

Valid for 2023.FS

<b>Module Name: AI Applications</b>	
Module Code	w.BA.XX.3KIA-WIN.XX
Module Description	This module consists of three blocks: 1) Creating a machine learning model for numeric data and integrating it with an application, 2) Generating transformer models and fine-tuning data sets using NLP for text data, and 3) model training for image classification and detection in motion pictures. The performance assessment is an oral exam, where the students present their own project and answer questions related to all three blocks.
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	<b>Module Type:</b> Compulsory
	<b>Program Phase:</b> Main Study Period
ECTS	3
Organizational Unit	W Institut für Wirtschaftsinformatik
Module Coordinator	Benjamin Kühnis (kuhs)
Deputy Module Coordinator	Alexandre de Spindler (desa)
Prerequisite Knowledge	Data Management, Prototyping, Software Engineering 2, Data Analytics
Contribution to Program Learning Goals (Affected by Module)	§ Professional Competence § Methodological Competence § Self-Competence
Contribution to Program Learning Objectives	Professional Competence § 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 Methodological Competence § Scientific Methodology § Work Methods, Techniques, and Procedures § Information Literacy § Creativity & Innovation Self-Competence § Self-Management & Self-Reflection
Module Learning Objectives	Students... § 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 and are able to apply NLP (e.g., NER, Triples, Sentiments) for extractions from text. § 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	§ Machine learning end-to-end process: Creating a dataset, training a machine learning model, deploying it, and integrating it with an application. § Natural language processing (NLP): Extractions from text data and generation of text using common NLP, such as named entity recognition (NER), triple extractions (rule-based, part-of-speech (POS)), and sentiment analysis. § 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. § Creating a data set of images and motion pictures from scratch. This includes creating, filtering, and labeling data. § Extracting key points from the image and motion picture data created to train an image and motion picture classification model. § Visual computing application: Using sign language recognition as an example, a prototype is built which recognizes selected signs and automatically displays them as words.
Links to other modules	The content of this module is linked to the following modules: w.BA.XX.3DA-WIN.XX w.BA.XX.3DM-WIN.XX w.BA.XX.3Pt-WIN.XX

	w.BA.XX.3SE1-WIN.XX		
	w.BA.XX.3SE2-WIN.XX		
Methods of Instruction	§ Lecture § Case Studies § Exercises § Project Work	<b>Social Settings Used:</b> Individual Work	
Digital Resources	§ Practice and Application Exercises (with Key) § Module materials on Moodle § Online tutorials		
Type of Instruction	<b>Classroom Instruction</b>	<b>Guided Self-Study</b>	<b>Autonomous Self-Study</b>
Large Class	28 h	24 h	
Small Class	-	-	
Group Instruction	-	-	
Practical Work	-	-	
Seminar	-	-	
<b>Total</b>	<b>28 h</b>	<b>24 h</b>	<b>38 h</b>
Performance Assessment			
<b>End-of-module exam</b>	<b>Form</b>	<b>Length (min.)</b>	<b>Weighting</b>
Oral exam		20	100.00 %
<b>Permitted Resources</b>	Permitted resources to be communicated.		
<b>Others</b>			
	<b>Assessment</b>	<b>Length (min.)</b>	<b>Weighting</b>
-	-	-	-
Classroom Attendance Requirement	Mandatory Attendance: Other Will be communicated separately by the lecturers.		
Language of Instruction/Examination	English		
Compulsory Reading	-		
Recommended Reading	-		
Comments	-		