Job Title:	Post-Doc	HR Contact:	
Department/Group:	Centre d'Investigation Clinique et d'Innovation technologique (CICIT)	Job Code/ Req#:	
Location:	Hopital Raymond Poincare 104, boulevard Raymond Poincaré 92380 Garches	Travel Required:	NO
Level/Salary Range:	2,000€-2,500€ monthly	Position Type:	Full-time
Length:	1 year (renewable)	Date posted:	1st December 2010
Type:	CDD	Starting period:	From 1st Jan 2010
External posting URL:			
Internal posting URL:			

Applications Accepted By:	
Fax or E-mail: Louis.mayaud@rpc.aphp.fr Subject Line: RoBIK: [Post-Doc Offer]	

Job Description

Environment

Raymond Poincare hospital

Since 2005, the Raymond-Poincare hospital in Garches and Berck Maritime Hospital (200 beds in rehabilitation), historically oriented in management of disability, is creating a Group 1800 Hospital staff with an annual budget approximately € 100 million. Today, the Hospital Group is organized around three poles oriented toward taking care of people with disabilities (Rehabilitation center-Assessment-Rehabilitation) of children, especially suffering from neuromuscular disease (pediatric center) and acute conditions: orthopedic surgery, infectious diseases. Thus, while upholding its duties of care, teaching and research, it is consolidating its international reputation as a center of reference in support of comprehensive and multidisciplinary disability.

The Centre for Clinical Investigation and technological Innovation (CICIT)

Within the Hospital Raymond Poincare you will join the CICIT whose purpose is to centralize research

activities of the various clinical hospital services around three fields:

- Mobility: These projects focus on developing technologies to improve efficiency wheelchairs whether manual or electric.
- Communication: There are projects designed to promote communication interfaces of subjects with severe disabilities. It is the development of phonation valves interfaced with a voice dictation software, or development projects of innovative virtual keyboards.
- Ventilation support: These projects involve both the development and evaluation of ventilation suitable for severely disabled subjects.

Context

Robust Brain Computer Interface virtual Keyboard (RoBIK)

The principle of a Brain-Computer Interface or BCI is to control a device through the extraction and interpretation of signal features from electroencephalographic (EEG) collected on the surface of the scalp or by the mean of invasive measurements. This old idea of communication technique (Vidal 1973) offers the advantage to bypass need of muscle activity in the control chain and therefore is naturally presented as a promising alternative for restoration of control and communication of people with neuromuscular (Wolpow, et al. 2002).

However BCI technology remains an object of study for research laboratories, it is not disseminated to patients and people with disabilities. To this, there are several reasons: lack of robustness and ergonomics. Therefore, despite the large number of research around this topic today, there is no BCI system for users. The project you will work on aims to develop a patient-dedicated application using OpenViBE software and an open-source platform for developments.

OpenViBE

The OpenViBE software (http://openvibe.inria.fr) is a free and open-source software platform dedicated to designing, testing and using brain-computer interfaces. Brain-Computer Interaction (or BCI) corresponds to the direct use of brain signals to send "mental commands" to an automated system such as a robot, prosthesis, or a cursor on a computer screen. Typical BCI applications are medical (assistance to disabled people, real-time biofeedback) and multimedia (virtual reality, video games).

Your Profile

Diploma and Experience

You have an engineer degree or a PhD preferably in the field of neurosciences.

Past experiences

You have been involved in human research and have already been writing articles. You're willing to carry out clinical trials in ICU and therefore spend time with patients and medical staff. You're fluent in C++

and able to develop some easy application in the scope of an open-source project.

Skills

Software skills: C++ (fluent), SVN, CSV, …

Research skills: writing and publishing articles, statistics

Others: EEG, signal processing, clinical

Your Mission

You will work at the Raymond Poincare Hospital with the medical staff on the project RoBIK Your missions will be:

1. Design application / tools on OpenViBE for research and in particular clinical trials
2. Design clinical trials and go through process of ethical approval with the help of medical team
3. Carry out studies with patients (under the principal investigator's supervision) and healthy volunteers
4. Post-process and analyze data from clinical trials with the help of a bio-statistician
5. Write and submit results to be published or for conferences
6. (Eventually) take part to the definition and founding process of new/on-going projects with head of the unit.

Reviewed By:		Date:	
Approved By:		Date:	
Last Updated By:		Date/Time:	