# PostDoc (f/m/d) in machine learning based MRI of bones

The main goal of the project (Principal Investigators: Prof. Tobias Wech, Department of Diagnostic and Interventional Radiology and Dr. Johannes Tran-Gia, Department of Nuclear Medicine) is the development of a data-driven MR imaging method to precisely characterize bone tissue without exposing the patient to ionizing radiation.
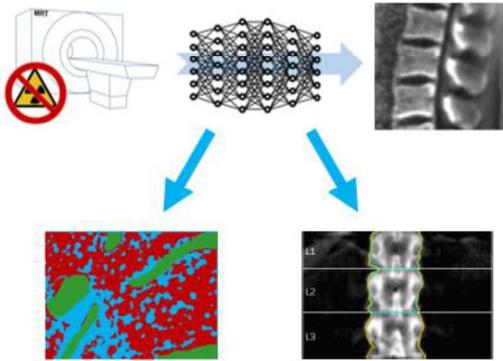
The work is part of the project "Fast Hyperintense MR Imaging of Cortical and Trabecular Bone", which is funded by our Interdisciplinary Center for Clinical Research (IZKF).

The tasks include the development and training of artificial neural networks specialized for the reconstruction of undersampled MR data, MRI simulations and measurements, as well as the calibration and validation of the MRI-based technique based on dual-energy computed tomography. Eventually, the developed imaging technique will be applied in two promising applications in nuclear medicine:

a) Comprehensive quantification of the volume fractions of different bone components in the lumbar vertebrae. This could lay the foundation for patient-specific dosimetry and thus enable more personalized radionuclide therapies.
b) Characterization of cortical and trabecular bone in patients with osteoporosis and comparison to the current state-of-the-art (dual X-ray absorptiometry) based on ionizing radiation.

The following knowledge or skills are of benefit:

- PhD in the field of physics, medical physics, biomedical engineering, or comparable
- High motivation, independent work style, ability to work in an interdisciplinary team
- Programming skills (preferably C++, Python, or MATLAB)
- Experimental skills
- Good knowledge of spoken and written English

You will initially be employed for a three-year period. The salary will be paid in accordance with TV-L and the position is to be filled as soon as possible. Candidates with disabilities are given preference if they are of equal qualification.

We are looking forward to receiving your application including a letter of motivation, CV, and relevant certificates as a single PDF-file via E-mail at EXP-RAD@ukw.de.

Universitätsklinikum Würzburg
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