Publication date : 02/22/2024

Course : Deep Learning with PyTorch

Practical course - 4d - 28h00 - Ref. DLT
Price : 2470 CHF E.T.

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Thanks to its simple, intuitive syntax, PyTorch, a Python software library, is considered easier to learn than other deep learning frameworks. Its large community provides useful documentation for all developers, even beginners in deep learning and tensor calculus.

Teaching objectives

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

- How to manipulate images and text with PyTorch
- Set up neural network training from scratch or using transfer learning
- PyTorch modules for loading data
- Knowledge of distributed drives
- Knowledge of new meta-architectures such as transformers and off-line curves

Intended audience

Machine learning designers and developers, data scientists, AI engineers.

Prerequisites

Python and machine learning.

Course schedule

1 Getting started with PyTorch

- PyTorch and its fundamental principles.
- Install PyTorch and related components.
- Comparison between the Numpy and PyTorch libraries.
- PyTorch vs Tensorflow.
- Principles of distributed computing.

Hands-on work

Installing PyTorch. Tensor and matrix manipulation.

PARTICIPANTS

Machine learning designers and developers, data scientists, AI engineers.

PREREQUISITES

Python and machine learning.

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 PyTorch submodules for training neural networks

- Presentation of Pytorch submodules for training neural networks.
- A reminder of forward propagation.
- A reminder of gradient backpropagation.
- Data loading.
- Define a convolution neural network with the torch.nn package, train the model, test it.

Hands-on work

Setting up a CNN network for image classification.

3 Transfer learning and the use of pre-trained networks

- The principle of transfer learning.
- Examples of transfer learning.
- Transfer learning steps in machine learning projects.
- Use of pre-trained networks.

Hands-on work

Repetition of previous exercises, to improve metrics with the implementation of transfer learning.

4 Meta-architectures for complex projects

- Introduction to meta-architectures.
- The problem of object detection.
- Image segmentation problems.
- UNet network architecture: encoder-decoder blocks and PyTorch.

Hands-on work

Creation of a simple UNet model for image segmentation. Comparison with transfer learning for UNet. etourchariot

5 NLP with PyTorch and spaCy

- Automatic natural language processing (NLP).
- The benefits of PyTorch and spaCy.
- Pipeline principle.
- Text processing .
- Recurrent network drive / biLSTM.
- Using PyTorch and spaCy for NLP.

Hands-on work

Topic modelling on movie reviews. Sentiment analysis on tweets.

6 Transformers and attention mechanisms

- Transformers for automatic language processing.
- Detail of attention mechanisms.
- The attention mechanism applied to a sequence: self-attention.
- Transformer operation.

Hands-on work

Setting up a translation model.

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.

Dates and locations

REMOTE CLASS
2026 : 18 May, 29 Sep.