

Lehrform (*teaching format*) / **SWS** (*hours per week*): 2SE

Kreditpunkte (*credit points*): 3

Turnus (*frequency*): usually, each summer

Inhaltliche Voraussetzungen (*content-related prior knowledge/skills*):

Basic knowledge of AI and machine learning, as acquired from one of the introductory and foundational machine learning, AI, or cognitive systems lectures. Advances course knowledge is not required, but will be beneficial to engage with more recent in-depth perspectives

Sprache (*language*): English

Lehrende (*teaching staff*): OWL-ML (Prof. Dr. Martin Mundt)

Studiengang (<i>degree program</i>)	Module	Semester
Informatik (Master)	IMS	ab 1.Sem.
AI and Intelligent Systems (Master)	AI-R-MS	from 2nd sem.
Informatik (Bachelor VF)	(nur <i>Freie Wahl</i>)	ab 4.Sem.

Lernergebnisse / *Learning Outcome*:

AI is conjectured to hold transformative economic potential and benefit society in several ways. Among countless aspects, it promises to aid in the climate crisis, foster food stability, democratize knowledge, and empower humans with unprecedented capabilities. Throughout the seminar, students will learn to critically engage with current perspectives on AI's impact, analyze the validity of claims with respect to economical, environmental and social sustainability, and separate opportunities from unaddressed harms. As such, students will improve their ability to engage with multi-faceted modern literature and participate in broader AI discourse.

Inhalte / *Contents*:

The seminar will cover the different aspects of AI sustainability. Students will get to engage with a choice of topics spanning a variety of modern perspectives and assessments of current state-of-the-art approaches. Respectively engaged literature serves as the basis to practice presentations and hold critical discourse among peers. Example questions for the specific covered dimensions of AI sustainability will be:

- Computational and environmental sustainability: how efficient are AI algorithms and how flexible are current workflows? Where does compute excel and where are the present limits? What are AI's contributions to the environment and in which ways are adverse effects entailed?
- Economic sustainability: What is the potential of AI to transform industries and contribute to financial growth? Which current AI use-cases are profitable and how efficiently are AI assets used in practice? What are applications where AI fell short and how can we spot hype?
- Social sustainability: How inclusive are AI approaches and how do they represent diverse cultures? What outcomes do AI systems hold for the average population and marginalized community? How can AI interface with moral systems and law?
- Human sustainability: What role does AI play in education and democratization of knowledge? What are respective risks of current AI systems? In which ways is AI able to support humans instead of replacing them?

Hinweise (*remarks*): The table lists only the primary / most specific modules to which this course is assigned.