



Einladung zum Informatik-Kolloquium

Hendrik Folkerts

Hochschule Wismar

Variability Modeling for Simulation in Engineering Using System Entity Structures

The System Entity Structure (SES) is a high level approach for variability modeling, particularly in simulation engineering, which is under continuous development. In this context, an enhanced framework is presented that supports dynamic variability evolution using the SES approach. An SES describes a number of structure variants encoded in a tree structure with nodes and edges. On the SES a pruning operation is defined, which resolves all decision points on execution, transferring the SES in a Pruned Entity Structure (PES). The PES describes one possible structure variant. Leaf nodes can contain links to a Model Base (MB) storing basic and coupled models. With the help of a build method, an executable model can be built from a PES and basic models from the MB. The entire SES/MB approach is summarized and explained using a real engineering application.

For the SES/MB framework software tools were developed in the research group Computational Engineering and Automation (CEA) at Wismar University of Applied Sciences. The SES tree can be defined interactively in a file browser view. For every node specific attributes or selection rules can be defined. Additionally, a method for pruning was added. During implementation and testing of the pruning algorithm the need to develop design patterns for the SES was recognized.

Analogous to Feature Models basic patterns can be classified in mandatory, alternative, optional and OR. Furthermore there are some combined patterns. Parts of the SES tools and the pruning algorithm are discussed in detail.

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Institut für Informatik (D5), Albrecht-von-Groddeck-Str. 7, Raum 106a