Advanced Statistical Learning

Chapter 0: Introduction and Overview

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Department of Statistics – TU Dortmund
Summer term 2021
ORGANISATION

Lecture

- Tuesday, 4-6 pm, Emil-Figge-Straße 50 - HS 3
- Thursday, 4-6 pm, Emil-Figge-Straße 50 - HS 3

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Exercises

- yet to be announced

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ORGANISATION

Website

https://moodle.tu-dortmund.de/course/view.php?id=24738

Enrollment key: ASL-Summer21

Exams

- 1st date: probably end of July 2021
- 2nd date: probably end of September 2021
GOALS

- learn to understand advanced models and analysing methods and are aware of their limitations
- become able to adapt methods to unusually structured data
- learn to choose appropriate methods for real data and apply them by means of statistical software
- understand the underlying mathematical theory

Partly builds upon the BA course “Introduction to Statistical Learning”.

⇒ For a short recap consult the pre-course eLearning slides with videos by Alexander Gerharz:

https://moodle.tu-dortmund.de/course/view.php?id=16736

(Password: vlds)
Introduction and Formalization
Classification Tasks
Hypothesis Spaces and Capacity
Risk Minimization
Univariate and Linear Modeling
Information Theory
(Multiclass Classification)
Curse of Dimensionality
Boosting
Advanced Performance Evaluation
Bayesian Optimization
Automatic Machine Learning
Feature Selection
Cost-Sensitive Learning
Imbalanced Classification problems
Advanced Trees and Forests
Deep Learning / Neural Networks
References