

Development and deployment of a deep learning model for segmentation of liver scans

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Introduction

In drug development it is possible to assess effect of a substance by performing repeated MRI scans of a subject in a clinical trial and analyzing the images. Antaros Medical is a strategic development partner to the pharmaceutical industry that designs and delivers clinical imaging studies, and an important part of the image analysis is to create segmentations in acquired images. The aim of the project is to develop and deploy software that can help with the segmentation of liver MRI-scans by creating automated suggestions. This will be done using deep learning and the U-net architecture, building upon the work described in Langner et al. [1].

Goals

- Creation of a deep learning pipeline for segmenting liver scans.
- Study of scientific reports using deep learning in medical segmentation and implementing said methods to further improve validation score.
- Validation of methods using suitable validation scores.
- Development of a queuing system on a server, to be used during inference and potentially also an interface.
- Creation of poster and report

Bullet point two is planned to be the main focus of the project.

Resources

Antaros Medical will provide office space and computers with RTX 2080 TI GPUs. The project will be given access to two studies totally containing 130 patient MRI-scans with ground truth segmentations. Antaros Medical will

also provide a dedicated supervisor, Lead Image Analyst, Camilla Englund (camilla.englund@antarosmedical.com).

References

- [1] Taro Langner, Anders Hedström, Katharina Mörwald, Daniel Weghuber, Anders Forslund, Peter Bergsten, Håkan Ahlström, and Joel Kullberg. Fully convolutional networks for automated segmentation of abdominal adipose tissue depots in multicenter water-fat mri. *Magnetic resonance in medicine*, 81(4):2736–2745, 2019.