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.

Key elements

Dates: January 9 to 12, 2023
Duration: 28 hours, 4 days
For whom: recent graduates, jobseekers and experienced employees
Location: ISAE-SUPAERO, Toulouse
Course fees: €2,300
Language: English

Highlights

- Mainstream Machine Learning algorithms
- Choosing the right algorithm / application
- Practical usage and feature engineering

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.

Teaching methods

<table>
<thead>
<tr>
<th>Teaching methods</th>
<th>Yes</th>
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<tbody>
<tr>
<td>Lectures / tutorial</td>
<td>X</td>
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<tr>
<td>Collaborative learning</td>
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<td>Flipped classroom</td>
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<td>Blended learning (online and face to face)</td>
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<td>Learning by doing</td>
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<td>Project-based</td>
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<td>Simulation</td>
<td>X</td>
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<td>Case study</td>
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Assessment

- Hands-on evaluation on a computer (100 %)