**MacSeNet ESR5 : Next generation compressed sensing techniques for a fast and data-driven reconstruction of multi-contrast MRI (GERMANY)**

*The position is part of the H2020 International Training Network MacSeNet ([http://www.macsenet.eu](http://www.macsenet.eu)).*

**Location:** Department of Informatics, Technical University Munich, Germany

**Approximate Country Specific Comparable salary:** € 36.300 – 39.000 (pre-tax)

**Start Date:** From May 2015  |  **Duration:** 36 Months  |  **Closing Date for Applications:** 2015-04-30

**Description**

One PhD position is available jointly at the Institute of Informatics at the Technical University Munich (TUM) and GE Global Research (GEGR). The selected candidate will study the next generation of compressed sensing (CS) techniques for accelerated acquisition in MRI. In more detail, the candidate will develop accelerated pulse sequences for MR spectroscopy in the brain, derive mathematical models of the underlying physical principles and implement CS techniques for advanced reconstruction.

Magnetic Resonance Imaging has already shown itself to be an ideal candidate for the application of compressed sensing theory. Excellent image reconstruction has been shown to be possible from undersampled k-space measurements through the application of compressed sensing principles and algorithms. However the real challenge and benefits lie in tackling advanced MR imaging techniques, such as quantitative MRI, MR spectroscopy and diffusion tensor imaging. These techniques require very long acquisition times and can suffer from bad motion artefacts induced during acquisition. These problems go beyond traditional CS solutions, and to tackle them will require the development of new structural signal models and sampling strategies.

The Early Stage Researcher on this project will benefit from the partnership between TUM, GEGR, the University of Edinburgh and the other academic institutions and industrial partners within the MacSeNet project. They will attend initial training events and be exposed to the research activities of all participants at regular six monthly progress meetings. They will engage in training events and secondments to other project partners.

Informal enquiries are welcome and should be made to Prof. Björn Menze (bjoern.menze@tum.de) and Dr. Jonathan Sperl Sperl (sperl@ge.com).

**Planned Secondments**

Scientific: University of Edinburgh, UK, 3 months, to explore ideas on compressed MRI.

Cross-Sector: GE Global Research, Germany, 1 day/week, for training and experience on MRI scanning.

**Requirements**

Highly motivated, excellent candidates should ideally hold a valid Master’s degree with a specialisation in biomedical engineering, physics, applied mathematics, medical imaging and/or signal processing and should be eligible for immediate admission on the PhD programme at the TUM.

**Applications**

TUM is an equal opportunity employer. TUM aims to increase the proportion of women and therefore particularly welcomes applications by women. Applicants with severe disabilities will be given priority consideration given comparable qualifications. Please ensure your application includes your completed eligibility form ([http://macsenet.eu/MacSeNetEligibilityForm.doc](http://macsenet.eu/MacSeNetEligibilityForm.doc)) and a letter of motivation including a maximum 1-page statement explaining how your research interests, skills and experience are relevant to the position.