

## Deep Learning and Applications

**Course level:** Master [M2]

**Track:** MLDM

**ECTS Credits:** 6

**Course instructors:** [Damien Muselet]

**Education period:** Third semester **Language of instruction:** English

**Expected prior-knowledge:** Machine Learning - Fundamentals and Algorithms (course of 2<sup>nd</sup> semester)



### Syllabus:

This course introduces fundamentals in deep-learning and presents some classical approaches and algorithms, with applications in Computer Vision.

The course (8 hours) aims at providing fundamental basics about (may be modified):

- Classical convolutional neural networks (CNN),
- Residual NN,
- Recurrent NN and Long short-term memory networks (LSTM),
- Auto-encoders and Generative adversarial Networks (GAN),
- Compressed networks (SqueezeNet, MobileNet).

After these 8 hours of lecture, a computer vision project will be proposed to the students (groups of 2 or 3 students). All the groups will have the same topic and their results will be compared. More details will be provided in September 2018 and the topic will be about **object detections in videos**.

**Form(s) of Assessment:** Only the project outcomes will be graded. The defense (in English) of the Project (20mn presentation - 15mn questions) is scheduled at the end of the 3<sup>rd</sup> semester in February. A written report in English has to be sent to the coordinator of the project 2 days before the defense. The final grade will depend on (i) the quality of the oral presentation; (ii) the quality of the report and (iii) the results obtained during the project.

### Additional information/Contacts:

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