

Job Offer

"R&D Engineer for improving real-time software performance of Brain-Computer Interfaces"

Project

An engineering position is open at Inria, Rennes, France, within the frame of the SABRE collaborative project. The SABRE project aims to attain advances in Brain-Computer Interfaces (BCI) by proposing novel, efficient algorithms for processing electrical signals of the brain (EEG). The project notably focuses on solving the complex inverse problem in real-time: inferring the likely electrical sources given EEG measurement data from a dense array of electrodes. The inferred source signal estimates are then used for visualization and classification of cerebral activity, and for device control -- online, in real-time.

The selected engineer will work on implementing real-time C++ versions of the algorithms proposed during the project and designing them in the scope of the OpenViBE real-time neuroscience framework (<http://openvibe.inria.fr>). The engineer will also work on extending the OpenViBE kernel and architecture as required for this purpose, and develop real-time brain data visualizations for the project. The engineer may also be requested to work on data acquisition, associated BCI protocols and diagnostics and run the related experiments.

The main implementation language of the project is C++, although experimental prototyping may be carried out in Matlab or Python.

Context

SABRE is a 3-year project funded by "CominLabs Labex" (<http://www.cominlabs.ueb.eu/>) and led by Dr. Francesco Andriulli (Telecom Bretagne). It involves three academic research partners:

- Telecom Bretagne (Brest, France) : Electronic Department
- Telecom Bretagne (Brest, France) : Microwave Department
- Inria (Rennes, France) : Hybrid research team (<https://team.inria.fr/hybrid/>), led by Dr. Anatole Lecuyer

Required background

- Master's Degree or PhD in an applicable field

An ideal candidate has a good subset of the following

- Strong C++ development skills: programming and design
- Experience in e.g.
 - Optimization using GPUs, threads, SIMD, etc
 - Algorithmic and mathematical optimization
 - Mathematics of inverse problems
 - Modifying and enhancing pre-existing software
 - Processing EEG or other streaming signal data
 - 3D computer graphics
 - Scientific programming, e.g. using Matlab, R or Python
- One or more years of work experience
- Working competence in technical, scientific and spoken English

Duration

12 Months (+12 Months)

Location

Inria, Rennes, France

Dates

Application deadline: 22.Jun.2014

Target hiring date: Sept/Oct 2014

Salary

~2500 to 3000EUR/month gross, based on experience

Contact

Interested candidates should send their CV, motivation letter, and references, to:

- Anatole Lécuyer - anatole.lecuyer@inria.fr
 - Jussi T. Lindgren - jussi-tapio.lindgren@inria.fr
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