

# **Elements of Machine Learning & Data Science**

Winter semester 2025/26

## **Introduction & Administrative Details**

20.10.2025

Prof. Bastian Leibe

# Organization

- **Lecturer this semester**

- Bastian Leibe Machine Learning



- **Lecturers in other years**

- Wil van der Aalst Data Science
- Holger Hoos AI Methodology



- **Main Assistants**

- Karim Abou Zeid ([abouzeid@vision.rwth-aachen.de](mailto:abouzeid@vision.rwth-aachen.de))
- Ilya Fradlin ([fradlin@vision.rwth-aachen.de](mailto:fradlin@vision.rwth-aachen.de))
- Christian Schmidt ([schmidt@vision.rwth-aachen.de](mailto:schmidt@vision.rwth-aachen.de))

# Language

- Official course language will be English.
  - The entire AI literature is in English, and this course will prepare you for it.
  - Some of the tutors are international Master students.
- **However,...**
  - We want to make it as easy as possible for you to follow the lecture.
  - Please tell us when we are talking too fast or when we should repeat something in German for better understanding!
  - You may at any time during the lecture ask questions in German!

# Course Structure

- **Structure:** 3V (lecture) + 2Ü (exercises)
  - 6 EECS credits
  - Mandatory lecture for Bachelor Computer Science (5<sup>th</sup> semester)
- **Place & Time**
  - Lecture:                      Mon      16:30 – 18:00      TEMP1
  - Lecture:                      Tue      08:30 – 10:00      TEMP2
  - Small-group exercises on Tue, Wed, Thu, Fri
  - Plenary exercise:      Thu      12:30 – 14:00      TEMP2
- **Lecture format**
  - The lecture will be held [in presence](#).
  - [Lecture recordings](#) and/or [supplementary videos](#) will be made available [on moodle](#).
  - Small-group exercises will be held [in person](#).

# Electronic Learning Room

## Communication

- **Moodle learning room**
  - Register to the lecture on RWTHOnline to get access.
  - *This will be our prime communication channel to you!*
- **Use the forum**
  - If you have a question about course organization or content, please ask it in the corresponding forum.
  - *We will monitor the fora and answer questions there.*

## Elements of Machine Learning and Data Science (VU) [23ws-12.00034]

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### ▾ Allgemeines

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# Electronic Learning Room

## Materials

- **For each lecture, you will find**
  - The lecture date and topic
  - The instructor
  - *A zoom link if we have to switch to an online mode in case of COVID*
- **Additional materials**
  - A pdf of the lecture slides
  - (In some cases) supplementary, pre-recorded videos
  - Video recordings (several days after the lecture)

### ✓ Lecture 1: Introduction & Organization (10.10.2023, all instructors)



EleMLDS-ws23-part01-intro.pdf 5.9 MB Hochgeladen 10.10.2023 13:23

Als erledigt kennzeichnen



EleMLDS-ws23-part01-intro-6on1.pdf 1.4 MB Hochgeladen 10.10.2023 13:24

Als erledigt kennzeichnen

# Materials *bridging* AI

- **Companion MOOCs**
  - We have created two MOOCs to complement this lecture
    - Basics of ML
    - Basics of Data Science
  - Target: International Master students and students from other degree programs joining Computer Science
  - *We will provide videos from those MOOCs as supplementary material wherever they fit.*
- **We will sometimes experiment with an inverted classroom format**
  - I.e., we will upload videos in advance and expect you to watch them ahead of the lecture
  - *This will be announced well in advance*



## *bridging* AI Basics of Machine Learning

**Introduction**  
Motivation

Prof. Bastian Leibe



## *bridging* AI Basics of Data Science

**Introduction to Data Science**  
Introduction

Prof. Wil van der Aalst

# Exercise Sheets

- **Exercise concept**
  - Typically, 1 exercise sheet every week
  - Hands-on experience with the algorithms from the lecture.
  - Both pen-and-paper and programming exercises (in python/numpy)
  - [Exam admission requirement: Need to reach 50% of exercise points](#)
- **Team submission**
  - Please sign up for exercise slots and form teams of 4 participants for the exercises.
  - Each team should only turn in one solution.
  - Submission via moodle, listing the team members.
  - *Forum on moodle where you can look for team members*

# Small Group Exercises

Monday	Tuesday	Wednesday	Thursday	Friday
		1x 08:30-10:00h	3x 08:30-10:00h	
			1x 10:30-12:00h	
	2x 12:30-14:00h			2x 12:30-14:00h
				3x 14:30-16:00h
		2x 16:30-18:00h	4x 16:30-18:00h	2x 16:30-18:00h

- **Weekly small-group exercises**
  - Exercise sheets will be given out on Fridays at 20:00h.
  - Small-group sessions with tutors will show you *how to solve similar exercises*.
  - Turn in your team's solutions via moodle by the specified deadline.
  - Exercises will be corrected by tutors, points will be tallied via moodle.
  - *We will set up a moodle poll to collect your preferences for exercise time slots*

# Exam

- **Exam admission requirement**
  - Need to reach at least 50% of exercise points to qualify
- **Tentative exam dates**
  - 1<sup>st</sup> exam:                **Wed**     **11.02.2026**, 17:30 – 19:00
  - 2<sup>nd</sup> exam:                **Fri**     **20.03.2026**, 15:30 – 17:00
  - The exam will cover the material from lectures and exercises.
  - Written exam, “closed book”
- **Disclaimer**
  - *Please also check RWTHOnline. Only the dates and times on RWTHOnline are binding.*

# Exam Registration

- **Registration via RWTHOnline**
  - Exam registration will be opened on 15.11.2025
  - Please note the deadlines!
    - 15.01.2026 for the 1<sup>st</sup> exam
    - 13.03.2026 for the 2<sup>nd</sup> exam
  - Withdrawal is possible until 3 days before the exam
  - *Take care to register by the deadline. Late registration cannot be accommodated!*