

Electives

updated on October 10, 2025

Designation	Pillar	Lecturer(s)	SWS	ECTS	WiSe	SoSe	Language
Advanced Deep Learning	ML	Dr. Christlein	2+2	5,0	x		ENG
Advanced Design and Programming	SA	Prof. Dr. Dirk Riehle	4	5,0	x		GER
Advanced Mechanized Reasoning in Coq	SA	PD Dr.habil. Tadeusz Litak	4	7,5	x		GER/ENG
Advanced Programming Techniques	SA	Prof. Dr. Harald Köstler	4	7,5	x		ENG
Advanced Topics in Deep Learning	ML	Prof. Dr. Vasileios Belagiannis	2+2	???		x	ENG
Algebra of Programming	Sym	Prof. Dr. L. Schröder, Prof. Dr. Stefan Milius	4	7,5		x	GER/ENG
Algebraic and Logical Aspects of Automata Theory	Sym	Prof. Dr. Stefan Milius, Dr. Henning Urbat	4	7,5	x		GER/ENG
Approximate Computing	SA	Prof. Dr. Keszöcze, Prof. Dr. Teich	2+2	5,0		x	GER/ENG
Artificial Intelligence I	Sym	Prof. Dr. Kohlhase	4+2	7,5	x		ENG
Artificial Intelligence II	ML	Prof. Dr. Kohlhase	4+2	7,5		x	ENG
Cognitive Neuroscience for AI Developers*	SA	Dr. Patrick Krauss, Prof. Dr. Andreas Kist	2+2	5,0		x	ENG
Computational Photography and Capture	SA	Prof. Dr. Tim Weyrich	2+2	5,0		x	GER/ENG
Computational Visual Perception	SA	Prof. Dr. Andreas Kist, Marc Stamminger, Prof. Egger	4+2	7,5	x		ENG
Computer Vision	ML	Ph Ronak Kosti, Dr. Vincent Christlein	2+2	5,0		x	GER
Deep Learning	ML	Prof. Dr. Andreas Maier	2+2	5,0	x		ENG
Description Logic and Formal Ontologies	Sym	Prof. Dr. Schröder	4	7,5	x		GER/ENG
Formal Verification	Sym	PD Dr. Tadeusz Litak, Paul Wild	4	7,5	x		GER/ENG
Generative Models for Signal Processing	ML	Dr. A. Brendel, Dr. N. Pia, Prof. M. Müller, Prof. E. Habets	2	2,5	x		ENG
Human Computer Interaction	SA	n.n.	3+1	5,0		x	ENG
Informationsvisualisierung	SA	Dr. Roberto Grosso	2+2	5,0		x	GER
Knowledge Representation for Mathematical Theories	Sym	Prof. Dr. Kohlhase/PD Dr. Rabe	2	2,5		x	ENG
Kommunikation und parallele Prozesse	Sym	Prof. Dr. Lutz Schröder	4	7,5	?	?	GER
Logic-based Natural Language Semantics	Sym	Prof. Dr. Kohlhase, PD Dr. Florian Rabe	2	2,5	x		GER/ENG
Methods of Advanced Data Engineering	SA	Prof. Dr. Dirk Riehle	2	5,0		x	ENG
Modallogik	Sym	Dr. Daniel Hausmann	4	7,5	?	?	GER
Multimedia Security	ML	Dr. Riess	2+2	5,0	x		ENG
Music Processing Analysis	ML	Prof. Dr. Meinard Müller	2+2	5,0	x		ENG
Nonclassical Logics in Computer Science	Sym	Prof. Dr. L. Schröder, PD Dr. Tadeusz Litak	4	7,5	x		GER/ENG
Pattern Analysis	ML	Dr. Christian Riess	3+1	5,0		x	GER
Pattern Recognition	ML	Prof. Dr. Andreas Maier	3+1+2	5,0	x		ENG
Practical Semantics of Programming Languages	Sym	PD Dr. Tadeusz Litak	4	7,5		x	GER/ENG
Reinforcement Learning	ML	Christopher Mutschler	2+2	5,0		x	GER/ENG
Speech and Language Processing	ML	Prof. Dr. Andreas Maier	2+2	5,0		x	GER

Speech and Language Understanding	ML	Prof. Dr. Yang	4	5,0		x	ENG
Symbolic Methods for Artificial Intelligence	Sym	Prof. Dr. Kohlhase	2	2,5	x		ENG
Verifikation digitaler Systeme	Sym	Prof. Dr. Oliver Keszöcze	2+2	5,0	x		GER
Verteilte Systeme	SA	Dr. Jürgen Kleinöder	2+2	5,0		x	GER
Verteilte Systeme erweiterte Übungen	SA	Dr. Jürgen Kleinöder, Dr. Tobias Distler	2+2	7,5		x	GER
Visual Computing in Medicine	ML	PD Dr. Wittenberg, PD Dr. Hastreiter	2+2	5,0	x	x	ENG
Wissensrepräsentation und -verarbeitung*	Sym	PD Dr. Rabe/Prof. Dr. Kohlhase	4+2	7,5	x		ENG

