



PhD Position: Motion-aware MR image reconstruction

Within a special program of the Christian Doppler Forschungsgesellschaft “PiR – Partnership in Research¹” (Kristian Bredies, University of Graz; Rudolf Stollberger Graz University of Technology) a PhD position is offered in the field of MR image reconstruction.

During the last years new methods for faster scanning in MRI have been developed. These techniques now allow the reduction of the MR scanning time to fraction of standard procedures. Despite these improvements motion related artifacts are still challenging in MRI and limit the general applicability of MRI for different applications. Furthermore, for quantification of biomarkers it is also to register moving organs to a specific state, additionally to the elimination of motion related artifacts. In previous work significant progress was achieved for 2D dynamic data based on standard non-rigid registration techniques.

Within the current project novel mathematical methods for motion-aware tomographic reconstruction should be transferred into practical applications. To support 3D data analysis a new multi-core server with 768 GB memory is now available. The institute operates also a 3T MR research system for practical implementation and has access to a clinical 3T research system (cooperation with the Medical University). The work will be performed within a team with several years' experience in new MR-image reconstruction methods and in cooperation with excellent academic partners and the industry.

Required qualifications:

- Master degree in Biomedical Engineering, Computer Science or a related field.
- Programming skills (Matlab, C).
- Strong interest in medical imaging and image processing.
- Interest to work in an interdisciplinary team.

Preferred additional experience:

- Mathematical optimization and/or inverse problems.
- GPU computing (CUDA).

Project Duration (PiR): 2 years, prolongation in planning

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¹<http://www.fwf.ac.at/de/news-presse/news/nachricht/nid/20161005-2210/>