Introduction to Machine Learning

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Universität Hamburg

Summer Term 2024

Preliminaries (1/4)

Target Audience

- MSc Economics, MSc Business Mathematics

Literature

- Zhou, Z. H. (2021): Machine Learning. 1st edition, Singapore: Springer Singapore.

Prerequisites

- Basic knowledge of probability, statistics and algebra.

Language

- English

Preliminaries (2/4)

Lecture

- Monday 10:15 - 11:45, ESA H, starting April 8.

Tutorial

- Monday 12:15 - 13:00 and Monday 13:15 - 14:00, both ESA H, starting April 15.
- Python introduction (optional): Wednesday 12:15 - 13:00, ESA H, April 8.

Instructors

- Professor Dr. Alexander Szimayer (Lecturer)
  - Consult: by appointment
  - Email: alexander.szimayer@uni-hamburg.de
- Sophie Döpp (Tutor)
  - Consult: by appointment
  - Email: sophie.doepp@uni-hamburg.de

Preliminaries (3/4)

Study Materials and Research Plan

- Material (Slides, exercises, . . .) will be uploaded to STiNE.
- Computer exercises are implemented with Python.
- Research Project:
  - Research topics are introduced on April 15th, 2022.
  - Students arrange themselves in groups of **4 students**. Each group indicates their top three preferences and mail them to sophie.doepp@uni-hamburg.de by 4th June.
  - Instructor announces topic allocation by 5th June. Projects start.
  - Submit **group research report (8-10 pages) and presentation slides** by June 30th.
  - **Presentation** of your final research results on July 1st.

Note: a pass grade in the project is necessary to qualify for the final examination of the course.

Preliminaries (4/4)

Examination

- Entry requirement: pass in research project (report and presentation).
- Oral examination:
  - Course material: 75 %.
  - Project: 25 %.

Contents of the Course

1. Introduction and Model Selection
2. Linear Models
3. Decision Trees
4. Ensemble Learning
5. Support Vector Machines
6. Bayes Classifier
7. Clustering
8. Neural Network