

Deep learning/ Python programming-courses

The course "Deep learning" (offered Dept. Information Technology) provides a PhD level introduction into the area of deep learning and focuses on the theoretical aspects of this subject. The first part of course focuses on the basic model and algorithmic ingredients of deep learning, such as the feed-forward neural network, back-propagation and stochastic gradient descent. In the first hand-in assignments the participants learn to implement these important concepts from scratch using python. The later part of the course focuses on other more advanced model architectures tailored for modelling images and time series data. In the later hand-in assignments, high-level DL libraries is used such as PyTorch and Tensorflow.

The course "Application oriented deep learning" (offered by Dept. Physics and Astronomy) is very practical (for deep learning practitioners), with many actual research examples (in physics, biology, ...) of applying known deep learning techniques to research problems; with weekly programming exercises (using python/tensorflow/keras) and with accompanying weekly feedback/exercise classes. This course stands on its own and does not require a prerequisite, but it will be offered in the period after the course by the IT department so that interested students can first take the IT course for more details on the theoretical foundation/background and deepen practical aspects in this course.

The course "Advanced scientific programming with Python" does not cover deep learning.