

# Tissue classification based on hyperspectral and RGB image data

Type	Bachelor or Master thesis
Workingtitle	Intraoperative tissue classification based on hyperspectral and RGB image data from laparoscopic procedures in visceral surgery

Hyperspectral imaging (HSI) is the combination of spectroscopy, imaging data acquisition and digital image processing. This allows chemical information such as tissue oxygenation or hemoglobin content to be determined from images. This opens up completely new and diverse areas of application in medicine.

Hyperspectral imaging technology generates three-dimensional data (two spatial and one spectral dimension). It is therefore possible to display the specific wavelength for each individual pixel in an HSI image and use it for analysis or diagnostics.

This spectral data is specific to different tissue types and can be used, for example, to train machine learning procedures for the intraoperative classification of healthy and diseased tissue.

## Requirements

- annotation and pre-processing of existing intraoperative image data
- implementation of machine learning methods for the classification of image data
- training and evaluation of different classification methods
- comparison of results with and without the use of additional spectral information

## Contact

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