



Advanced Machine Learning

Deep Learning

INTENDED PARTICIPANTS

This program is intended for professionals who are comfortable working with advanced mathematics, such as computer scientists, physicists, statisticians, engineers, and related profile.

ACCESS CONDITIONS AND PREREQUISITES

Introductory course to Machine Learning or equivalent knowledge: experience in machine learning/data science, programming experience, Python.

If applicable, a telephone interview with the academic director will be conducted to verify that the prerequisites are met.

To know more about the Introductory course, follow this link: <https://www.h-ka.de/iww/machine-learning/ueberblick-inhalte>.

To register to the Introductory course, you can contact Romina Kolb, director of the Continuing Education Institute of Karlsruhe University of Applied Sciences: romina.kolb@h-ka.de.

CONTEXT AND GOALS OF THE TRAINING PROGRAM

The aim of this course is to develop an understanding of deep learning and data visualisation. You will gain theoretical knowledge of the different components and architectures of neural networks and apply it to real-world data via supervised and unsupervised approaches. We will use Python and Tensorflow.

Main strenghts:

- A balanced approach combining theoretical foundations with hands-on practice
- Personalized support and mentoring throughout the program
- Course designed and taught by a recognised expert in the field

LEARNING OBJECTIVES

- > Understand how deep learning algorithms work
- > Implement and train a deep neural network
- > Visualise and explore data
- > Use an existing neural network for new tasks

PROGRAM

Day 1

9:00 – 12:00

Theory: Introduction to Deep Learning, Convolutional Neural Networks

Practical Work: Segmentation and classification

13:00 – 16:00

T: Architectures and cost functions

PW: Regression and classification

Day 2

9:00 – 12:00

T: Advanced training: augmentation and dropout

PW: Segmentation with augmentation

13:00 – 16:00

T: Transfer learning, pre-trained architectures

PW: Transfer Learning with Deep Neural

Day 3

9:00 – 12:00

T: Dimension reduction and visualisation

PW: Eigenfaces

13:00 – 16:00

T: Stacked, sparse and denoising autoencoders

PW: Representation learning

MÉTHODES ET RESSOURCES PÉDAGOGIQUES

Theoretical input – Practical work, hands-on activities – Slideshows and other course materials – Practical sheets

ACADEMIC DIRECTOR

Prof Thomas Lampert, Professor of Computer Science, University of Strasbourg – lampert@unistra.fr

INTER ENTREPRISES

Durée : 3 days (18 hours)

September 23-25, 2026

Lieu

Télécom Physique
Strasbourg
300 Boulevard Sébastien
Brant

CS 10413

67412 Illkirch Cedex

INTRA course: contact us directly

Renseignements et inscriptions

Solène GILG

Tél : 03 68 85 49 14

s.gilg@unistra.fr

Nature and certification of the training

This training constitutes a skills adaptation and development program.

It leads to the issuance of a certificate of attendance.

An evaluation conducted at the end of the training measures participants' satisfaction as well as the achievement of the training objectives (knowledge, skills, engagement, and confidence), in accordance with Levels 1 and 2 of the evaluation model developed by Donald Kirkpatrick.