

Updated on 12/26/2024

Sign up

## Keras training

4 days (28 hours)

### Presentation

Our Keras training will enable you to build deep models, exploit data, deploy or integrate models and optimize them.

This course will introduce you to the basics of Keras and its applications in solving complex problems. Throughout the course, you'll have the opportunity to put your knowledge into practice through practical exercises and concrete examples.

You'll learn how to Design Templates for Specific Applications, such as mobile and web applications, and how to integrate them into existing systems.

We then look at cost functions, optimizers and various regularization methods to improve model performance.

As with all our training courses, this one will be based on the latest version of the [Keras 3.7.0](#)

### Objectives

- Understanding the key concepts of deep learning
- create a model structure in Keras
- manage inputs and outputs with the functional PLC
- Use of the loss function and regularization techniques
- models for NLP
- Cloud deployment: Google Cloud, AWS, or Azure

### Target audience

- Data Analyst
- Data Scientist
- Data Engineer
- Developers
- Big Data Architects
- Lead Developer

## Prerequisites

- Knowledge of Python ideally, or recent programming language
- Mathematical knowledge

## Keras training program

### Introduction, Deep learning With Keras

- Keras installation and configuration
- Keras benefits and features
- Configuring Keras with TensorFlow
- Key concepts in deep learning
  - neural networks
  - backpropagation
  - gradient descent

### Basic Model Architecture with Keras

- Model structure in Keras
  - API Sequential
  - Functional API
- Creating a simple model
- Using callbacks

### Complex Model Design

- ConvNets convolutional networks
- LSTM
- GRU
- Time series
- NLP
- Multiple input management
- outputs with functional API

### Keras Model Optimization

- Loss function
  - categorical\_crossentropy
  - mean\_squared\_error
- SGD
- Adam
- RMSprop
- hyperparameter settings
- Dropout
- BatchNormalization
- L2 regularization

## Transfer learning

- ResNet
- VGG
- Inception
- Loading and adjusting a model
- image classification

## Natural Language Processing with Keras

- Models for NLP: LSTM and GRU
- Vectorization with embeddings
  - Word2Vec
  - GloVe
  - Embedding Layer
- sentiment analysis on text data

## Time Series and Forecasting

- Data preparation for time series
- Using RNN to predict trends
  - LSTM
  - Bi-directional
  - GRU

## Integration and Deployment

- Saving and exporting models
  - SavedModel
  - H5
- Integrating a Keras model into an application
  - API Flask
  - TensorFlow Serving
- Cloud deployment
  - Google Cloud
  - AWS
  - Azure

## Troubleshooting

- Debugging Keras models
- Visualizing results with TensorBoard
- data augmentation
- hyperparameter tuning
- Build complex models adapted to various types of data
- Optimizing and deploying neural networks efficiently

## Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

## Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

## Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

## Organization

The course alternates theoretical input from the trainer, supported by examples, brainstorming sessions and group work.

## Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

## Sanction

A certificate will be issued to each trainee who completes the course.

approval.

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