UMM
UNIVERSITÄTSMEDIZIN
MANNHEIM

Medizinische Fakultät Mannheim
der Universität Heidelberg

Universitätsklinikum Mannheim

1 x PhD Position in Diffusion MRI

Institution: Computer Assisted Clinical Medicine, Heidelberg University, Germany
Start date: flexible
Duration: 3 years

Profile:
Master degree in physics, computer science, mathematics, biomedical engineering or a related field; basic knowledge of a programming language is required; willingness to learn programming languages such as MATLAB and C++ as well as an affinity towards practical measurements are expected; basic knowledge of MRI physics is a plus.

Job Description:
Diffusion weighted imaging (DWI) is a powerful sub-discipline in magnetic resonance imaging (MRI), which reveals information about the examined tissue on a level far beyond spatial resolutions of conventional MR techniques by being sensitive to the diffusive processes of water molecules. This allows the study of biological tissue down to the scale of cell sizes, which can play an important role in the prognosis, diagnosis and therapy control of various pathologies. The project includes advanced MRI sequence design and post-processing of the acquired data both on a fundamental research level and in an applied clinical context. Measurements in phantoms, volunteers and patients can be performed on clinical 1.5T and 3T whole body MRI systems (Siemens) as well as on a state-of-the-art preclinical 9.4T animal scanner (Bruker). Close collaborations with clinicians of the University Medical Center Mannheim and other researchers are strongly encouraged.

Working Environment:
Our group is composed of more than thirty scientists from physics, electrical engineering, medicine and computer science and is working in close co-operation with the local medical departments. We are developing new imaging techniques and translate them with our clinical partners into daily practice. In particular, we are doing basic research on the development of novel MR-techniques for measuring perfusion, diffusion, BOLD + oxygenation, and sodium in the human brain or other organs like lung, liver or heart. Tasks include the implementation of novel MRI techniques at whole body MRI systems (Siemens) at different field strengths (3x 1.5 Tesla; 2x 3.0 Tesla) with transfer to a small bore animal system 9.4 T (Bruker) for mice and rats. Beside this we are developing molecular innovative imaging technologies by fusion of several imaging modalities (CT, MRI, PET) to enable image-guided, high-precision interventions using high-end CT and robotic systems (ZEEGO, Siemens). Ongoing collaborations with other researchers involve the Central Institute of Mental Health (ZI, Mannheim), the German Cancer Research Centre (DKFZ, Heidelberg), and across Europe with multiple opportunities to visit leading international laboratories and to attend taught schools.

Interested?
If you enjoy working in an interdisciplinary, young, creative and open team, we are looking forward to your application! For more information on the project or for application please contact:

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