Our trainings introduce the foundations of data analysis and relevant tools for data scientists. During our sessions, we always keep data-driven use cases in sight. Our modular training concept consists of skill building blocks from introductory to expert level. We emphasize applications and a hands-on approach. All trainings take place in a virtual environment or on-site. Our trainers are senior data scientists with extensive experience in research and industry.

Our TechTrainings are geared towards technical users - data scientists, analysts, engineers - building data-driven innovation hands-on.

Our BusinessTrainings provide insights for decision makers - shedding light on how to put data science and artificial intelligence to work in the enterprise.

We use our digital laboratory in the cloud, thus each participant can work at his workspace independently while the trainer is presenting. We focus on interactivity, hands-on and individual support. This is what we aim with our developed and well tested trainings material in Jupyter Notebooks, small group sizes and enough time for practice.
Intensive hands-on introduction to powerful Python analytics tools. Besides a basic overview on Python, we focus on relevant libraries and methods for data handling, visualization and analytics within the PyData stack.

**Level:** 🚪 (Beginner)

**Duration:** 2 days

**Prerequisites:** basic programming skills

**Language:** english, german; materials are in english

1. **Python Basics**
   Learn the basics of the Python programming language.

2. **Efficient Computing with numpy**
   Apply the numpy library to process efficiently large amounts of data.

3. **Basic data Handling with pandas**
   Learn to import and work with tabular data, supported by the pandas library.

4. **Plotting and Data Visualization**
   Visualize and interpret data with plots and charts.

5. **Introduction to Statistics**
   First steps with statistics concepts needed for data analysis.

6. **Exercises**
   A. **Museums of France:**
      An exercise with a clear task, requiring you to apply the learnings from the course.
   
   B. **Titanic:**
      An open-ended exercise to practice answering questions with data.

7. **Outlook: Handling Time Series with pandas**
   Learn to work with time series data.

8. **Outlook: Machine Learning**
   A preview on machine learning applications.
Machine Learning with Python

Get started with machine learning in theory and practice. Strengthen your analytics skills with setting up your first machine learning pipelines for different use cases with scikit-learn.

**Level:** 🔄 (Intermediate)

**Duration:** 2 days

**Prerequisites:** DAP (or similar know-how)

**Language:** english, german; materials are in english

1. **Introduction to Machine Learning**
   An overview over the field of machine learning.

2. **ML for Classification**
   Learn about classifiers and how to measure the quality of their decisions.
   
   A. **Building an ML Pipeline for Classification**
      Build a classification model and learn about the building blocks of ML with Python.
   
   B. **Feature Engineering and Selection**
      How to build better features.
   
   C. **Algorithm Selection and Hyperparameter Tuning**
      Learn about classifiers and how to measure the quality of their decisions.
   
   D. **Exercise: Titanic Survival Classifier**
      Build your own classification model from scratch.

3. **ML for Regression**
   Learn about regressors and how to measure the quality of their prediction.
   
   A. **Exercise: Predicting House Prices**
      Apply regression to predict house prices.

4. **Building a Recommender Engine**
   Use machine learning to generate movie recommendations.

5. **Unsupervised Learning: Clustering**
   Apply clustering algorithms to detect structure in the data.
Deep Learning with TensorFlow
DLT

Deep dive into the fundamentals of deep learning and neural networks with TensorFlow/Keras to improve your machine learning skills.

**Level:** ⭐⭐ (Advanced)
**Duration:** 2 days
**Prerequisites:** DAP + MLP (or similar know-how)
**Language:** english, german; materials are in english

1. **Deep Learning Walkthrough**
   Neural networks explained step by step.

2. **Watching the Network Learn**
   Observing training progress and diagnosing trouble.

3. **Saving and Loading Models**
   Exporting models to files.

4. **Applying Pretrained Models**
   Reinvent the wheel only when necessary.

5. **Explainable AI**
   Tools for interpreting neural network outputs.

6. **Applications and Hands-On Exercises**
   Classification, regression, computer vision, dimensionality reduction, time series analytics...

Point 8 GmbH, Rheinlanddamm 201, 44139 Dortmund,

www.point-8.de  trainings@point-8.de
Specialization for machine learning on time series with a focus on analysis, classification and forecast.

**Level:** 🎯 (Advanced Pro)

**Duration:** 2 days

**Prerequisites:** DAP + MLP + DLT (or similar know-how)

**Language:** english, german; materials are in english

1. **Overview**
   An overview over machine learning on time series.

2. **Handling Time Series with pandas**
   Working with time series data as dataframes.

3. **Time Series Analysis**
   Analysing time series data for structure.

4. **Time Series Classification and Regression**
   Classification and regression tasks where the inputs are time series.
   
   **A. Feature Engineering on Time Series**
   Describing time series so that ML algorithms understand.

5. **Time Series Forecasting**
   About predicting a time series several steps into the future.
   
