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 09:00 to 17:00 each day, on the last day from 9:00 to about 15:00.
- 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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