

IG.3513 - Advanced Deep Learning

Module ID: IG.35XX

Module Leader: Idowu Ajayi

ECTS: 5

Course of the module (Hours of face-to-face teaching) = TBD

Average amount of work per student: 120 hours

Prerequisites: Machine Learning OR A2 Deep Learning

Keywords: generative AI, transformers, NLP

Educational objectives

Ability to solve multidisciplinary scientific and technical problems under constraints in the field of ICT":

- Problem modeling and formal treatment:
 - Implementation of a problem decomposition heuristic.
 - Precision of resources useful for the resolution.
 - Planning the resolution and successive refinements.
 - Search for suitable solutions.

This knowledge and skills developed in this module fall within the field of Advanced Deep Learning

B. Knowledge

The curriculum for this course is as follows:

Reminders:

- CNN

Advanced Models:

- Attention Gates, Transformers
- NLP: Word2Vec, BERT
- Deep Learning on Graphs

Advanced deep learning models:

- Generative and adversarial models: GANs
- Introduction to LLMs
- Self-supervised learning

The theoretical course is followed/accompanied by tutorials and practical work on a machine in Python. In such a way that students can assimilate theoretical knowledge of experimentally and with concrete examples.

Pedagogical methods

This module is based on a problem-based approach, through the systematic use of contextualized problems, particularly in the dimension to improve skills "Ensuring the quality and safety of a system (availability, reliability, maintainability, security, confidentiality – integrity)".

Language of work

English.