UNIVERSITÄT BIELEFELD

Module Guide 39-M-Inf-MBP Multimodal Behavior Processing

Technische Fakultät

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This module guide reflects the current state and is subject to change. Up-to-date information and the latest version of this document can be found online via the page

https://ekvv.uni-bielefeld.de/sinfo/publ/modul/308601970

The current and valid provisions in the module guide are binding and further specify the subject-related regulations (German "FsB") published in the Official Announcements of Bielefeld University.

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39-M-Inf-MBP Multimodal Behavior Processing

Faculty

Technische Fakultät

Person responsible for module

Frau Prof. Dr. Hanna Drimalla

Regular cycle (beginning)

Every semester

Credit points

5 Credit points

Competencies

Non-official translation of the module descriptions. Only the German version is legally binding.

The students know the relevant modalities of human behavior. Based on physiological and psychological principles, the students understand possible interpretations of various behavioral signals. Students are able to describe, explain and use diverse computational approaches for behavior analysis. Students will be able to apply various methods of sound, image and video processing as well as machine learning to specific cases of behavior analysis. Students understand the benefits of multimodal fusion and integration and are able to explain different fusion schemes. They are able to transfer the methods they have learned to concrete use cases, explain potentials and name possible limitations and risks.

Content of teaching

The lecture and seminar are dedicated to the multimodal analysis of human behavior. The focus is on interpretation of social behavior and emotion expression, due to their high relevance for human-computer interactions.
In the first part of the course, different modalities of behavioral and affective expression will be presented (e.g., movements, facial expressions, voice, physiological responses) and discussed with respect to their meaning and interpretation. In the context of different methods of sound and video analysis, different approaches are presented to computationally evaluate and interpret these signals.
The second part of the course will focus on aspects of multimodality of behavioral signals. Besides the processing of multimodal signals, one important topic will be the fusion of multimodal signals. On the basis of different use cases of multimodal behavior analysis, the potential but also the limits and risks of multimodal behavior analysis will be explained.

Recommended previous knowledge

Knowledge as in module 39-Inf-NN, module 39-Inf-13, or in module 39-Inf-ML.

Necessary requirements

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Explanation regarding the elements of the module

The (partial) examination of the module can be performed as "ungraded" in some study programs at the students choice. Before the examination a respective determination must be carried out, a later modification (graded - ungraded) is impossible. If the "ungraded" option is chosen, it is not possible to include this module in a study program where this module is deemed to enter the calculation of the overall grade.

Module structure: 0-1 bPr, 0-1 uPr [1]

Courses

Title	Type	Regular cycle	Workload [5]	LP[2]
Multimodal Behavior Processing	lecture	SoSe	60 h (30 + 30)	2 [Pr] [Pr]
Excercise on Multimodal Behavior Processing	exercise	SoSe	30 h (15 + 15)	1

Examinations

Allocated examiner	Type	Weighting	Workload	LP[2]
Teaching staff of the course **Multimodal Behavior Processing (lecture)** *Portfolio of homework assignments accompanying the lecture, usually given weekly, and final written exam (60 min) or oral exam (15 min). The assignments complement and deepen the content of the lecture. Proof of a sufficient amount of correctly solved assignments (usually 50% of the maximum total score in the semester). The final exam covers the content of the lecture and the assignments.*	Portfolio mit Abschlussprüfung	without grades	60h	2
Teaching staff of the course **Multimodal Behavior Processing (lecture)** *See explanations of ungraded examinations*	Portfolio mit Abschlussprüfung	1	60h	2

Further notices

The module can be recognised in the following compulsory optional subject areas (WP):
- WP "Vertiefung Informatik" in the Master's programme Informatics for the Natural Sciences
- WP "Vertiefung Intelligente Systeme" in the Master's programme Intelligent Systems

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Legend

1	The module structure displays the required number of study requirements and examinations.
2	LP is the short form for credit points.
3	The figures in this column are the specialist semesters in which it is recommended to start the module. Depending on the individual study schedule, entirely different courses of study are possible and advisable.
4	Explanations on mandatory option: "Obligation" means: This module is mandatory for the course of the studies; "Optional obligation" means: This module belongs to a number of modules available for selection under certain circumstances. This is more precisely regulated by the "Subject-related regulations" (see navigation).
5	Workload (contact time + self-study)
SoSe	Summer semester
WiSe	Winter semester
SL	study requirement
Pr	Examination
bPr	Number of examinations with grades
uPr	Number of examinations without grades