

Super-Resolution Reconstruction of Lung MRI-Images with Supervised Machine Learning Methods

Background:

Super-resolution reconstruction (SRR) aims to enhance the quality and resolution of images. As a trending topic in Computer Vision, SRR is proved to be useful in many practical cases. Established application areas include medical imaging, astronomy, and video applications.

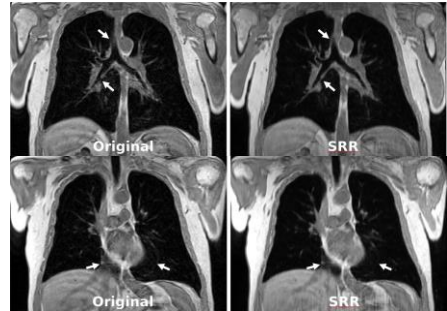


Fig.: Examples of Improvements of lung MRI images by applying SRR

Your tasks:

This project focuses on applying SRR to lung MRI images to improve the image resolution to enhance further processing steps such as segmentation. Throughout this thesis a novel, supervised, machine learning (ML) based SRR approach should be chosen supported by a literature review. In a next step the in-house ML framework *CIDS* should be used to implement, train and validate the chosen SRR model.

Qualifications:

For the processing of the topic basic machine learning knowledge is recommended. Programming experience in a higher programming language (ideally Python) is mandatory. Additionally, interest in medical research should be present.

We offer:

- Intensive support
- Modern workstations and high-performance computers as working environment
- Productive and dynamic atmosphere in a team
- Cooperation with international research groups
- Cooperation with a clinical research institute
- Career perspectives as young scientist

Interested?

Please contact: Muhammed Kocak
muhammed.kocak@kit.edu

Prof. Dr. Britta Nestler
britta.nestler@kit.edu