Projects

Designation	Pillar	Lecturer(s)	SWS	ECTS	WiSe	SoSe	Language
AI 1 Systems Project	Sym	Prof. Dr. Kohlhase	4	10,0	x		ENG
AI 2 Systems Project	ML	Prof. Dr. Kohlhase	4	10,0		x	ENG
AI Project: Computational Visual Perception	SA	Prof. Dr. Egger	4	10,0	x	x	GER/ENG
Biomedical Image Analysis Project	ML	Prof. Dr. Andreas Kist	4	10,0		x	GER/ENG
Computational Imaging Project	SA	Prof. Dr. Knoll	8	10,0	x	x	GER/ENG
Digital Alchemy	SA	Prof. Dr. Carolin Müller	8	10,0	x	x	ENG
Fabrication Project	SA	Prof. Dr. Tim Weyrich		10,0	x	x	GER/ENG
Hands on Rehabilitation and Assistive Robotics	SA	Prof. Dr. Castellini		5,0			GER/ENG
Image and Data Analysis: Engage in your own research project at the IDEA lab	SA	All scientific members of IDEA lab		10,0	x	x	GER/ENG
Interactive Visualization Project	SA	Prof. Dr.-Ing. Tobias Günter		10,0	x	x	GER/ENG
Master Projekt Datenmanagement	ML	Prof. Lenz	4	10,0		x	GER
Neurotechnology Project	ML	Prof. Dr. Tobias Reichenbach		10,0			GER/ENG
Project Biomedical Network Science	SA	Prof. Dr. David B. Blumenthal	4	10,0	x	x	ENG
Project Biomechanical Movement Analysis and Simulation	SA	Prof. Dr. Anne Koelewijn / Markus Gambietz	4	10,0	x	x	ENG
Project Computer Vision	ML	Dr. Christlein	4	10,0	x	x	GER/ENG
Project Digital Reality	SA	Prof. Dr. Weyrich	6	10,0	x	x	GER/ENG
Project Mathematical Knowledge Representation	Sym	Prof. Kohlhase	4	5,0		x	ENG
Project Music and Audio Processing	SA	Prof. Dr. Meinard Müller	4	10,0	x	x	ENG
Project on Applied AI in Factory Automation and Production Systems	SA	Prof. Dr.-Ing. Jörg Franke	8	10,0	x	x	GER/ENG
Project Representation Learning	ML	Prof. Dr. Kainz	8	10,0	x	x	ENG
Project Symbolic Natural Language Processing	Sym	Prof. Kohlhase	4	5,0	x		ENG
Projekt Applied Software Engineering	SA	Prof. Dr. Dirk Riehle	0	10,0	x	x	GER
Projekt Künstliche Intelligenz	Sym	Prof. Kohlhase	4	10,0	x	x	GER
Projekt Machine Learning and Data Analytics	ML	n.n.	4	10,0	x	x	GER/ENG
Projekt Pattern Recognition	ML	Dr. Christlein	4	10,0	x	x	GER/ENG

Rehabilitation and Assistive Robotics Research Lab	SA	Prof. Dr. Castellini		5,0			GER/ENG
Reproduce Research Results	All	Linda-Sophie Schneider, Bernhard Egger	6	10,0	x	x	ENG
Selected Projects in Computer Graphics	SA	Prof. Dr.-Ing. Marc Stamminger	4	10,0	x	x	GER/ENG
Surgical Robotics	SA	Prof. Dr. Franziska Mathis-Ullrich	?	?	x	x	ENG
The AMOS Project: Agile Methods and Open Source	SA	Prof. Dr. Dirk Riehle	4	10,0		x	ENG

