

Bachelor's Thesis:

Cardiac T1 mapping: evaluation of simultaneous multi-slice acquisition and linear subspace reconstruction

Overview

Cardiovascular magnetic resonance finds many applications in clinics due to a high prevalence in society. Quantitative mapping of MR relaxation parameters such as T1 can increase the diagnostic capabilities. Recent developments in radial sampling combined with advanced reconstructions offer the possibility for a shorter examination. The demand of multiple time-consuming inversion was diminished by lately published methods enabling a mapping after a single inversion-recovery of one cardiac slice in a reasonable acquisition and reconstruction time. For a further enlargement of the examined volume, simultaneous multi-slice acquisitions are of specific interest. To fulfill the requirement of an appropriate computing time a linear subspace reconstruction was developed.

The aim of this bachelor thesis is to evaluate the differences in myocardial T1 maps as a result of different acquisition and reconstruction strategies.

Specific tasks

- Literature review
- Intro to an advanced reconstruction toolbox
- Investigation of existing code base
- Image reconstruction of existing MR data
- Evaluation and comparison of quantitative maps
- Documentation and illustration of the results

Recommended Knowledge

- C and bash scripting
- Interest in state-of-the-art MRI reconstruction
- Basic git workflow

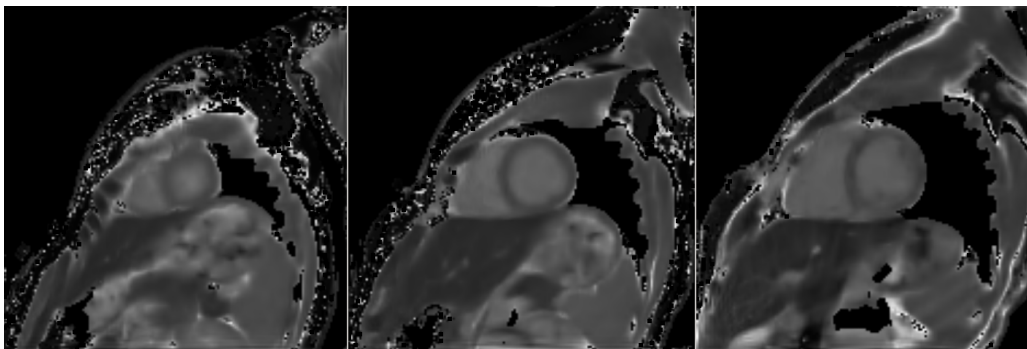


Figure 1: Different slices of cardiac T_1 maps acquired after a single inversion.

Contact

Daniel Mackner,
daniel.mackner@tugraz.at