Publication date : 03/14/2025

Course : Machine learning: Methods and solutions

Practical course - 4d - 28h00 - Ref. MLB
Price : 2520 € E.T.

4,6 / 5

BEST

Teaching objectives

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

- Understand the different learning models
- Model a practical problem in abstract form
- Identify relevant learning methods to solve a problem
- Apply and evaluate the identified methods for a problem
- Make the connection between different learning techniques

Course schedule

1 Introduction to Machine Learning

- Big Data and Machine Learning.
- Supervised, unsupervised and reinforcement learning algorithms.
- Steps for building a predictive model.
- Detecting outliers and handling missing data.
- How to choose the algorithm and its variables

Demonstration
Getting started in the Spark environment with Python using Jupyter Notebook. View several examples of the models provided.

2 Model evaluation procedures

- Techniques for resampling in training, validation and testing sets.
- Learning data representativeness test.
- Predictive model performance measurements.
- Confusion and cost matrix and AUC-ROC curve.

Hands-on work
Evaluation and comparison of different algorithms on the provided models.

PARTICIPANTS

PREREQUISITES

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.

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.

3 Predictive models, the frequentist approach

- Statistical learning.
- Data conditioning and dimensionality reduction.
- Support vector machines and kernel methods.
- Vector quantization.
- Neural nets and Deep Learning
- Ensemble learning and decision trees.
- Bandits' algorithms, optimism in the face of uncertainty.

Hands-on work
Implementing algorithm families using various data sets.

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.

4 Bayesian models and learning

- Principles of Bayesian inference and learning.
- Graphical models: Bayesian networks, Markov fields, inference and learning.
- Bayesian methods: Naive Bayes, mixtures of Gaussians, Gaussian processes.
- Markov models: Markov processes, Markov chains, hidden Markov chains, Bayesian filtering.

Hands-on work
Implementing algorithm families using various data sets.

5 Machine Learning in live environments

- Features related to the development of a model in a distributed environment.
- Big Data deployment with Spark and MLlib.
- The Cloud: Amazon, Microsoft Azure ML, IBM Bluemix, etc.
- Maintenance of the model.

Hands-on work
Taking a predictive model live, with integration into batch processes and processing flows.

Dates and locations

REMOTE CLASS
2026 : 19 May, 19 May, 2 June, 7 July, 15 Sep., 15 Sep., 15 Sep., 3 Nov., 24 Nov., 24 Nov.

PARIS LA DÉFENSE
2026 : 19 May, 7 July, 15 Sep., 24 Nov.

LILLE
2026 : 15 Sep.