ONLINE TRAINING

Introduction to Machine Learning for I4.0

DATES AND DURATION	Two days training 08 - 09 May 2023 10:00 - 16:00 CEST
FORMAT	Online
LEVEL	Intermediate
OFFICIAL CERTIFICATION	Certificate of attendance
FEE	200,00 EUR + VAT
PARTICIPANT PROFILE	All engineering disciplines with some programming experience (ideally with Python) Professionals who would like to make use of the tons of data that are being collected

MORE INFORMATION AND REGISTRATION 🔗

DESCRIPTION

This two-day course aims at professionals from all domains, who would like to make the most out of their data. It takes the participant on a journey to the fundamentals of supervised machine learning (ML). Apart from providing an overview, this course also gets hands-on with different ML methods such as Support-Vector Machines, Decision Trees, Random Forests and Ensemble Learning for regression and classification problems. It conveys ways to find the best suitable method and teaches participants how to fine-tune their method of choice.

The programming language of choice is Python with libraries such as NumPy, Pandas, Scikit-Learn and Matplotlib.

The content is delivered with Jupyter notebooks on Google Colab, so to be able to participate, the participants should have a Google account.

CURRICULUM

Participants will learn what ML is and what different forms exist, as well as what the typical use case is. They will also learn about the scope of the ML journey they are about to begin.

Performance Metrics:
Participants get to know how the performance of an ML algorithm can be measured and what needs to be taken into account.

Regression Methods:
In this section, the first ML methods are introduced, both for regression as well as classification problems. Participants will set benchmarks against which all other algorithms will be measured.

Support Vector Machines:
Here, participants will get to know a powerful and widely applicable ML method.

Decision Trees:
This is the third type of ML method that participants will learn about.

Random Forests:
A single decision tree is often not sufficient. Therefore, participants will learn how to „combine" several trees into a random forest. This requires considerable compute power.

Model Evaluation & Hyperparameter Tuning:
Participants learn how to decide which model performs the best and how they can improve the best-performing model even further.

Ensemble Learning:
With even more compute power, different ML methods can be combined to improve performance even further.

Outlook:
In this final topic, participants will get a glimpse of what can be done with deep learning – the next step in the ML journey.

LEARNING OUTCOMES

At the end of the course, participants will be able to:
- Choose the best-suited ML method for a given problem
- Training an ML algorithm
- Evaluate the algorithm's performance
- Fine-tune hyperparameters

SIMEON HARRISON

EUROCC AUSTRIA

Simeon works at the EuroCC Austria at the TU Wien, the Austrian national competence centre for high-performance computing, high-performance data, and artificial intelligence (AI). He has a background in mechanical engineering and is passionate about teaching in the ground-breaking AI area. Before joining EuroCC Austria, he was teaching high school maths for 8 years.

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