

AIBT108 – Sequential Decision Making in AI

From the Advanced Master AIBT

(Artificial Intelligence and Business Transformation)



Artificial intelligence is creating new jobs and new ways of working. This is crucial to acquire some basic knowledge about AI and big data in order to lead one's firm and teams through change and transformation challenges.

Key elements

Dates:

11 - 14 May 2020

Duration:

28 hours, 4 days

For whom:

**recent graduates, jobseekers
and experienced employees**

Location:

ISAE-SUPAERO, Toulouse

Course fees: **2300 €**

Language: **English**

Skills learned

After completing this course, participants will be able to:

- Decide which method is relevant to solve a sequential decision problem.
- Know the foundations of RL, path planning, scheduling and decentralized decision methods
- Know the names and principles of the most recent algorithms
- Design simple proofs of concept based on these methods.

Prerequisites

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

Learning objectives

True AI won't come without the ability to reason and plan ahead. Super-human video game playing, Go mastery, autonomous driving, dynamical systems control, supply chain management, are examples of recent AI successes and contribute to the strength of modern approaches. While Reinforcement Learning and AI planning and scheduling techniques appear as an asset for the future of organizations, companies and industries, making efficient strategic choices require a good understanding of their foundations, mechanics, intrinsic difficulties and practice.

Practical information and registration

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Programme

- *Introduction*
- *Reinforcement Learning (RL)*

Main concepts of modern Deep RL algorithms.

Hands-on: design a learning agent for autonomous driving.

Illustration: drone control.
- *Scheduling*

Main concepts of scheduling and different optimization methods and modeling frameworks.

Hands-on: airline network optimization.

Illustration: supply chain management.
- *Path Planning*

Shortest path algorithms, heuristic search, motion planning.

Hands-on: flight planning.

Illustration: sense-and-avoid in robotics.
- *Decentralized decision making*

Multi-agent concepts and game theory. Collaborative and adversarial decision making.

Hands-on: multi-agent path planning
- *Illustration: product/market optimization.*