

**PhD scholarship – European ITN program EBRAMUS -  
CIM: gesture-based audio stimulation in cochlear implant users**  
Supervisor: Professor Marc Leman; University of Gent, Belgium

A PhD scholarship (3 years) is available as part of the European research project EBRAMUS (Europe **BRA**in and **MUS**ic). Enrolment as a PhD student will begin in October or November 2010.

EBRAMUS is a consortium of European research centres based in Belgium, France, Germany, Great Britain, and Poland (for further information: <http://leadserv.u-bourgogne.fr/ebramus>). EBRAMUS offers a unique interdisciplinary graduate programme to study the behavioural, functional, structural, and plastic effects of music on cognitive functions such as language, memory, learning, and motor behaviour through an integrative and interdisciplinary approach. Its goal is to train PhD students in the multidisciplinary aspects of music in rehabilitation, learning, and facilitation of cognitive processes with behavioural and neuroscience (EEG, fMRI, etc.) methods.

**As a member of the EBRAMUS project, the PhD will be:**

- working in collaboration with the other centres of the network based in Belgium, France, Germany, Great Britain, and Poland.
- participating, together with the 9 other PhD students of the network (1 per team), at 3 workshops and 2 summerschools organized by the EBRAMUS consortium.
- including mobility to at least one other research site up to 6 months.

For more details on project: <http://leadserv.u-bourgogne.fr/ebramus>

## **Project Description**

### **Objective of the PhD research**

CIM (Cochlear Implant Music) is a device that uses body movement as input to control a cochlear implant. The goal of the PhD is to develop a system that fosters the coupling of action and perception in cochlear implant users. The PhD work will focus on the technical development of the system, which comprises the study of different interaction levels (from sound design, to composition of sequences, to social interaction) and ways of mapping gestures to the cochlear interface, using commercial and/or custom made sensors. The cochlear device (hardware/software) is provided by the company Cochlear (Research Unit in Mechelen, Belgium). The technical development of CIM will be carried out in an iterative user-oriented development cycle with a target cochlear implant user group in collaboration with the Ghent University Hospital. The underlying hypothesis is that gesture-based auditory stimulation can foster perception of real-world sounds.

### **Competences of the candidate:**

(in addition to general requirements, see: <http://leadserv.u-bourgogne.fr/ebramus>)

#### **Required**

- Master degree or equivalent in cognitive science, musicology, or engineering.
- Skills in programming Matlab, C/C++
- Deep knowledge of signal processing
- Capacity to work in an interdisciplinary environment
- Social skills to work with patients
- Knowledge of the English language and Academic English writing skills

#### **Additional skills**

- Good musical knowledge
- Knowledge of hardware (sensors)
- Knowledge of human auditory system

### **How to apply**

Application procedure and eligibility criteria on: <http://leadserv.u-bourgogne.fr/ebramus>

For further information, contact EBRAMUS at: [EBRAMUS@gmail.com](mailto:EBRAMUS@gmail.com)

Applications should be submitted to: [EBRAMUS@gmail.com](mailto:EBRAMUS@gmail.com) and [Marc.Leman@UGent.be](mailto:Marc.Leman@UGent.be)

**NOTE:** Applications will be evaluated as they come in, and the position will be open until filled (or at the latest for August 30, 2010).