

Bachelor Thesis

Evaluation of imaging artifacts in low-field MRI sequences through introduced time interferences

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08.01.2025

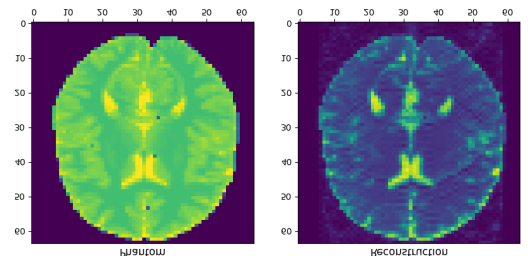
Keywords

Low-Field MRI | Microcontroller | Realtime Synchronization | Embedded Systems

Background

Magnetic resonance imaging (MRI) is an imaging technique that uses magnetic fields and radio waves to create detailed images of the inside of the body. Low-field MRI systems work with a weaker magnetic field.

In the DeLoRi project, together with the Fraunhofer MEVIS Institute, we are developing a low-field MRI device to support cancer diagnostics.



Tasks

The aim of this work is to investigate artifacts occurring in MR imaging after image reconstruction of different MR sequences (spin-echo, flash, gradient-echo). In particular, the focus will be on which artifacts occur when different parts of the sequence exhibit temporal jitter. A small simulation setup will be set up and the simulation results will be systematically examined for defects.

Your Profile

For the successful implementation of the project, you should have an interest in one or more of the following subject areas:

- Python
- MR Simulation Library MRzero
- Theoretical Interest of common MR Sequences

Our Offer

The call for applications is aimed at bachelor's students with a technical or medical background and is carried out in cooperation with Fraunhofer MEVIS. A workstation can be provided at the Chair of Image Processing, includes access to modern IT infrastructure, a workshop and rapid prototyping facilities. Access to a commercial 1.5T and Low-Field MRI system.