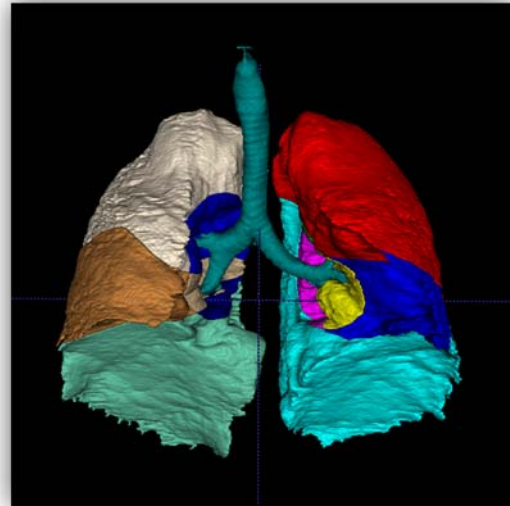




Lung and lung lobe segmentation from CT images

The segmentation of lungs and their lobes are crucial preprocessing steps for the accurate lung CT image analysis in computer-aided diagnosis systems [1]. They mainly involve the identification of the lung tissue, the separation of the left and right lung volumes and the localization of the lung lobes [2]. Although lung segmentation has been studied extensively the past decades and produced adequate results for cases with limited or focal pathologies, there are not many works addressing the problem in cases with interstitial lung diseases (ILD). ILDs are chronic lung disorders characterized by scarring and/or inflammation of the lung tissue, which often increases its density and are generally manifested as texture alterations of the lung parenchyma [3]. The high density of the ILD patterns that corresponds to high attenuation values along with their often peripheral and basal manifestations make the problem more difficult by causing severe under-segmentation problems.



Within the framework of the proposed MSc Thesis project, algorithms for lung and lung lobe segmentation will be developed and evaluated on CT scans with ILDs. A publicly available dataset will be used for the purposes of the project, provided by the Lung Tissue Research Consortium (<https://www.ltrcpublic.com/>). The candidate will be working in a multidisciplinary team of clinicians and engineers. The project will be conducted at the ARTORG Center for Biomedical Engineering Research of the University of Bern, in close collaboration with the Department of Diagnostic, Interventional and Pediatric Radiology, of the Bern University Hospital "Inselspital".

- Requirements:**
- Good programming skills in MATLAB and/or Python
 - Image processing background
 - Excellent English (written, spoken)

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References

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