Recent patents in brain-machine interfaces

Patent number	Description	Assignee	Inventor	Date
US9095455	Methods, devices and systems for restoring lost motor function, in particular, brain-machine interfaces incorporating neural population dynamics for controlling prosthetic devices.	Board of Trustees of Stanford University (Palo Alto, CA, USA)	Kao JC, Nuyujukian P, Churchland MM, Cunningham JP, Shenoy KV	8/4/2015
US9050200	Systems and methods for brain-machine interface control using reinforcement learning. Embodiments are directed to a brain-machine interface system that can translate neural activity into goal-directed behaviors, allowing for the control of computers or prosthetic devices without requiring knowledge of the physical actuation of the behaviors.	University of Florida Research Foundation (Gainesville, FL, USA)	Digiovanna JF, Mahmoudi B, Mitzelfelt JD, Sanchez JC, Principe JC	9/9/2015
US9034055	A human-machine interface based on task-specific temporal postural synergies that uses low-dimensional command signals to control a high-dimensional, virtual, robotic or paralyzed human hand.	University of Pittsburgh (Pittsburgh)	Vinjamuri RK, Wang W, Mao ZH, Weber DJ	5/19/2015
US9020586	A brain activity–deducing apparatus, a brain activity–deducing method, a brain activity–measuring apparatus, a brain activity–measuring method, and a brain-machine interface device, capable of deducing a brain activity signal of a source subject.	Honda Motor Co. (Tokyo), Advanced Telecommunications Research Institute International (Kyoto, Japan)	Yamada K, Kamitani Y	4/28/2015
US8792976	A brain-machine interface containing a mapping of neural signals and corresponding intention-estimating kinematics (e.g., positions and velocities) of a limb trajectory. The prosthetic device is controlled by the brain-machine interface. During the control of the prosthetic device, a modified brain-machine interface is developed by modifying the vectors of the velocities defined in the brain-machine interface. The modified brain-machine interface includes a new mapping of the neural signals and the intention-estimating kinematics that can now be used to control the prosthetic device using recorded neural brain signals from a user of the prosthetic device.	Board of Trustees of Stanford University (Palo Alto, CA, USA)	Gilja V, Nuyujukian P, Chestek CA, Cunningham JP, Yu BM, Ryu SI, Shenoy KV	7/29/2014
US8406889	Systems and methods of conducting polymer nanowires and their use in a brain-machine interface which is secure, robust and minimally invasive.	New York University (New York), Massachusetts Institute of Technology (Cambridge, MA, USA)	Llinas RR, Hunter IW, Ruddy BP	3/26/2013
US7983756	A miniaturized high-density multichannel electrode array for long-term neuronal recordings and devices employing the array, including an intelligent brain pacemaker and a closed loop brain-machine interface.	Duke University (Durham, NC, USA)	Nicolelis MA, Lehew GC, Krupa DJ	7/19/2011
US7209788	A closed loop brain-machine interface that translates one or more neural signals into a movement, or a series of movements, performed by a machine. The closed-loop brain-machine interface also provides sensory feedback to the subject.	Duke University (Durham, NC, USA)	Nicolelis MA, Chapin JK, Wessberg J	4/24/2007
US7058445	A brain-machine interface for decoding neural signals for control of a machine. The interface estimates and then combines information from two classes of neural activity. A first estimator decodes movement plan information from neural signals representing plan activity.	Board of Trustees of Stanford University (Palo Alto, CA, USA)	Kemere CT, Santhanam G, Yu BM, Meng TH, Shenoy KV	6/6/2006

Source: US Patent and Trademark Office (http://www.uspto.gov); European Patent Office (http://www.epo.org).