

Inhouse-Training: Machine Learning

Key data

- 5 days of which 1.5 days are on Python introduction and 3.5 days on machine learning
- From about 09:00 to 17:00 each day.
- Goals: Kick-start into machine learning methods. Through theory and practical application, participants get an overview of which method is suitable for which application and learn how to implement it.
- Course materials may be reused internally.
- Certificates of attendance included
- max. 12 participants
- Required previous knowledge: Basics in programming is advantageous, science or engineering background is advantageous.
- Premises and notebooks with software provided by you.
- For software installation we will send instructions in advance.
- Total cost: 8000 €, gross, plus travel expenses

Contents

- Python for Machine Learning
 - Basics of programming with Python
 - Efficient data processing with NumPy
 - Visualization of data
 - Data analysis with Pandas
 - Special plot types for data analysis
 - *In between there are small practical elements*
- Basics of ML and classical methods
 - Machine learning terms and concepts
 - Decision trees with CART & Random Forest
 - *Practice element: modeling bike sharing data with Random Forest*

- Lazy Learning & k Nearest Neighbors
- *Practice element: hyperparameter optimization with k Nearest Neighbors*
- Support Vector Machines
- *Practice element: Support Vector Machines with different kernels and parameters*
- Artificial Neural Networks
 - Dense Neural Networks
 - *Practice element: model bike sharing data with neural networks*
 - Classification with neural networks
 - Time Series & 1D Convolutional Neural Networks
 - *Practice element: 1D Convolutional Neural Networks on a time signal*
 - 2D Convolutional Neural Networks
 - Class Activation Maps
 - *Practice element: apply class activation maps*
 - *Practice element: Recognizing Letters with Convolutional Neural Networks*
- Feature Engineering & Clustering
 - Imputer & Correlation
 - *Practice element: Imputer with machine learning methods*
 - Principal Component Analysis (PCA) & Autoencoder
 - *Practice element: comparing the performance of PCA with Autoencoder*
 - Basics of clustering, k-Means & DBSCAN
 - *Practice element: clustering of OECD data on states*
 - Discussion and closing session

Contact

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