Module 14 “Data Science and Machine Learning for Managers”

<table>
<thead>
<tr>
<th>Supervisor</th>
<th>Prof. Dr. Christoph Ihl</th>
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<tbody>
<tr>
<td>Inputs</td>
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<tr>
<td>Learning path</td>
<td>Workload: 6 ECTS / 180 hours 48 hours attendance (6 dates) in 15 weeks</td>
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<td>Recommended semester</td>
<td>Freely selectable</td>
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<tr>
<td>Exam / grading</td>
<td>Project presentation graded</td>
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Contents

- Basic Workflows in Data Science
- Programming Basics: Functions, Loops, Apply Data Access, Scraping and Import
- Data Transformation with dplyr and data.table
- Dealing with Text Data
- Exploratory Data Analysis
- Data Visualization with ggplot2
- Data Modeling Overview
- Unsupervised Machine Learning
- Supervised Machine Learning
- Deep Learning
- Data Communication: R Markdown, Shiny Dashboards

Learning objectives

After completing this module, students will be able to:

- Obtain large amounts of data via APIs or web scraping from the Internet
- Clean and transform data
- Explore and visualize data in a goal-oriented way
- Model data using modern machine learning techniques with respect to classifications and predictive predictions
- Communicate data and results in the form of products and applications