AIBT3 - Development & deployment of efficient AI technologies

From the Advanced Master AIBT

(Artificial Intelligence and Business Transformation)

Key elements

Dates:
January 9 to June 23, 2023

Duration: **84 hours, 12 days**

For whom:
recent graduates, jobseekers and experienced employees

Location:
ISAE-SUPAERO, Toulouse

Course fees: **€5,000**

Language: **English**

Highlights

- Mainstream Machine Learning algorithms
- Reinforcement Learning algorithms
- Practical courses
- Interpretability and explainability issues
- Aerospace & automotive industry focus

Machine Learning aims at giving computers the ability to learn with data, without being explicitly programmed.

Reinforcement Learning is an asset for the future of organizations, to make efficient strategic choices. Industrial groups building critical systems are pressed to take benefit from the performance of modern AI. They need to understand the content, qualify their systems and anticipate certification requirements.

Prerequisites

- General knowledge on computer science, mathematics, and algorithmic.
- The Python programming language will be used throughout the course (numpy and pandas libraries).

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;
- Decide which method is relevant to solve a sequential decision problem;
- Know the foundations of RL, path planning, scheduling and decentralized decision methods.

Practical information and registration

Jessica Alix - 05 61 33 83 91 – info.exed@isae-supaero.fr

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Course Content

AIBT106 - Machine learning and data analytics (28h):

- The data analytics workflow;
- General overview of Machine Learning;
- Unsupervised Learning;
- Geometrical & probabilistic approaches in Supervised Learning;
- Bio-inspired ML, Neural Networks and Deep Learning;
- Feature engineering and data preprocessing;

AIBT108 - Sequential Decision Making in AI (28h):

- Reinforcement Learning (RL);
- Scheduling and different optimization methods and modeling frameworks;
- Shortest path algorithms, heuristic search, motion planning;
- Decentralized decision making;
- Multi-agent concepts and game theory. Collaborative and adversarial decision making.

AIBT110 - AI certification, robustness and dependability

- When Learning algorithms face the questions of robustness, interpretability and explainability, certificability: examples of successes and failures;
- Presentation of ongoing reflections on the evolution of norms, especially in the aerospace and automotive industries;
- The human/machine couple in the decision process;
- Are we ready to accept a reduced performance?

Cette offre de formation est éligible à MON COMPTE FORMATION moncompteformation.gouv.fr

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Teaching methods

Teaching methods	Yes
Lectures / tutorial	X
Collaborative learning	
Flipped classroom	
Blended learning (online and face to face)	
Learning by doing	X
Project-based	
Simulation	
Case study	X

Assessment

Written examination (100%)