

Valid from 2025.FS

Module description: AI Applications		
Module Code	w.BA.XX.3KIA-WIN.XX	
ECTS Credits	3	
Language of Instruction/Examination	English	
Module Description	This module consists of three blocks: 1) Creating a machine learning model for numeric data 2) Using retrieval-augmented generation and transformer models for text data 3) Solving computer vision tasks using LLMs or other models	
Organizational Unit	Institut für Wirtschaftsinformatik	
Module Coordinator	Benjamin Kühnis	
Deputy Module Coordinator	Alexandre de Spindler	
Program and Specialization	• Business Information Technology - Specialization in Business Information Systems	
Legal Framework	Academic Regulations BSc dated 29.01.2009, for the degree programs in Business Administration, International Management, Business Information Technology, Business Law, Business Law and Applied Law, first adopted on 12.05.2009	
Module Category	Module Type Compulsory	Program Phase Main Study Period
Prerequisite Knowledge	Data Management, Prototyping, Software Engineering 2, Data Analytics	
Contribution to Program Learning Objectives (by the concerned Module)	<ul style="list-style-type: none"> Professional Competence Methodological Competence Self-Competence 	
Contribution to Program Learning Objectives	<p>Professional Competence</p> <ul style="list-style-type: none"> Knowing and Understanding Content of Theoretical and Practical Relevance Apply, Analyze, and Synthesize Content of Theoretical and Practical Relevance Evaluate Content of Theoretical and Practical Relevance <p>Methodological Competence</p> <ul style="list-style-type: none"> Scientific Methodology Work Methods, Techniques, and Procedures Information Literacy Creativity & Innovation <p>Self-Competence</p> <ul style="list-style-type: none"> Self-Management & Self-Reflection 	
Module Learning Objectives	<p>Students...</p> <ul style="list-style-type: none"> know how and are able to train and validate a model applied to numeric, text, image, and motion picture data. know how and are able to deploy a model. know how and are able to integrate a model with an application. know how to build and evaluate retrieval-augmented generation applications using LLMs, vector stores, embeddings, and semantic similarity. know how and are able to fine-tune and use a transformer model. know how and are able to train models to classify numeric, text, image, and motion picture data. know how and are able to train models for regressions on numeric data. 	
Module Content	<ul style="list-style-type: none"> Machine learning end-to-end process: using a dataset, training a machine learning model, and deploying it. Natural language processing (NLP): conversational interactions, building and evaluating retrieval augmented generation applications with LLMs and vector stores, and embeddings and semantic similarity Fine-tuning transformer models such as GPT and Dall-E for specific tasks such as domain-specific question answering. The fine-tuning dataset is created using common NLP. Using pre-trained models and training models to solve different computer vision tasks. 	

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Links to other modules	This module is linked to the following modules: <ul style="list-style-type: none">• w.BA.XX.3DA-WIN.XX• w.BA.XX.3SE2-WIN.XX• w.BA.XX.3SE1-WIN.XX• w.BA.XX.3DM-WIN.XX• w.BA.XX.3Pt-WIN.XX																																										
Digital Learning Resources	<ul style="list-style-type: none">• Practice and Application Exercises (with Key)• Online tutorials• Module materials on Moodle																																										
Methods of Instruction	<ul style="list-style-type: none">• Project Work• Lecture• Exercises• Case Studies			Social Settings Used: <ul style="list-style-type: none">• Individual Work																																							
Type of Instruction	<table><tr><td></td><td>Classroom Instruction</td><td>Guided Self-Study</td><td colspan="2">Autonomous Self-Study</td></tr><tr><td>Large Class</td><td>28 h</td><td>24 h</td><td colspan="2"></td></tr><tr><td>Small Class</td><td>-</td><td>-</td><td colspan="2"></td></tr><tr><td>Group Instruction</td><td>-</td><td>-</td><td colspan="2"></td></tr><tr><td>Practical Work</td><td>-</td><td>-</td><td colspan="2"></td></tr><tr><td>Seminar</td><td>-</td><td>-</td><td colspan="2"></td></tr><tr><td>Total</td><td>28 h</td><td>24 h</td><td colspan="2">38 h</td></tr></table>						Classroom Instruction	Guided Self-Study	Autonomous Self-Study		Large Class	28 h	24 h			Small Class	-	-			Group Instruction	-	-			Practical Work	-	-			Seminar	-	-			Total	28 h	24 h	38 h				
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Performance Assessment	<table><tr><td colspan="2">End-of-module exam</td><td>Form</td><td>Length (min.)</td><td>Weighting</td></tr><tr><td colspan="2">-</td><td></td><td></td><td></td></tr><tr><td colspan="2">Permitted Resources</td><td colspan="3"></td></tr><tr><td colspan="5"></td></tr><tr><td colspan="2">Others</td><td>Assessment</td><td>Format</td><td>Length (min.)</td><td>Weighting</td></tr><tr><td colspan="2">Project presentation and Q&A</td><td>Grade</td><td>Einzelarbeit</td><td>0</td><td>100.00</td></tr><tr><td colspan="2">One exercise per block</td><td>Pass/Fail</td><td>Einzelarbeit</td><td>0</td><td>0.00</td></tr></table>					End-of-module exam		Form	Length (min.)	Weighting	-					Permitted Resources										Others		Assessment	Format	Length (min.)	Weighting	Project presentation and Q&A		Grade	Einzelarbeit	0	100.00	One exercise per block		Pass/Fail	Einzelarbeit	0	0.00
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Classroom Attendance Requirement	Other Will be communicated separately by the lecturers.																																										
Compulsory Reading																																											
Recommended Reading	<ul style="list-style-type: none">• Aurelien, G. Hands-On Machine Learning with Scikit-Learn and TensorFlow. O'Reilly Media. ISBN 9781491962299. Chapters 1-3 and 10.																																										
Comments																																											