Published Application	20190159715	05/30/2019	2016-043

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