Seminars

Designation	Pillar	Lecturer(s)	SWS	ECTS	WiSe	SoSe	Language
Advanced Simulation Technology	-	Prof. Dr. Harald Köstler	2	5,0		x	GER/ENG
Advanced Machine Learning for Anomaly Detection	-	Johanna Müller	2	5,0	x		ENG
Applied Neural Engineering	-	Prof. Dr. Del Vecchio	4	5,0	x		ENG
Big Data Seminar	-	Prof. Dr. Richard Lenz	2	5,0	x		GER
Blender Seminar	-	Prof. Dr.-Ing. Marc Stamminger	2	5,0		x	GER/ENG
Catching your eyes: AI-driven modeling and analysis of eye-tracking data	-	Dr. Zanca	2	2,5		x	ENG
Cognitive Surgical Robotics	-	Prof. Dr. Franziska Mathis-Ullrich	?	?	x	x	GER/ENG
Digital Psychology Lab	-	Prof. Dr. Eskofier / Robert Richer / Maximilian Rohleder	2	5,0	x		GER
Erweitertes maschinelles Lernen für Anomalieerkennung	-	Prof. Dr. Kainz	2	2,5	x	x	GER
Ethics in AI	-	Dr. Christoph Merdes	2	2,5	x		GER/ENG
Ethics and Philosophy of AI	-	Prof. Dr. Vincent Müller	2	5,0		x	GER/ENG
Fantastic datasets and where to find them	-	Prof. Dr. Kist	2	5,0	x	x	ENG
Humans in the Loop: The Design of Interactive AI Systems	-	Prof. Dr. Kainz	2	5,0	x		ENG
Legged Locomotion of Robots	-	Prof. Dr. Koelewijn	2	2,5		x	GER/ENG
Machine Learning in MRI	-	Florian Knoll		5,0			GER/ENG
Nailing your Thesis (Anleitung zum wissenschaftlichen Arbeiten)	-	Prof. Dr. Dirk Riehle	2	5,0		x	GER/ENG
Neuroscience-inspired Artificial Intelligence	-	Patrick Krauss, Achim Schilling, Andreas Maier		5,0			GER/ENG
Philosophy of AI	-	Dr. Christoph Merdes	2	2,5		x	GER/ENG
Philosophie und Künstliche Intelligenz (KI)	-	Prof. Dr. Vincent Müller	2	5,0		x	GER
Seminar Advances in Deep Learning for Time Series	-	Dr. Zanca, Naga Venkata Sai Jitin Jami	4	5,0	x		ENG
Seminar Automata over Infinite Words	-	Prof. Dr. L. Schröder	2	5,0			GER/ENG
Seminar Automatic Analysis of Voice, Speech & Language Disorders in Speech Pathologies		Dr. Perez-Toro/Dr. Arias-Vergara/ Prof. Dr. Andreas Maier	4	5,0	irregularly		ENG
Seminar Co-algebraic Logic	-	Prof. Dr. L. Schröder	2	5,0			GER/ENG
Seminar Computer Vision	-	Prof. Dr. A. Maier/Dr. Christlein	2	5,0		x	GER/ENG
Seminar Deep Learning	-	Prof. Dr. A. Maier/Dr. Christlein	2	5,0	x		GER/ENG
Seminar Ethik der Digitalisierung	-	Immanuel Lautner	?	?		x	GER
Seminar Graphical Data Processing	-	Prof. Dr. Tobias Günther	2	5,0	x		GER/ENG

Seminar Inverse Rendering	-	Prof. Dr. Weyrich	2	5,0		x	GER/ENG
Seminar Machine Learning in Movement		Prof. Dr. Anne Koelewijn	3	5,0	x	x	ENG
Seminar Multi-Core Architectures and Programming	-	PD Dr. Frank Hannig et al.	2	5,0		x	GER/ENG
Seminar Network Medicine	-	Prof. Dr. David B. Blumenthal	2	5,0			ENG
Seminar Nominal Quantities and Automation	-	Prof. Dr. L. Schröder	2	5,0			GER/ENG
Seminar RMA (Seminar Research in Movement Analysis)	-	Prof. Dr. Anne Koelewijn / Markus Gambietz	2	5,0	x	x	ENG
Seminar Surgical Robotics Hardware	-	Prof. Dr. Franziska Mathis-Ullrich	?	?	x	x	GER/ENG
Seminar Surgical Robotics Software	-	Prof. Dr. Franziska Mathis-Ullrich	?	?	x	x	GER/ENG
Seminar Visual Computing	-	Prof. Dr.-Ing. Tobias Günter / Prof. Dr. Tim Weyrich	2	5,0	x		GER
Seminar Wissenrepräsentation und verarbeitung	-	Prof. Dr. Kohlhase/PD Dr. Rabe	2	5,0	x	x	GER
Surgical Robotics	-	Prof. Dr. Franziska Mathis-Ullrich	?	?	?	?	GER/ENG
Topics of Category Theory	-	???	?	5,0			GER/ENG
Tracking Olympiad	-	Prof. Dr. Kist	4	5,0		x	GER/ENG

Sym = Symbolic AI

ML = Subsymbolic AI / Machine Learning

SA = AI Systems and Applications

All = can be used in all pillars, please speak to lecturer

* currently not offered