Machine Learning with PyTorch

Duration: 3 days **Price: € 2250**

Open Schedule

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Audience Course Machine Learning with PyTorch

The course Machine Learning with PyTorch is intended for data scientists who want to use Python and the Torch machine learning library to create models and make predictions.

Prerequisites training Machine Learning with PyTorch

To participate in this course, knowledge of and experience with Python is required and knowledge of data analysis libraries such as Numpy and Pandas is desirable.

Realization course Machine Learning with PyTorch

The theory is discussed through presentations. Illustrative demos clarify the concepts. The theory is interchanged with exercises.

Certificate course Machine Learning with PyTorch

After successfully completing the course, attendants will receive a certificate of participation in Machine Learning with PyTorch.

Content Course Machine Learning with PyTorch

In the course Machine Learning with PyTorch data scientists, data engineers and aspiring machine learning practitioners learn how to harness the power of the PyTorch framework to create machine learning applications using Python and the Torch library. The course covers fundamental concepts and advanced techniques and provides a hands-on learning experience in the exciting field of machine learning.

Intro PyTorch

The course Machine Learning with PyTorch starts with an introduction to PyTorch, covering the basic principles of tensors, autograd and the PyTorch ecosystem.

Linear Regression

Subsequently linear regression in PyTorch for predicting results is discussed, including optimization with gradient descent, loss functions, regularization techniques and evaluation metrics.

Neural Networks

Then neural networks with PyTorch are treated, where activation functions, backpropagation and optimization algorithms are explained.

Classification

Classification tasks in PyTorch are also covered with logistic regression and cross entropy losses. Both binary and multi-class classification are treated.

Model Building

And model building is also on the program of the course Machine Learning with PyTorch. Here it is explained how more complex models can be based on fundamental building blocks, using feature engineering, categorical variables and hyperparameter tuning.

Natural Language Processing

Then Natural Language Processing with PyTorch is explained. The use of text classification, named entity recognition and sequence to sequence models for machine translations is covered.

Reinforcement Learning

And reinforcement learning with PyTorch is also on the program. Among others, Markov Decision Processes, Q-Learning, Policy Gradients and Actor-Critic Methods are discussed then.

Image Processing

The use of PyTorch for image processing is also covered, including classification, object detection and semantic segmentation.

Model Optimization

Finally attention is paid to optimizing machine learning models in PyTorch with the goal to improve performance and efficiency. Techniques such as batch normalization, hyperparameter tuning and pruning are treated then.

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Locations
Houten, Amsterdam, Rotterdam, Eindhoven, Zwolle, Online

Modules Course Machine Learning with PyTorch

Module 1 : Intro PyTorch	Module 2 : Linear Regression	Module 3 : Neural Networks
Machine Learning Intro	Linear Regression in PyTorch	Neural Networks Intro
Overview of PyTorch	Gradient Descent Optimization	Building NN with PyTorch
Installing Anaconda	Mean Squared Error	Multiple Layers of Arrays
Setting Up PyTorch	Regularization Techniques	Convolutional Neural Networks
PyTorch Tensors	Feature Scaling	Activation Functions
Tensor Operations	Feature Normalization	Loss Functions
Simple Neural Networks	Categorical Features	Backpropagation
Datasets and DataLoaders	Model Evaluation Metrics	Gradient Descent
Fundamentals of Autograd	RMSE, MAE, R-squared	Stochastic Gradient Descent
Model Evaluation Metrics	Hyperparameter Tuning	Recurrent Neural Networks
Module 4 : Classification	**Module 5 : Model Building**	**Module 6 : Natural Language Processing**
Logistic Regression	PyTorch Models	NLP Overview
Binary Classification	Model Components	Text Preprocessing
Multi-class Classification	Parameters	Tokenization
Cross-Entropy	Common Layer Types	Stopword Removal
Confusion Matrix	Linear Layers	Spam Detection
Precision and Recall	Convolutional Layers	Bag-of-Words
ROC Curve	Input Channels	Word Embedding
Handling Imbalanced Data	Recurrent Layers	Sentiment Analysis
Regularization Techniques	Transformers	Attention Mechanisms
Hyperparameter Tuning	Data Manipulation Layers	Transformer Models
Module 7 : Reinforcement Learning	**Module 8 : Image Processing**	**Module 9 : Model Optimization**
Intro Reinforcement Learning	Image Preprocessing	Profiling PyTorch
Markov Decision Processes	Resizing and Normalization	Profiler With TensorBoard
Q-Learning	Convolution Layer	Hyperparameter tuning
Deep Q-Networks	Convolutional Neural Networks	Parametrizations
Policy Gradient Methods	Object Detection	Pruning
Actor-Critic Methods	Transfer Learning	torch.compile
Proximal Policy Optimization	Semantic Segmentation	Dynamic Quantization
Deep Policy Gradient	Image Captioning	High-Performance Transformers

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