Friedrich-Alexander-Universität
Computational Imaging Lab

Available Position

We are looking for PhD candidate or Postdoctoral researcher in a recently funded project by the German Research Foundation (DFG) to develop an approach for imaging of orthopedic implants with reduced metal artifacts at 0.55T. While this lower field strength offers advantages in terms of reduced metal artifacts (see **Figure 1**), this advantage comes at the cost of reduced SNR and challenges for fat suppression. We will address these issues with machine learning image reconstruction and subject-specific spectral-spatial fat-suppression pulses. This is a collaborative project with the department of radiology at the university hospital (Dr. Rafael Heiss) and its MR-physics lab (Dr. Armin Nagel).

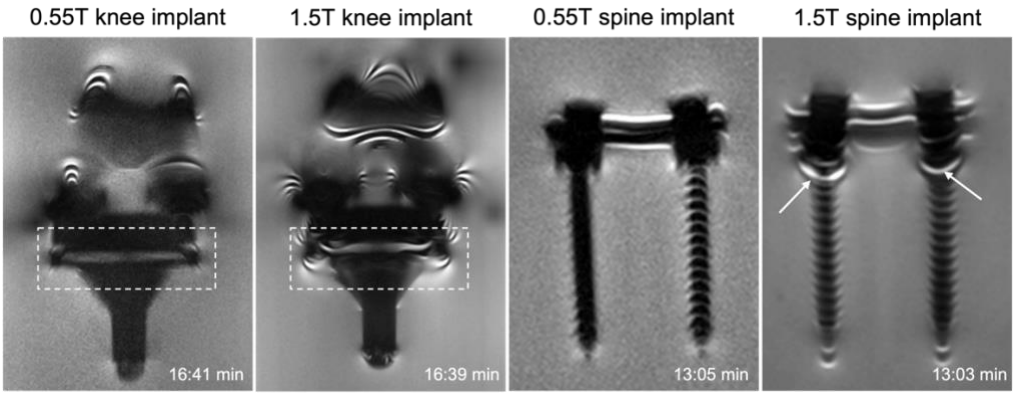

Figure 1: Comparison measurements of knee and spine implants at 0.55T and 1.5T with matched scan-time, illustrating reduced metal artifacts at 0.55T at the cost of SNR.

The position will initially be for three years (PhD student) or two years (Postdoctoral researcher), with the possibility to extend depending on availability of funding. Salary is based on the German TVL system. Responsibilities will include, but are not limited to:

- Development of machine learning methods for accelerated low-field MRI based on our established variational network approach [1].
- Performing neural network trainings and validation experiments on our GPU cluster, consisting of more than 500 NVIDIA GPUs (https://hpc.fau.de/).
- Performing test measurements on a 0.55T (Siemens Magnetom Free.Max) system.
- Working with our research partners at the university hospital on clinical validation studies.
- Contributing to the teaching portfolio of the group and the department.

Requirements for this position include:

- Experience in iterative MR reconstruction methods, optimization or machine learning.
- Programming skills, with experience in Python and familiarity with Pytorch.
- Experience with Siemens MR scanners is a plus.

About the Computational Imaging Lab

Our lab is a member of the Department Artificial Intelligence in Biomedical Engineering at Friedrich Alexander University Erlangen Nuremberg (FAU). The group currently consists of one professor and 6 PhD students. We are located in the center of Erlangen, in walking distance from the MR-physics group at the university hospital and from Siemens Healthineers. We have strong collaborations with both the university hospital and with Siemens Healthineers.

Contact

Please send your application (CV with publication list) to florian.knoll@fau.de.

References

[1] Hammernik, Klatzer, Kobler, Recht, Sodickson, Pock, Knoll. Learning a variational network for reconstruction of accelerated MRI data, MRM (2018).