

ARTIFICIAL INTELLIGENCE IN MULTIMEDIA (5 ECTS, S3 93001413):

Principles of Artificial Intelligence for Multimedia.

Classical machine learning algorithms for supervised, semi-supervised and unsupervised learning in multimedia.

Advanced Deep Learning architectures for vision, audio, and multimodal correspondence representations.

Training and

learning strategies: multimedia data augmentation, transfer learning, fine-tuning, representation learning, self-supervised learning, adversarial learning, contrastive learning, in-learning, zero-shot and few-shot learning, etc.

Generative multimedia models: autoregressive models, VAEs, GANs, normalising flows, diffusion, consistency models, ...

Guidelines for designing, evaluating and developing multimodal AI applications.

Practical case studies: multimedia analysis and information extraction using classification, regression and clustering with machine learning and deep learning models, multimodal generative AI applications using Foundation or Large-Multimodal Models (assessment via group work :25%-35%)