Anwendungsfach Artificial Intelligence in Biomedical Engineering für den Masterstudiengang Data Science (gem.)

Modul Nr.	Modulbezeichnung	Modulverantwortlicher	Lehrveranstaltung	SWS V	SWS Ü	SWS P	SWS S	SWS T	Gesamt ECTS	Workload-Verteilung pro Semester in ECTS-Punkten: 1. Sem	2. Sem	3. Sem	4. Sem	Art und Umfang der Prüfung/Studienleistung	Modul Nr.
	A look inside the human body - gait analysis and simulation	Anne Koelewijn	A look inside the human body - gait analysis and simulation	2					2.5	[2.5]		[2.5]		Oral exam (30 min.)	
	AI in Medical Robotics	Thomas Seel	AI in Medical Robotics	4					5	[5]		[5]		Written exam with multiple choice (60 min.)	
	Algorithmische Bioinformatik	David Blumenthal	Algorithmic Bioinformatics	2					5	[5]		[5]		Oral exam (30 min.)	
			Algorithmic Bioinformatics Übung		2					[ ]		[ ]			
	Artificial Motor Learning	Thomas Seel	Artificial Motor Learning	4					5		[5]		[5]	Written exam with multiple choice (60 min.)	
	Bewegungsanalyse und biomechanische Grenzgebiete (VHB-Kurs)	Sigrid Leyendecker, Anne Koelewijn	Bewegungsanalyse und biomechanische Grenzgebiete	2					2.5	[2.5]	[2.5]	[2.5]	[2.5]	Electronic exam (60 min.)	
	Biomedizinische Signalanalyse	Björn Eskofier	Biomedizinische Signalanalyse	2					5	[5]		[5]		Written exam (90 min.)	
			Biomedizinische Signalanalyse Übung		2					[ ]		[ ]			
	Cognitive Neuroscience for AI Developers	Patrick Krauß, Andreas Maier	Cognitive Neuroscience for AI Developers	4					5	[5]	[5]	[5]	[5]	Written exam (90 min.)	
	Computational Magnetic Resonance Imaging	Florian Knoll	Computational Magnetic Resonance Imaging Vorlesung	2					5	[5]		[5]		Oral exam (30 min.), homeworks, bonus via exercises	
			Computational Magnetic Resonance Imaging Übung		2					[ ]		[ ]			
	Digital Psychology Lab	Björn Eskofier, Nicolas Rohleder, Robert Richer	Digital Psychology Lab [DiPsyLab]				2		5	[5]		[5]		Presentation, code, short summary (6-8 pages)	
	Exergames	Benedikt Morschheuser, Daniel Roth	Exergames	4					5	[5]		[5]		Project presentation (30 min., 50%), report (8-10 pages, 50%)	
	Human Computer Interaction	Björn Eskofier	Human Computer Interaction	3					5		[5]		[5]	Written exam (90 min.)	
			Human Computer Interaction Exercises		1						[ ]		[ ]		
	Inertial Sensor Fusion	Thomas Seel	Inertial Sensor Fusion	4					5	[5]		[5]		Written exam with multiple choice (60 min.)	
	Interfacing the Neuromuscular system: Applications for Human/Machine Interfaces and Neurophysiology	Alessandro Del Vecchio, Daniela Souza de Oliveira	Interfacing the Neuromuscular system: Applications for Human/Machine Interfaces and Neurophysiology	3					5		[5]		[5]	Oral exam (30 min.)	
	Leading by Learning	Heike Leutheuser	Leading by Learning	2					5	[5]	[5]	[5]	[5]	Presentation (30 min.), essay (min. 6 pages)	
	Medizintechnik II (Bildgebende Verfahren)	Bernhard Kainz, Florian Knoll	Medizintechnik II	4					5		[5]		[5]	Essay (5-8 pages), code (Java), homework, presentation (5 min.)	
			Medizintechnik II Rechnerübung				2				[ ]		[ ]		
			Medizintechnik II Tafelübung		2						[ ]		[ ]		
	Movement Neuroscience: Connections between the Brain and Muscles in Humans	Allesandro Del Vecchio	Movement Neuroscience: Connections between the Brain and Muscles in Humans	3					5	[5]		[5]		Oral exam (30 min.)	
	Network Medicine	David Blumenthal	Network Medicine				2		5	[5]		[5]		Presentation (90 min.)	
	Numerische Neurotechnologie	Tobias Reichenbach	Numerische Neurotechnologie – Vorlesung	2					5		[5]		[5]	Written exam (60 min.)	
			Numerische Neurotechnologie – Übung		2						[5]		[5]		
	Project seminar	Project responsibles	Project seminar				4		10	[10]	[10]	[10]		Presentation, code, report	
	Seminar Automatische Analyse von Stimm-, Sprech- und Sprachstörungen bei Sprachpathologien	Seung Hee Yang	Seminar Automatic Analysis of Voice, Speech and Language Disorders in Speech Pathologies				4		5		[5]		[5]	Presentation (30 min., 50%), essay (6-8 pages, 50%)	
	Seminar Digital Pathology and Deep Learning	Katharina Breininger	Seminar Digital Pathology and Deep Learning				2		5	[5]		[5]		Presentation, code, short summary (6 pages)	
	Seminar Machine Learning and Data Analytics for Industry 4.0	An Nguyen	Maschinelles Lernen und Datenanalytik für Industrie 4.0				2		5		[5]		[5]	Presentation (25 min.), Essay (4 Seiten)	

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				V	Ü	P	S	T		1. Sem	2. Sem	3. Sem	4. Sem		
	Speech and Language Understanding	Andreas Maier, Seung Hee Yang	Speech and Language Understanding	2					5		[5]		[5]	Oral exam (30 min.)	
			Speech and Language Understanding Exercises		2						[ ]		[ ]		
	The Why and How of Human Gait Simulations	Anne Koelewijn	The Why and How of Human Gait Simulations				2		2.5	[2.5]		[2.5]		Presentation	
	Tracking Olympiad	Andreas Kist	Tracking Olympiad				4		5		[5]		[5]	Presentation (20 min.), report (10-15 pages)	

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