

# 4<sup>th</sup> International OpenViBE Workshop

Fabien Lotte<sup>1</sup>, Laurent Bougrain<sup>2</sup>, Hakim Si-Mohammed<sup>3</sup>, Sébastien Rimbart<sup>1</sup>, Léa Pillette<sup>4</sup>, Aline Roc<sup>1</sup>

<sup>1</sup> *Inria Bordeaux Sud-Ouest / LabRI (Univ. Bordeaux / CNRS / Bordeaux INP), 200 avenue de la vieille tour, 33405, Talence Cedex, France*

<sup>2</sup> *University of Lorraine, LORIA, Bât C, Campus Scientifique, F54506, Vandœuvre lès Nancy, France*

<sup>3</sup> *Université de Lille, CRIStAL, CNRS, Campus Cité scientifique, Sciences et technologies, Bâtiment Esprit, 59655 Villeneuve-d'Ascq, France*

<sup>4</sup> *Ecole Centrale de Nantes, 1 Rue de la Noë, 44300 Nantes, France*

## Abstract / Short description (max. 150 words)

[OpenViBE](#) is a free and open-source software platform dedicated to designing, testing and using Brain-Computer Interfaces (BCI). It can be used to acquire, filter, process, classify and visualize brain signals in real time. OpenViBE is used by multiple people and laboratories all over the world and has become a major platform for real-time BCI and neuroscience. After three successful workshops, this fourth one will be a new opportunity for the OpenViBE and Neuroergonomics communities to meet, exchange and learn about OpenViBE. It will comprise a mix of tutorials and scientific presentations, targeted at both beginners, who want to discover OpenViBE, and current OpenViBE users who want to learn more about the software and its evolutions. It will show how OpenViBE can be used for Neuroergonomics research & applications, e.g., for clinical BCI design, BCI connection to AR and VR or mental state induction and estimation.

## Keywords (max. 5)

Brain-Computer Interfaces, EEG/MEG, AR/VR, Working Memory, Selective Attention

## Prerequisites (if any; or none)

Some knowledge about BCI principles and use would certainly be a plus.

Participants are encouraged to install OpenViBE on their own machine before joining the workshop (free download there: <http://openvibe.inria.fr/downloads/>), so that they can learn how to use it in practice during the hands-on session of the workshop.

## Course Schedule (September 11<sup>th</sup>-12<sup>th</sup>, 14:00h – 18:00 CET)

Day 1 (Saturday, Sep 11th)	
14:00	Welcome - Fabien Lotte
14:05	An Introduction to the OpenViBE platform and ecosystem - Laurent Bougrain
14:30	step-by-step Tutorial of OpenViBE use (hands-on) - Fabien Lotte
15:45	Break

16:15	Using OpenViBE and Unity for AR/VR applications – Hakim Si-Mohammed
16:45	Clinical BCI applications of OpenViBE – Sébastien Rimbart
17:05	Inducing, measuring and estimating the different types of attentions in EEG signals – Léa Pillette
17:25	Studying working memory load during motor imagery BCI use – Aline Roc
17:45	Discussion and closure

## Maximum Intake

No maximum.

## Long Description

Brain-Computer Interfaces (BCI) are innovative Human-Computer Interaction Systems for recovery, monitoring, evaluation and communication and enhancement. [OpenViBE](#) is a free and open-source software platform dedicated to designing, testing and using BCI in real-time. It can be used to acquire, filter, process, classify and visualize brain signals in real time. OpenViBE is used by multiple people and laboratories all over the world and has become a major platform for real-time BCI as well as for real-time neuroscience in general, including for neuroergonomics. Based on the success of the previous workshops done in Europe ([BCI conference 2014, Graz, Austria](#)), USA ([BCI meeting 2016, Pacific grove, CA](#)), and Asia ([IEEE SMC 2018, Miyazaki, Japan](#)), this fourth workshop will be a new opportunity for the OpenViBE community to meet, exchange and further collaborate. It will also be a perfect opportunity to enable people from the Neuroergonomics community not yet familiar with OpenViBE to discover and learn about OpenViBE. This workshop will consist of a mix of tutorials, scientific presentations and discussions between users, targeted at both beginners who want to discover OpenViBE or people already using OpenViBE who would like to learn more about the software and its evolutions. For this specific workshop, we will notably show how OpenViBE can be used for Neuroergonomics research & applications, e.g., for clinical BCI design, BCI connection to Augmented and Virtual Realities (AR/VR) or mental state (workload, attention) induction and estimation.

## Embedded content

The workshop is also mentioned on the OpenViBE website, there: <http://openvibe.inria.fr/the-4th-international-openvibe-workshop/>  
We will share the slides of the tutorials and presentations on that website after the workshop.

## Recommended Reading

1. Renard, Y., Lotte, F., Gibert, G., Congedo, M., Maby, E., Delannoy, V., ... & Lécuyer, A. (2010). Openvibe: An open-source software platform to design, test, and use brain-computer interfaces in real and virtual environments. *Presence*, 19(1), 35-53.
2. <http://openvibe.inria.fr/>