Open Positions – Interventional and Cognitive Neuromodulation group

The Interventional and Cognitive neuromodulation group at Charité Campus Mitte (CCM), Chariteplatz 1 10117 Berlin is looking for applicants interested in pursuing a PhD. Our work is focussing on neurophysiology of cognition and movement in patients undergoing deep brain stimulation (DBS) for movement disorders.

Therefore, we are combining multimodal research methods including intraoperative invasive human neurophysiology (Local field potentials and electrocorticography), non-invasive neurophysiology with magneto-electroencephalography e.g. using newest generations of optically pumped magnetometers (OPM), structural and functional neuroimaging with access to 3T MRI in the department of neuroradiology.

Our projects explore how neural activity is synchronized across multiple nodes of the motor circuit, how such activity is implicated in cognition and neurological disorders and how these findings can be used for next-generation brain stimulation approaches for therapeutic translation. The following key research points are being tackled:

- Functional relevance of oscillatory activity on cognitive and motor control
- Machine learning based real-time prediction of human behaviour from invasive recordings
- Mechanisms of synaptic plasticity in the pathophysiology of Parkinson’s disease
- Development of data science solutions for multimodal clinical neuroscience research data

The positions are funded through a NIH/BMBF grant on machine learning for adaptive deep brain stimulation in cooperation with Prof. R. Mark Richardson (Director of functional neurosurgery at MGH/Harvard University) and Prof. Andrea A. Kühn (Chair of the Movement Disorder and Neuromodulation Unit, Charité). Further funding is available through the Hertie clinical neuroscience program. Group members will interact closely with international collaborators and will benefit from the research environment of the Movement Disorder and Neuromodulation Unit.

I am a recently appointed assistant professor developing my newly formed group. It is important to me to build a safe, positive and supportive research environment. I am making every effort to recruit a diverse and gender balanced research team. Project aspects with direct patient interaction are possible for applicants with German language skills, which are a plus but not necessary. Please feel encouraged to apply if the research topic sounds interesting to you.

Email julian.neumann@charite.de for further information. Visit our OSF.io website for a short overview https://osf.io/qwn5b. You can find all our publications here https://osf.io/rt9wa/.