

Recent patents in neuroengineering				
Patent number	Description	Assignee	Inventor	Date
US 10,112,056	A method of optimizing transcranial magnetic stimulation. An electrical signal is applied to a coil to generate one or more magnetic field pulses for transcranial magnetic stimulation of a target cortical region of a patient. The transcranial magnetic stimulation has stimulation parameters including orientation of the coil relative to the patient and intensity of the magnetic stimulation. At least the orientation of the coil relative to the patient is varied. At different orientations of the coil relative to the patient, neuron activation at the target cortical region is determined by monitoring changes in blood flow and/or blood oxygenation, e.g., using near infrared spectroscopy. Based on information obtained during the monitoring, one or more optimal coil orientations for the transcranial magnetic stimulation are determined.	Monash University (Melbourne, Victoria, Australia)	Fitzgerald PB, Thomson RH	10/30/2018
US 10,080,885	A functional electrical stimulation (FES) orthosis for FES to a limb segment, including: (i) a semi-rigid, self-retaining C-shaped frame, the frame configured to substantially envelop the limb segment, the frame including a first flexible and elongated circumferentially retaining element and at least a first and a second opposing flexible and elongated circumferentially retaining elements disposed on the circumferentially opposite side of the frame, the first retaining element and the first opposing retaining element forming a pair of opposing retaining elements, and (ii) a surface electrical stimulation electrode for contacting at least one stimulation point on a surface of the limb segment, associated with, and supported by, the frame, the surface electrode for electrically associating, via the frame, with a neuroprosthetic stimulator unit, so as to provide FES.	Bioness Neuromodulation (Ra'anana, Israel)	Nathan RH, Dar A, Bar-Or J	9/25/2018
US 10,070,802	A system and method to track and navigate an instrument relative to a patient. The system can include an electromagnetic tracking system to track an electromagnetic stimulation probe, such as a transcranial magnetic stimulation probe. The system can provide a tracking device on the probe, track the coil of the probe, provide a field relative to the probe, and determine the position of the patient based upon the field produced by the probe.	Medtronic Navigation (Louisville, CO, USA)	Paitel Y, Hartmann SL, Muller L	9/11/2018
US 10,046,171	A transcranial magnetic stimulation device comprising a head mount for disposition on a 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, 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.	Seraya Medical Systems (Greenwich, CT, USA)	Lowin L	8/14/2018
US 10,046,161	A neuroprosthetic device for restoring daily-life action movements of upper limbs in patients suffering from motor impairments, comprising several noninvasive electrodes adapted to be fixed on a patient body, in a way as to stimulate at least two separate muscles that participate in the movement execution of the upper limb, an electrical stimulation device for injecting electrical current into said electrodes and a controller unit for regulating said currents through said electrodes.	Ecole Polytechnique Federale de Lausanne (Lausanne, Switzerland)	Biasiucci A, Maesani A, Dimassi H	8/14/2018
US 10,029,112	A transcranial magnetic stimulator (TMS) to treat a variety of human disorders including migraine headaches. The device has an electronic device to charge a capacitor to a high voltage, which creates a high current in a magnetic coil, which produces an intense magnetic pulse applied to the patient's head for treatment of migraine headaches or to other patient body parts to treat other disorders. The TMS may be reprogrammed remotely over the Internet to add additional pulses or additional time that the patient may use the TMS, during which time the TMS would continue to function. The data in the TMS may be sent over the Internet to the patient's physician and/or to a monitor to send the data to the company that manufactured the TMS.	Eneura (Sunnyvale, CA, USA)	Fischell DR, Fischell RE, Fredrick JP, Woods SP	7/24/2018
US 10,029,111	Repetitive transcranial magnetic stimulation (rTMS) administered at a pulse rate that is equal to or a harmonic of a biological metric of a patient, to provide frequency coupling among different organs (e.g., heart, brain, breathing and gastrointestinal movement) through rhythmic entrainment. The specific harmonic chosen is the one closest to a desired EEG frequency. The desired EEG frequency is chosen on the basis of the cognitive element or symptom that is targeted.	Kosivana Holdings (Limassol, Cyprus)	Jin Y	7/24/2018
US 10,028,723	Systems and techniques for real-time, transcranial monitoring of safe blood-brain barrier opening, including determining an approach angle for targeted blood-brain barrier opening proximate a predetermined region in a brain of a patient, and positioning an ultrasound transducer to generate a focused ultrasound signal at the determined approach angle to the predetermined region in the brain.	The Trustees of Columbia University (New York)	Konofagou EE, Teichert T, Ferrera VP, Marquet F, Teng Y-S, Wu S-Y	7/24/2018
US 9,925,388	Devices and methods for directing a magnetic field into a body part of a subject. The devices include at least one electromagnetic coil, a magnetic core or yoke, and a pair of flux concentrators. The flux concentrators are separated by a gap into which the body part fits and through which the flux concentrators focus the magnetic field. The devices allow magnetic fields to be transmitted through the gap with higher intensity at greater distances from the device than possible with previous designs. The methods of using such devices allow the delivery of magnetic fields with higher intensity to the interior of a body part without exposing interposed proximal regions to magnetic fields of unduly high intensity. The devices and methods are useful for deep transcranial magnetic stimulation of the brain to treat various medical conditions.	Northeastern University (Boston)	Andalib P, Scappuzzo FS, Harris V	3/27/2018

Source: United States Patent and Trademark Office (<http://www.uspto.gov>).