

The 38th Chinese Control Conference

Pre-conference Workshop 2

Advances on Brain Signal Processing



Speaker: Ming Dong, Tianjin University, China

Title: Developments and Challenges of Brain-computer Interface

Abstract: A BCI is a system that measures brain activity and converts it into artificial output that replaces, restores, enhances, supplements, or improves natural CNS output. The system has drawn much attention from scientists across the world, due to its wide applications in military and medication. After decades of development, BCI has been updated quickly in paradigm design, algorithm and hardware innovations, resulting in further improvements in BCI performance. Here we mainly reviewed the development history of BCI, and focused on the latest research achievements and applications in civil use. Finally, we briefly discussed the existing problems in BCI technology, aiming at promoting the development of BCI.

Biography: Dr. Ming received his B.S. and Ph.D. degrees in biomedical engineering at Tianjin University (TJU), China, in 1999 and 2004, respectively. He worked as a research associate in the Department of Orthopaedics and Traumatology, Li Ka Shing Faculty of Medicine, University of Hong Kong, from 2002 to 2003 and was a visiting scholar in the Division of Mechanical Engineering and Mechatronics, University of Dundee, U.K., from 2005 to 2006. He joined TJU faculty in the College of Precision Instruments and Optoelectronics Engineering in 2006 and was promoted to full professor of biomedical engineering since 2011. Now he is the Chair Professor of the Department of Biomedical Engineering of TJU, the director of the Tianjin Neural Engineering Center, the director of Academy of Medical Engineering and Translational Medicine and the Chair of IEEE-EMBS Tianjin Chapter.

His major research interests include neural engineering, rehabilitation engineering, sports science, biomedical instrumentation and signal/image processing, especially in brain-computer interface, functional electrical stimulation, and gait analysis. He has managed almost 20 national and international research projects. He designed I-Neuro Sys Robot “TUNEXON-I”, which is the first “intention controlled” artificial neural robot for whole body rehabilitation of stroke patients. It is one of the “top 10 technical achievements of China to change the future” in 2014. He and his colleagues have successfully carried out the first in-space BCI experiment on the “Tiangong II” space station. He has also organized and hosted over 10 international conferences as the Session Chair or Track Chair over the last 10 years and was the General Chair of the 2012 IEEE International Conference on Virtual Environments, Human-Computer Interfaces and Measurement Systems (VECIMS 12). Furthermore, he has been an International Advisory Board member of the The Foot, and the Editorial Committee member of International Journal of Biomedical Engineering in China.