

## Software for Advanced Machine Learning

### Description

During the semester, students learn about different deep learning techniques and deep neural network architectures. The course focuses on the most popular software tools used in the implementation of deep learning methods. Topics of the course in short:

- Static and dynamic computational graphs in machine learning frameworks
- Implementation of simple supervised neural network models (dense networks, convolutional networks, recurrent networks)
- Implementation of complex supervised neural network models (residual networks)
- Implementation of unsupervised neural network models (autoencoder networks, generative networks)
- Implementation of custom neural network layers
- Implementation of custom training procedures

### Literature

- Goodfellow, Y. Bengio, A. Courville, Deep Learning, MIT Press, 2016, ISBN: 9780262035613
- F. Chollet, Deep Learning with Python, Manning Publications Co., 2017, ISBN: 9781617294433
- I. Lieder, Y. Resheff, T. Hope, Learning TensorFlow: A Guide to Building Deep Learning System, O'Reilly Media, 2017, ISBN: 9781491978511