PhD Student Position in Brain-Computer Interfaces

The International Research Training Group Hamburg – Beijing/China (Internationales Graduiertenkolleg) on Cross-modal Interaction in Natural and Artificial Cognitive Systems (CINACS) is seeking a highly qualified and motivated candidate for a doctoral position in Brain-Computer Interfaces (BCI). The training group is funded by the German Research Foundation (DFG), the State of Hamburg, and the Ministry of Education of the People's Republic of China. The candidate will also collaborate with the project "MULTISENSE – The merging of the senses: understanding multisensory experience", funded by an ERC Advanced Investigators Grant. The major goal of this project is the investigation of dynamic, large-scale neural interactions and the characterization of functional networks during multisensory processing in the human brain, using techniques such as MEG, EEG, TMS, tACS and eye tracking.

The dissertation project will be carried out at the Dept. of Neurophysiology and Pathophysiology of the University Medical Center Hamburg-Eppendorf (UKE). The UKE is the largest hospital in Hamburg, comprising 14 centers with 80 clinical and research departments. The Dept. of Neurophysiology and Pathophysiology is headed by Prof. Dr. Andreas K. Engel. The research of Prof. Engel's group focuses on cognitive and sensorimotor functions, which are studied in humans and animal models using neurophysiological and neuroimaging techniques. The project will build on strong interactions with the Dept. of Biomedical Engineering at the Tsinghua University in Beijing, China. Tsinghua University is among China's top universities, and the Dept. of Biomedical Engineering hosts one of the world's leading BCI research teams.

The project will be focused on the integration of different modalities (e.g., vision, audition, and touch) into a unified BCI system. Using several modalities allows to employ proven BCI paradigms to increase the number of control channels. Research questions will be the possibility of gaining additional information from switching attention between modalities, and the emergence of immersive control of the system after training with such a multimodal BCI system. Potential applications of the system to be developed are not only in classical BCI application fields like rehabilitation and prosthetics, but rather envisaged in everyday usage for computer control or in computer games.

Applicants should have a master in computer science, physics or engineering, and excellent programming skills, as well as expertise in methods in signal processing, pattern recognition and classification. Experience in human electrophysiology would be an asset, but is not required. The position will be funded for up to three years, beginning Oct. 2012 or later. Applicants can have any nationality, female applicants are particularly welcome.

Informal inquiries can be directed to Dr. Alexander Maye (a.maye@uke.de). Applicants should send their curriculum vitae, a statement of research interests, as well as names of two referees to Prof. Dr. Andreas K. Engel, Institut für Neurophysiologie und Pathophysiologie, Universitätsklinikum Hamburg-Eppendorf, Martinistr. 52, 20246 Hamburg, Germany.

Web ressources:

www.cinacs.org
www.uke.de/neurophysiologie
www.40Hz.de
www.tsinghua.edu.cn
www.multisense.org