

Software developer for real-time fMRI neurofeedback and machine learning

Qualification and skills

The software developer candidate should have:

- 1) A Masters of Science or PhD degree in any of the following disciplines: Bioinformatics, Engineering, Biomedical Engineering, Computer Science, or (Bio-)Physics.
- 2) Scientific programming expertise in C/C++ and parallel code implementation on CPU (multi-threading) and GPU (OpenCL, Cuda), Matlab/Python/Qt programming and Unix environment
- 3) Strong interest in any the following areas:
 - machine learning
 - fMRI acquisition and analysis
 - brain-computer interfaces
 - real-time fMRI neurofeedback methods
 - multivariate and univariate pattern analysis
 - functional/effective connectivity
 - computational modeling
- 4) Good English communication skills (both written and verbal)
- 5) Excellent organizational, diligent, analytical skills. Ability to collaborate and work as a team player.

Job description

The main tasks of the software developer will be:

- 1) Software development of real-time fMRI neurofeedback approaches
- 2) Setup of acquisition, analysis and modelling of real-time fMRI neurofeedback studies
- 3) Contribution to experimental design
- 4) User interface fMRI neurofeedback software development tailored for specific patient applications
- 5) C++ implementation of plugins needed for specific patient applications

Apply:

Please send a pdf or word CV to Dr. Dorina Papageorgiou at papageor@bcm.edu
Compensation commensurate with experience.

Two Postdoctoral Fellowship Positions in the Dept. of Neurology

Two interdisciplinary postdoctoral fellowship program positions apply to the translational aspects of brain-machine learning interface, neuroscience and neurologically sustained injuries, such as stroke, traumatic brain injury and neurodevelopmental and neurodegenerative diseases.

The postdoctoral fellow candidate should have:

A PhD degree (completion of doctoral research) in any of the following disciplines: Neuroscience, Engineering, Biomedical Engineering, Bioinformatics, Computer Science, or (Bio-)Physics.

A post-doctoral fellowship is available in the laboratory of Dorina Papageorgiou, Ph.D., MHSc at Baylor College of Medicine to study cortical plasticity and repair in specific patient populations as a result of neurological injury and/or disease using real-time functional MRI neurofeedback methods. In collaboration with the laboratory of Stelios Smirnakis, M.D., Ph.D. we have focused on a systematic approach to cortical visual system rehabilitation via the study of the population receptive field analysis and real-time fMRI neurofeedback methods. We have relied heavily on highly quantitative methods, such as population receptive field and fMRI multivariate and univariate analyses and have utilized a variety of innovative approaches to address our questions, including support vector machine analyses, as well as cortical and subcortical neurofeedback in targeted regions of interest. Additionally, we have gained insights from highly individualized cortical and subcortical behavioral neuro-rehabilitative approaches.

The work promises to be challenging, but also presents an exciting opportunity to gain an understanding of the neurofeedback methods involved in various patient populations depending on the domain of brain function lesioned, such as in visual, speech, attention, and pain-associated networks. Trainees will benefit from the Center for Advanced MR Imaging at Baylor College of Medicine, which includes a state-of-the art imaging facility with four research-dedicated 3 Tesla MR scanners. (1 Siemens Allegra (head-only) and 3 Siemens Trio), a high speed private network, a database with web-based access, independent computing facilities, real-time fMRI capabilities.

Minimum Education:

PhD

Minimum Job Experience:

PhDs with a background in any of the following disciplines: (i) Neuroscience Biomedical Engineering, Engineering, Bioinformatics, Computer Science, or (Bio-)Physics with an emphasis on scientific programming expertise in C/C++ and parallel code implementation on CPU (multi-threading) and GPU (OpenCL, Cuda), Matlab/Python/Qt programming and Unix environment. The applicant should be highly motivated with a flexible work schedule.