

Machine Learning and Data Mining Project



Course level: Master [M2]

Track: MLDM

ECTS Credits: 6

Course instructors: Marc Sebban (**UJM, Saint- Etienne**)

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

Syllabus:

The aim of this 3 months project is to work, by groups of 3 students, on a machine learning and data mining project that requires the use of the skills acquired during the MLDM master as building blocks for constructing a whole pattern recognition system.

Typically, this MLDM project is based on the development of a platform that (i) acquires signals from the real world (e.g. images, videos, sounds, web pages, etc.), (ii) encodes and represents the data with relevant features and (iii) performs machine learning and data mining processes to deal with a given pattern recognition task.

An example of MLDM project may consist in developing a handwritten digit recognition system. In such a case, the project would be organized according to the following steps:

1. Construction of a training set of digits using a graphics tablet or a graphic interface on a computer.
2. Encoding of the digits in a numerical way (e.g. visual words, histograms) or in a structured representation (e.g. using Freeman's codes).
3. Implementation of a platform that automatically recognizes new handwritten digits (using Machine Learning algorithms) or automatically extracts knowledge from the acquired experience (using Data Mining algorithms).

Key dates:

- **T₀ (in October):** Presentation of the project by the instructors and launch of the project.
- **T₀+10 weeks:** dead-line to send the developed platform to the instructors (marc.sebban@univ-st-etienne.fr) in the form of an archive .zip or .tar.gz. This archive will contain the code of the platform as well as a report (Latex) written in the form of a scientific paper
- **T₀+11 weeks:** Oral presentation with an on-line demo of the platform.