Open PhD position

Application deadline: 31 December 2018

Responsibilities

We seek one highly talented and motivated PhD student for a Swiss National Foundation (SNF) funded project entitled Reorchestrate-4-Vision. The overarching aim of the project is to develop a computational framework to better characterize the visual system and to promote visual restoration in patients using non-invasive brain stimulation.

The high-technology project involves task development, multimodal recordings, computational modelling, and testing the models in healthy and patients with visual deficits. Besides making use of various brain imaging techniques (e.g. fMRI and DWI) to investigate the neural basis of visual processing and visual learning, you will work on causal interventions using brain stimulation (TMS and tACS) in a multimodal fashion (TMS-fMRI and TMS-EEG) in healthy and patient samples (stroke patients and patients with Parkinson’s disease). With this, we want to contribute to a better understanding of the neurophysiological bases of visual discrimination in healthy and patients. Ultimately, we aim to predict and manipulate current neurophysiological states that may affect visual learning in normal and diseased brains and to provide starting points for personalised interventions based on brain oscillations to enhance vision.

Work environment

EPLF is worldwide known for its excellent teaching, delivered by inspiring teachers and world leading academic researchers. The EPFL PhD Program in Neuroscience (EDNE) provides its students with training from the genetic to the behavioural level including: molecular, cellular, cognitive, computational neuroscience, and neuroprosthetics. You will benefit from a rich interdisciplinary environment of the EPFL as part of the Brain Mind Institute (BMI, School of Life Sciences), and the Center for Neuroprosthetics (CNP). This research centre is devoted to innovative research in biotechnology, microelectronics, neural implants as well as in understanding the mechanistic underpinnings of human cognition and behaviour in health and disease with a large translational focus. The Center’s mission is to define and establish a truly interdisciplinary area of study, merging neuroscience with engineering and medicine, and efficiently translating major breakthroughs from bioengineering and neuroscience to viable clinic applications.

You will be joining the UPHUMMEL lab led by Prof. Hummel. Our group is embedded in EPFL, BMI and CNP and has two antennas, one at Campus Biotech in Geneva and the second at campus SUVA in Sion with access to patients. We focus on systems and translational neuroscience. The main research topics include neuroplasticity, neuronal control of sensorimotor function, motor skill acquisition and learning, healthy aging and especially on functional reorganization and recovery after focal brain lesions. We are especially interested in understanding how non-invasive brain stimulation can help functional recovery. We use multimodal systems neurosciences approaches including modern neuroimaging, brain stimulation, psychophysical and clinical evaluations.

What we expect from you

You should have a Master degree in a field related to neural engineering or cognitive neuroscience (e.g. experimental psychology, cognitive science, biology, computational neuroscience). Candidates with a strong background in systems neuroscience and experience with
computational modelling are particularly encouraged to apply. Selection will be based on university records, expertise in systems neuroscience methods and theories, computational modelling and familiarity with neuroimaging and brain stimulation techniques. You are expected to work in an interdisciplinary environment, sharing technical know-how and ideas. You will be given the opportunity to follow classes from EPFL and gain experience in teaching at EPFL and present your work at international conferences and meetings.

Other Information

EPFL is an equal opportunity employer, committed to building a culturally diverse intellectual community, and as such encourages applications from women and minorities. The ideal start date would be January 2019.

Would you like to know more?

For more information about this PhD position, please contact:
Estelle Raffin, Postdoctoral researcher and study coordinator
Telephone: +41 21 69 55185

E-mail: estelle.raffin@epfl.ch, friedhelm.hummel@epfl.ch
More information about CNP: https://cnp.epfl.ch/
More information about the UPHUMMEL lab: https://hummel-lab.epfl.ch/

Are you interested?

You should send your application to Prof. Hummel (friedhelm.hummel@epfl.ch) and Estelle Raffin (estelle.raffin@epfl.ch) and apply to the EPFL PhD program (https://phd.epfl.ch/application).