

PATENTS

Neuroengineering

Recent patents related to methods of transcranial magnetic and electrostimulation.

Patent number	Description	Assignee	Inventor	Date
US 10,543,367	A method of providing transcranial electrostimulation by combining transcranial direct current stimulation and theta burst stimulation to achieve an unexpected therapeutic effect in various brain or neural diseases. Accordingly, the invention provides a mode of direct current with biphasic square wave pulses for the treatment of brain or neural diseases. Also, methods of employing and applications of transcranial electrostimulation.	Taipei Medical University (Taipei), National Applied Research Laboratories (Taipei)	Peng C-W, Chen S-C, Li YT, Lee HC, Chen J-J, Hsieh T-H, Lai C-H, Kang J-H	1/28/2020
US 10,537,737	An adaptive non-invasive alternating current brain stimulation system and method, including supplying transcranial alternating current stimulation (tACS) from a tACS source to a person and receiving electroencephalogram (EEG) signals from EEG sensors disposed on the person, where the EEG signals including stimulation interference.	Honeywell International (Morris Plains, NJ, USA)	Orhan U, Mathan S, Pavel M	1/21/2020
US 10,518,099	A transcranial magnetic stimulation device comprising a head mount for disposition on the head of a patient and configured with a plurality of attachment points, a plurality of magnetic assembly devices connected to the plurality of attachment points, a given magnetic assembly device equipped with an actuator device to actuate a magnet, is addressable, and configured to receive a control signal addressed to the given magnetic assembly device, and a processor having a memory and configured by program code. The processor is configured to select one or more treatment protocol units, generate a control signal using at least information contained in the selected treatment protocol units, energize at least one magnetic assembly device over a period of time to cause the magnet to actuate according to the control signal, and monitor the patient response to energizing the at least one magnetic assembly device.	Seraya Medical Systems (Greenwich, CT, USA)	Lowin L	12/31/2019
US 10,507,335	A coil assembly comprising a housing, a magnetic coil and an electrode arrangement, wherein the magnetic coil is arranged in the housing and is adapted for generating a magnetic field for transcranial magnetic stimulation, wherein the electrode arrangement is arranged on the housing and adapted for deriving an EEG signal, and wherein the magnetic coil and the electrode arrangement are arranged on top of each other. Further, an electrode arrangement and a system for transcranial magnetic stimulation.	Eberhard Karls University of Tübingen Faculty of Medicine (Tübingen, Germany)	Zrenner C, Ziemann U	12/17/2019
US 10,500,408	Apparatus for applying transcranial magnetic stimulation (TMS) to a patient, comprising a head mount for disposition on the head of a patient and a plurality of magnet assemblies for releasable mounting on the head mount. The magnet assemblies comprise a magnet for selectively providing a rapidly changing magnetic field capable of inducing weak electric currents for modifying the natural electrical activity of the brain of the patient. The number of magnet assemblies mounted, their individual positioning, and their selective provision of a rapidly changing magnetic field is selected to allow spatial, strength and temporal characteristics of the magnetic field to be tailored to the patient, to provide patient-specific TMS therapy, assist in diagnosis, or map out brain function.	The Methodist Hospital (Houston, TX, USA), Cornell University (Ithaca, NY, USA)	Helekar SA, Voss HU	12/10/2019
US 10,463,870	A system and methods for controlling pulse parameters during transcranial magnetic stimulation. Multiple coils are placed on external body parts and are controlled using an external control unit coupled to a stimulator having fast switches. The timing of the switches, as well as other parameters within the stimulator, determine the pulse parameters, such as pulse shape.	Yeda Research & Development Co. Ltd. at the Weizmann Institute of Science (Rehovot, Israel)	Roth Y, Chudnovsky V, Safra N, Hazani D, Zangen A	11/5/2019
US 10,463,855	A system and method for optimizing the configuration of multisite transcranial current stimulation, including providing an electric field characteristic target map on the brain's cortex, the target map including multiple cortical targets. The multiple cortical targets are localized and/or continuously varying and spatially extended, providing a weight map on the cortical surface prioritizing the important of areas in the target map for the purposes of optimization; and calculating, on the basis of the target and weight maps, optimal currents and optimal locations for a plurality of electrodes intended for providing transcranial current stimulation to globally stimulate at once the multiple cortical targets with excitatory, inhibitory or neutral stimulation.	Neuroelectrics (Barcelona), Beth Israel Deaconess Medical Center (Boston)	Ruffini G, Ripolles Mateu O, Pascual-Leone A, Fox MD, Cavaleiro Miranda PM	11/5/2019

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