

## Deep Learning-based Image Segmentation

Hepatic cancers represent sixth most frequent cancers worldwide. The current practice in radiotherapy is to manually segment the liver tumor and surrounding organs at risk (OAR) to create a radiation plan.

**Image segmentation** is the process of identifying and labeling the different regions of interests (i.e., tumor, oar...) in the provided original image data. The delineation of the tumor volumes can be extremely time consuming and costly, as it occupies the time of the physician. Machine learning technologies are gaining importance more and more in the radiation oncology field and already demonstrated their capabilities in automatic segmentation of OAR.

The goal of the master project is to apply **Deep Neural Networks** for automatic segmentation of liver tumor tissue and liver lobes from **CT-images**.

### Your tasks:

- Review literature on **Data Augmentation** in medical imaging.
- Apply data augmentation concept to mitigate the limitation of the training data set.
- Implement of Deep Neural Networks.
- Perform a statistical analysis

### Required skills:

- Good python programming skills
- Communication

### Preferred skills:

- Experience in machine learning
- Experience in medical image analysis

