

## Workshop “Modelle und KI”

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**Abstract:** The workshop focuses on topics at the intersection of the fields of conceptual modeling and AI and explores the value conceptual modeling brings to AI, and, vice versa, the value that AI can bring to conceptual modeling. This covers a wide range of issues such as how to combine learned and manually engineered models, data-driven modelling support, automatic incremental model adaptation, and how to achieve the explainability of learned models e.g. by utilizing conceptual models as background knowledge.

**Keywords:** Conceptual Modelling; AI; Model Learning; Explainability

### Vorwort

With the increasing availability of large amounts of data in practically all application areas, the field of artificial intelligence (AI) has been attracting increasing attention for some time now. The new paradigm of data-driven AI, i.e. learning (domain) models and keeping them up-to-date by using data mining techniques, is highly attractive because it reduces the effort of creating application systems. However, it also has many disadvantages. For example, models generated from data usually cannot be inspected and understood by a human being, and it is difficult to integrate already existing domain knowledge into learned models ? prior or after learning.

The approaches to conceptual modelling as well as earlier approaches to AI have mainly been focusing on the manual engineering of models, which requires a great deal of time and money. Thus, depending on the application domain, these approaches scale up poorly.

In this workshop, we are interested to discuss all kinds of topics at the intersection of the fields of conceptual modeling and AI. More specifically, we would like to explore the value conceptual modeling brings to AI, and, vice versa, the value that AI can bring to conceptual modeling.

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The workshop has been deliberately designed to be strongly discussion-oriented. Apart from an initial introduction into the topic the workshop comprises two papers, which together with additional provocative theses provided by the organizers form the starting point for the discussion part of the workshop.

The paper by Marvin Hubl presents a manually engineered mathematical model for a process coordination problem in agricultural crop production. To estimate appropriate values for the variables in the model, considerable domain knowledge would be needed since the values depend on a multitude of factors from the specific application setting. As a more viable alternative approach, the authors suggest to determine proper variable values using machine learning.

Rittelmeyer and Sandkuhl present an approach to support the usage of AI techniques for enterprise modelling. In several industrial use cases the authors have observed that due to a lack of understanding of AI concepts many companies encounter problems when using AI. To cope with this, the authors have developed a so-called “morphological box” for AI solutions for the purpose of enterprise modelling. A morphological box divides a given problem into different aspects that can be seen as parameters or features and it identifies potential values for those features. The paper concludes with an account of the experiences made when using the morphological box.

Both papers illustrate the fact that there is a huge potential in combining manual model engineering with data-driven model generation: the advantages of both approaches can be combined and their respective disadvantages be mitigated.