Course : Microsoft Azure Machine Learning, developing and using algorithms

Practical course - 3d - 21h00 - Ref. AZL
Price : 2360 CHF E.T.

Algorithms are becoming one of the most important topics in Big Data. They are the tools for exploratory, explanatory or predictive methods applied to data, within the framework of machine learning. This course will give you the skills you need to use Azure Machine Learning.

Teaching objectives

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

- Getting to grips with the Azure Machine Learning interface
- Choose from several equivalent algorithms based on a given problem
- Discover the basics of R and Python to enhance the capabilities of Azure Machine Learning
- Exploiting an experience through a web service

Intended audience
Data scientists, data miners, statisticians, developers responsible for putting models into production.

Prerequisites
Basic knowledge of statistics (centering, dispersion, correlation, hypothesis testing). Programming or algorithmic notions may be useful.

Practical details
Exercise
Case studies on realistic, large-scale data

Course schedule

① Getting to grips with the Azure Machine Learning interface

- Azure offer. Pay-per-use billing.
- Getting to grips with the Machine Learning Studio interface.
- Create a dataset. Connect to a data source.
- Building a ML experience.
- Define a predictive web service.
- The Cortana Intelligence Gallery.

Hands-on work
Getting to grips with the Azure ML interface. Creating a dataset. Define a predictive web service.

② Creating a machine learning experience

- Use the algorithm selection tree.
- Detect outliers.
- Select algorithm variables (features selection).
- Initialize the model, train the model, evaluate the model.
- Reforming a predictive model.
- Transform algorithm variables (features engineering).
- Limit rows in a dataset.

Hands-on work
Evaluate different algorithms using the Receiver Operating Characteristic (ROC) curve.

③ Know how to parameterize the main algorithm families

- Unsupervised clustering algorithms.
- Linear regression algorithms.
- Logistic or ordinal regression algorithms.
- Binary or one-versus-all classification algorithms (supervised approach).
- Ensemblist methods (forest, jungle...).
- R and Python packages. The Vowpall Wabbit framework.
- Algorithm parameterization.

Hands-on work
Set up algorithm families with R/Python.

④ Process other types of data

- Analyze time series, detect anomalies.
- Text data analysis with R packages.
- Apply a Vowpal Wabbit algorithm (Latent Dirichlet Analysis).
- Exploiting images with Jupyter notebooks.

Hands-on work
Text or image data processing.

5   Discover new tools for Azure Machine Learning

- New Azure bricks for ML (Experimentation/Model Management).
- Data inspection and preparation (e.g. advanced transformations).
- Implementing Azure Machine Learning instances.
- Monitoring of execution and evaluation metrics.
- Deployment scenarios (local/Spark/Docker/AKS).

Hands-on work
Data preparation and advanced transformations.