Course : Digital twins and AI: concepts, uses and issues

Simulating and optimizing real systems with digital twins

Seminar - 1d - 7h00 - Ref. JUM

Price : 940 € E.T.

NEW

Discover how digital twins coupled with AI are revolutionizing the industry. This introductory seminar enables you to understand the key concepts, explore real-life cases and identify the challenges to successful implementation.

Teaching objectives

At the end of the training, the participant will be able to:

- Understand the fundamental concepts of digital twins and artificial intelligence
- Identify the opportunities, limits and challenges associated with their implementation
- Identify relevant use cases in different sectors (industry, healthcare, aeronautics, etc.).
- Analyze the key steps and tools needed to design an AI-integrated digital twin

Intended audience

Strategic decision-makers, innovation project managers, technical team leaders, R&D engineers, digital or industrial transformation managers.

Prerequisites

Master the basics of applied mathematics, simulation and numerical modeling. A first exposure to Machine Learning is a plus.

Course schedule

1 Introduction to digital twins: concepts and fundamentals

- Definition and origins of the digital twin concept.
- The components of a digital twin: data, models, real-world connections.
- Differences between digital twins, simulation models and digital models.
- The role of surrogate models.
- Overview of emerging fields of application.

PARTICIPANTS

Strategic decision-makers, innovation project managers, technical team leaders, R&D engineers, digital or industrial transformation managers.

PREREQUISITES

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TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.

Participants also complete a placement test before and after the course to measure the skills they've developed.

2 AI for digital twins

- What is artificial intelligence? Focus on Machine Learning.
- Synergies between AI and simulation: hybrid modeling, prediction, recalibration.
- Link to Big Data, virtual reality and data science.
- The role of computing resources (HPC, cloud, edge computing).
- Ethical and technical issues related to AI integration.

3 Methodology for implementing a digital twin

- Key design stages: from modeling to deployment.
- Data collection and integration (sensors, historical, synthetic).
- Choice of software tools and platforms (open source vs. industrial).
- Validation and maintenance of the twin under real-life conditions.
- Success factors and pitfalls to avoid.

4 Use cases and sector feedback

- Manufacturing industry: process simulation and optimization.
- Medicine and health: patient twins, personalized medicine.
- Aeronautics and transport: predictive maintenance, safety.
- Energy and environment: real-time monitoring, energy efficiency.
- Group discussion: opportunities for your business.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.

• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.

• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.