

Lehrform (*teaching format*) / **SWS** (*hours per week*): 4K

Kreditpunkte (*credit points*): 6

Turnus (*frequency*): usually, each winter term

Inhaltliche Voraussetzungen (*content-related prior knowledge/skills*): none

Sprache (*language*): English

Lehrende (*teaching staff*): AG Cognitive Systems Lab (Dr. Felix Putze)

Studiengang (<i>degree program</i>)	Module	Semester
Informatik (Master)	IMVA, IMVA-AI	ab 1.Sem.
AI and Intelligent Systems (Master)	AI-M-MLCS	from 2nd sem.
Management Information Systems (Master)	(MIS-INF3)	from 2nd sem.
Informatik (Bachelor)	(nur <i>Freie Wahl</i>)	

Lernergebnisse / *Learning Outcome*:

- Students are able to conduct machine learning experiments following good scientific practices
- Students are able to perform and document machine learning experiments in a reproducible way
- Students are able to evaluate and incorporate new tools into their machine learning research pipeline
- Students are able to present, evaluate, and discuss their machine learning experiments in a scientific paper

Inhalte / *Contents*:

Students will learn the theory and practice of empirical machine learning research. Iteratively, they will construct a research pipeline for a common machine learning task, which they will document and evaluate in the form of a scientific paper. Aspects of the research pipeline which the course will cover:

- Uncertainty quantification
- Statistical analysis
- Bias estimation
- Parameter optimization
- Energy consumption measurement
- Documentation of code and data
- Visualization

Good practical and theoretical knowledge of state-of-the-art machine learning methods is strongly recommended.

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