

Module title		Abbreviation
Multimodal Interfaces		10-HCI-MMI-152-m01
Module coordinator		Module offered by
holder of the Chair of Computer Science IX		Institute of Computer Science
ECTS	Method of grading	Only after succ. compl. of module(s)
5	numerical grade	--
Duration	Module level	Other prerequisites
1 semester	graduate	--
Contents		
<p>The multimodal interaction paradigm simultaneously uses various modalities like speech, gesture, touch or gaze, to communicate with computers and machines. Basically, multimodal interaction includes the analysis as well as the synthesis of multimodal utterances. This course concentrates on the analysis, i. e. the input processing. Input processing has the goal to derive meaning from signal to provide a computerised description and understanding of the input and to execute the desired interaction. In multimodal systems, this process is interleaved between various modalities and multiple interdependencies exist between simultaneous utterances necessary to take into account for a successful machine interpretation.</p> <p>In this course, students will learn about the necessary steps involved in processing unimodal as well as multimodal input. The course will highlight typical stages in multimodal processing. Using speech processing as a primary example, they learn about:</p> <ol style="list-style-type: none"> 1. A/D conversion 2. Segmentation 3. Syntactical analysis 4. Semantic analysis 5. Pragmatic analysis 6. Discourse analysis <p>A specific emphasis will be on stages like morphology and semantic analysis. Typical aspects of multimodal interdependencies, i. e. temporal and semantic interrelations are highlighted and consequences for an algorithmic processing are derived. Prominent multimodal integration (aka multimodal fusion) approaches are described, including transducers, state machines and unification.</p>		
Intended learning outcomes		
At the end of the course, the students will be able to build their own multimodal interfaces. They will have a broad understanding of all the necessary steps involved and will know prominent algorithmic solutions for each of them. Student will have learned about available tools for reoccurring tasks as well as their pros and cons.		
Courses (type, number of weekly contact hours, language — if other than German)		
V (2) + Ü (2) Module taught in: German and/or English		
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether module is creditable for bonus)		
written examination (approx. 90 minutes) or presentation of project results (approx. 30 minutes) Language of assessment: German and/or English creditable for bonus		
Allocation of places		
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Additional information		
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Referred to in LPO I (examination regulations for teaching-degree programmes)		
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Module appears in		
Master's degree (1 major) Human-Computer-Interaction (2015)		

Master's degree (1 major) Human-Computer-Interaction (2018)
Master's degree (1 major) eXtended Artificial Intelligence (xtAI) (2020)