

AIBT108 – Sequential Decision Making in AI

From the Advanced Master AIBT

(Artificial Intelligence and Business Transformation)



Highlights

- Reinforcement Learning algorithms
- Choosing the right algorithm / application
- Practical redline on market optimization

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.

Prerequisites

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

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: 2 300 €

Language: English

Learning objectives

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.

Practical information and registration

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Course Content

- 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.