

Course: Neural Networks in Image Processing

Module Code: EITB712M

Lecturer: Prof. Dr. Jan Bauer

Scope of weekly semester hours (SWS): 2

Semester of delivery: Winter and Summer

Type/Mode: Laboratory, compulsory subject

Language of instruction: English or German; the course language will be announced at the beginning of the semester

Contents:**Experiments on:**

- Classification methods in image processing
- Optimization of parameters of classification methods
- Data preparation and data reduction methods
- Training of Neural Networks
- Image recognition with Convolutional Neural Networks
- Methods for model evaluation and tuning of hyperparameters
- Use of cloud services for neural networks
- Transfer Learning
- Deep Learning Frameworks using the example of Pytorch

Recommended reading:

- Lämmel, U.; Cleve, J.: Künstliche Intelligenz, Carl Hanser Verlag, München, 2012
- Bibel, W.; Kruse, R.; Nebel, B.: Computational Intelligence, Springer Vieweg, Wiesbaden, 2015
- Raschka, S.: Machine Learning mit Python, mitp Verlag, Frechen, 2017
- Haykin, S.: Neural Networks and Learning Machines; Pearson Education, New Jersey, 20019