   **A. Classical Time Series Forecasting Models**
   Statistical modelling applied to forecasting.

   **B. Forecasting with Prophet**
   An easy-to-use model from our colleagues at a social media company.

   **C. Forecasting with Shallow Learning**
   How to apply any supervised ML regression algorithm for forecasting.

   **D. Forecasting with Deep Learning**
   Using recurrent neural networks to forecast a time series.
Big Data Analysis with PySpark

BDAS

Scale your data analysis to really, really big data. Strengthen your data science skills and learn how to work with PySpark and distributed computing on a cluster.

Level: ★★ (Intermediate)
Duration: 1 day
Prerequisites: DAP (or similar know-how)
Language: english, german; materials are in english

1. **Processing Big Data**
   Which strategies are available to compute efficiently with increasing amounts of data? What is a cluster, and when do we need one?

2. **Spark Fundamentals**
   An overview of Spark - a framework for programming distributed computation, using PySpark, its Python API - core data structures and operations.

3. **Submitting Spark Jobs**
   How to submit jobs to a Spark cluster for batch processing.

4. **Spark and Structured Data**
   Working with structured data in Spark.

5. **Exercises:**
   A. **Museums of France**
      An exercise with a clear task, requiring you to apply the learnings from the course.
   B. **Counting Bigrams**
      Using Spark to count bigrams in big text data.
Machine learning as a big data edition. Get started with machine learning in theory and practice. Strengthen your big data skills with setting up your machine learning pipelines for different use cases.

**Level:** ⚙️ (Advanced)

**Duration:** 2 days

**Prerequisites:** DAP + BDAS (or similar know-how)

**Language:** english, german; materials are in english

1. **Introduction to Machine Learning**
   An overview over the field of machine learning.

2. **ML for Classification**
   Learn about classifiers and how to measure the quality of their decisions.
   A. **Building an ML Pipeline for Classification**
      Build a classification model and learn about the building blocks of ML with PySpark.
   B. **Feature Engineering and Selection**
      How to build better features.
   C. **Algorithm Selection and Hyperparameter Tuning**
      Learn about classifiers and how to measure the quality of their decisions.
   D. **Exercise: Titanic Survival Classifier**
      Build your own classification model from scratch.

3. **ML for Regression**
   Learn about regressors and how to measure the quality of their prediction.
   A. **Exercise: Predicting House Prices**
      Apply regression to predict house prices.

4. **Building a Recommender Engine**
   Use machine learning to generate movie recommendations.

5. **Unsupervised Learning: Clustering**
   Apply clustering algorithms to detect structure in the data.
NLP from basics to advanced with Python tools. Learn how to extract, handle and process text data. Apply your analytics and machine learning skills to expand your data science know-how.

**Level:** 🏆 (Advanced)

**Duration:** 2 days

**Prerequisites:** DAP + MLP (or similar know-how)

**Language:** english, german; materials are in english

1. **Extracting Text from Documents**
   Extracting natural language texts from various sources and formats.

2. **Natural Language Processing: The Basic Toolkit**
   Tokenization, stemming, and other fundamental tools for slicing and dicing text data.

3. **Document Similarity for Clustering and Recommendation**
   How to measure the similarity of texts and do useful things with that.

4. **Text Classification**
   Machine learning for classifying text documents.

5. **Sentiment Analysis**
   How to deal with more comments than you can possibly read.

6. **Topic Modelling**
   An unsupervised ML technique for discovering topics in text documents.

7. **Word Embeddings**
   Mapping words to vectors for fun and profit.

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TechTrainings Hands-On
Analytics, Data Science, Machine Learning, Artificial Intelligence.

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Point 8 GmbH, Rheinlanddamm 201, 44139 Dortmund,
✉️ www.point-8.de   📧 trainings@point-8.de
Overview and technical introduction to Data Science, Machine Learning and AI to shed light on how to put data driven use cases to work in the enterprise.

**Level:** Beginner

**Duration:** 1-2 days

**Prerequisites:** technical interests for data-driven use cases

**Language:** english, german; materials are in english

1. **Data Science basics**
   In an open kick-off lecture, we will discuss what is behind Data Science, how you have to set up your team, and people usually talk about when they say they are "doing AI".

2. **Introduction to Machine Learning**
   An overview of the field of machine learning & AI with related use cases. What is a label? When do I need supervised, unsupervised or reinforcement learning?

3. **Bias, Python and statistic basics**
   We need some basics and we will keep it simple.

4. **ML workflow**
   We get an overview of each step, learn more about problems and pitfalls, and find out that machine learning and AI are not magic. We go through a standard machine learning workflow:
   - From data generation, import and preparation
   - via feature exploration and engineering
   - to model definition, training and validation.

5. **ML run-through**
   Build a classification model and learn about the building blocks of ML with Python.
   - **Getting started:**
     Let’s try out different models in Python and see how well your learner can perform.

6. **Use cases, lessons learned and outlook**
   We go through some additional examples of possible ML applications, and what to do, when you really have Big Data.