high tech institute

Introduction to deep learning

Price:	€ 595.00 excl. VAT
Duration:	1 day
Contact:	training@hightechinstitute.nl, +31 85 401 3600

Objective

After this 1-day masterclass you will have an understanding of the latest Artificial Intelligence / Deep Learning techniques. More specifically, you will:

- Understand the latest Artificial Intelligence / Deep Learning trends;
- Understand the intuition behind Artificial Neural Networks;
- Understand the intuition behind Convolutional Neural Networks;
- Understand the intuition behind Recurrent Neural Networks;
- Understand the intuition behind Reinforcement Learning;
- Get an overview of Deep Learning software tools;
- Carry out Deep Learning exercises.

Intended for

- Software & hardware engineers;
- Application & process engineers;
- System architects;
- Managers with technical background.

Prerequisites:

- Basic mathematics skills;
- Basic (python) programming skills.

Methods

Lectures & exercises (Jupyter notebooks, python).

Program

1-day masterclass

- Introduction Deep Learning;
- Artificial Neural Networks;
- Software & Hardware frameworks;
- Convolutional Neural Networks;
- Recurrent Neural Networks;
- Reinforcement Learning.

Total: 8h + 1h lunch

Certification

After attending you will receive a High Tech Institute certificate.

Course leader

Dr.ir. Albert van Breemen

Trainers

Dr.ir. Albert van Breemen

Intro

Get an introduction with this 1-day masterclass to one of the fastest developing fields in Artificial Intelligence: Deep Learning. Deep Learning technology matured rapidly during the last 7 years and is currently applied to many existing and new applications, including self-driving cars, drones, intelligence machines, robotics, speech recognition systems, predictive maintenance, smart camera's and more. The technology is so powerful that it beat world's number one in ancient game of Go.

During this course you get an overview of the latest Deep Learning trends and techniques. The course starts with explaining general concepts and trends. Why does Deep Learning get so much attention now? Is it a hype? Next, four major Deep Learning technologies are discussed:

Artificial Neural Networks: The basic model behind many deep learning techniques.

- Topics: perceptron, multi-layer perception, activation functions, gradient descent, training neural networks.

Convolutional Neural Networks: Neural networks specialized to process images.

- Topics: image convolution, LeNet, AlexNet, VGGNet, GoogLeNet, ResNet, image datasets, cnn performance, image segmentation, UNet, GapNet, Generative Adversarial Networks, designing cnn's, optimizing cnn's.

Recurrent Neural Networks: Neural networks optimized to process time-series data.

- Topics: vanishing gradient problem, long short term memory (LSTM), Gates RNN, rn architectures.

Reinforcement Learning – Algorithm to learn optimal sequence of actions

- Topics: credit assignment problem, multi-armed bandit problem, reinforcement learning framework, Q-learning, deep Q-networks.

During each chapter participants will gain deeper insights by doing exercises using a Jupyter/python environment. Exercises include o.a. training a convolutional neural network to detect objects and training a reinforcement learning agent to learn to drive a taxi.