

Spectral Imaging in medicine

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Spectral imaging is a non-destructive imaging technique commonly used in various areas such as waste sorting and recycling, food quality and safety, pharmaceuticals, agriculture and vegetation as well as environmental monitoring. It was introduced in medicine 10 years ago in the context of research projects. The main medical applications are the estimation of tissue perfusion, the classification of tissue and the identification of tumor margins. The visualization of the information included in the spectral image data requires image processing techniques. Machine learning approaches are especially suitable due to the complexity of the data. Although medical spectral imaging showed very promising results, further studies are needed to acknowledge the first results, technically improve the devices and evaluate these new developments on patients.

In this presentation the following aspects will be developed:

- What are the physical and technical principles of spectral imaging? What are the advantages for medicine?
- How are the spectral image data presented to physicians? Which algorithms are being developed for this purpose?
- What are the medical applications of spectral imaging?
- Which further technical innovations are expected in the future for medical applications?