

Special session for the IWBBIO 2016

Title: Last advances in Brain-Computer Interfaces.

Motivation and objectives:

The Brain-Computer Interface (BCI) technology provides a non-muscular communication channel between the brain and the outer world, thus allowing for the transmission of data, messages and commands. BCIs emerged few decades ago as a new communication technology that permitted subjects with severe neuromuscular disorders to communicate and to interact with other everyday-life elements such as people or things. However, technology advances in the last years have permitted BCIs to extend their application areas (e.g., entertainment, evaluation of cognitive workload, neuro-rehabilitation, etc.). In the future, it is expected a qualitative improvement in performance, in terms of information transfer rate and reliability. This fact will contribute to potential uses of BCIs in emerging areas of interest, such as Ambient Assisted Living (AAL) or security. The main goal of this special session is to show the last advances in BCIs, neuro-technologies (e.g., innovative EEG/ECG/fNIRS headsets, integrated stimulation acquisition devices, etc.), tele-services (e.g., applications in tele-medicine, tele-rehabilitation programs, tele-control, mobile applications, etc.), innovative bio-signals processing algorithms, training techniques, and novel paradigms of data transmission by means of BCIs.

Organizers:

- **Dr. Eng. Miguel Angel Lopez-Gordo:** Signal Theory, Telematics and Communications Department, University of Granada, Spain. C/ Periodista Daniel Saucedo Aranda, s/n, 18071 Granada (Spain). Tlfn: +34958249721. Email: malg@ugr.es. He received the degree in Telecommunication Engineering in 1998 from the University of Malaga (Spain), the Master degree from the same university in 2011 and finished the Ph.D in 2009 (Ph.D. award) in the University of Granada (Spain). For several years worked in the deployment of core networks in GPRS and UMTS systems and became Cisco Systems expert. He is currently with the Department of Signal Theory, Communications and Networking of the University of Granada and he is also member of the Nicolo Association for the R+D+i in Neuro-technologies for disability (www.nicolo.es). He researches in the field of signal processing for brain-computer interfaces, bio-inspired data transmission and e-health. **He has successfully co-organized five special sessions about BCIs in IWANN09 (Salamanca), IWANN11 (Torremolinos), IWANN13 (Canary Islands), IWANN15 (Palma de Mallorca), and IWINAC15 (Elche).**
- **M. Eng. Jesus Minguillon:** Brain-Computer Interfaces Laboratory (Department of Computer Architecture and Technology), Research Centre for Information and Communications Technologies, University of Granada, Spain. C/ Periodista Rafael Gomez Montero, 2, 18014 Granada (Spain). Email: minguillon@ugr.es. He received the Master degree in Telecommunication Engineering in 2014, and the Master degree in Electrical and Electronic Engineering in 2015, all from the University of Granada. He has worked in the hardware-software design of biomedical devices and 3D bio-printers. He is currently with the Department of Computer Architecture and Technology of the University of Granada. He researches in the fields of hardware-software implementation and signal processing for brain-computer interfaces.

Prospective contributed papers: