zurich43

Foundation for Research on Information Technologies in Society

IT'IS FOUNDATION

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Position	**Development of Novel EM Models for Simulations of Human Brain Activity (PhD)**
Workplace:	Zurich, Switzerland
Company:	IT'IS Foundation for Research on Information Technologies in Society (IT'IS), Swiss Federal Institute of Technology (ETH) Zurich
Description:	The Foundation for Research on Information Technologies in Society (IT'IS) is an independent non-profit research organization dedicated to improving and advancing the quality of people's lives. The foundation's primary activities include computational electromagnetics in complex environments, computational life sciences (CLS) applied to devices in and around the human body, and the development of medical-image-based, high-resolution computable whole-body anatomical phantoms. We are seeking a PhD candidate in bioelectromagnetics to achieve a breakthrough in the use of electromagnetic (EM) fields for non-invasive detection of specific brain diseases. The position involves the development of novel EM models to simulate the interactions between human brain activity and induced quasi-static fields by electrodes. The models will be subsequently tested in close collaboration with research groups at the University of Zurich and the University Hospital Zurich.
Your Main Tasks:	- Establish biophysical models for a setup containing electrode sensors placed over the head, accounting for dynamic changes in functional anatomy - Perform sensitivity analyses on the developed biophysical model - Identify parameters for optimization of the measurement device - Analyze the simulation data for comparison with measured values - Establish a reduced-order biophysical model based on the simulations performed - Engage in various other EM modeling projects at IT'IS

Education / Profile:	- MSc degree in electrical engineering, numerical mathematics, physics, or related field - Interest in and basic knowledge of bioelectromagnetics, EM theory and /or EM simulation and optimization - Experience in EM modeling with a commercially available software - Experience programming in Python a plus - Excellent command of English, knowledge of German a plus - Self-motivation, discipline, high level of commitment, and flexibility - Excellent ability to work both independently and in a team
What IT'IS offers:	- State-of-the-art research infrastructure - Outstanding talented colleagues and interdisciplinary research teams - Cooperation with leading research laboratories worldwide - Vibrant workplace in the heart of Zurich - Flexible working hours
Beginning:	As soon as possible
Application Process:	Applications should consist of: - Cover letter including the position title and a statement addressing the selection criteria and outlining the motivation for applying for the position - Detailed CV - Copies of degree certificates and / or diplomas, including grades - Letters of recommendation For further information or to discuss the scope of this position, please contact Dr. Arya Fallahi (afallahi@itis.swiss) (phone +41 44 245 98 33) We look forward to receiving your complete resume materials as a single pdf file sent to: jobs@z43.swiss.
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