Extracting knowledge and value from finite data (whether scarce or abundant) in an automated way is the goal of Machine Learning. It aims at giving computers the ability to learn - i.e. progressively improve performance on a specific task - with data, without being explicitly programmed.

This module offers a hands-on approach, through practical use-cases, at the general landscape of learning algorithms and the main problems they solve.

**Prerequisites**
- General knowledge on computer science.
- Work experience in a professional environment.

**Learning objectives**
After completing this course, participants will be able to:
- Link some field problems to their formal Machine Learning counterparts;
- Know the main bottlenecks and challenges of data-driven approaches;
- Know the main categories of Machine Learning algorithms;
- Know the names and principles of key algorithms in Machine Learning;
- Know the basics of common libraries.

**Practical information and registration**
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Course Content

- The data analytics workflow;
- General overview of Machine Learning;
- Unsupervised Learning;
- Geometrical approaches in Supervised Learning;
- Probabilistic approaches in Supervised Learning;
- Ensemble methods;
- Anomaly detection;
- Bio-inspired ML, Neural Networks and Deep Learning;
- Feature engineering and data preprocessing.