

Propositions accompanying the thesis

Image Reconstruction and Motion Compensation Methods for Fast MRI

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1. Including multiple echo types of the GRASE sequence as virtual coil channels in autocalibrated reconstruction improves image quality compared to the conventional splitted k-space approach. (*This thesis, Chapter 2*)
2. The concept of reconstruction with virtual coil channels can be extended to the acquisition of multiple contrasts; however, differences in signal evolutions should be compensated in magnitude. (*This thesis, Chapter 3*)
3. By minimizing the inconsistency between the GRAPPA reconstructed k-space and the acquired k-space within the autocalibration region of a parallel imaging experiment, intra-scan motion can be compensated. (*This thesis, Chapter 4*)
4. APIR-Net as an alternative to GRAPPA reconstructs images with higher quality for low SNR acquisitions. (*This thesis, Chapter 5*)
5. The quantitative recurrent inference machine using a unified forward model improves the quality of $R2^*$ mapping compared to the conventional sequential reconstruction and parameter mapping method. (*This thesis, Chapter 6*)
6. In MRI, acceleration by subsampling k-space comes at the cost of image quality.
7. Acquisition and reconstruction are equally important in fast imaging.
8. AI is important in medical imaging. Verification of AI is more important.
9. In research on medical imaging, innovations with limited technical novelty but high clinical impact are preferred over highly novel technology with limited clinical impact.
10. Scientific training shapes not only the skills of research, but also the way of thinking in daily life.
11. 锲而舍之，朽木不折；锲而不舍，金石可镂。 — 荀子

Carve but give up halfway, even a decayed piece of wood will not break; carve with perseverance, even metal and stone can be engraved. — Xunzi