TU Clausthal

Kolloquiums-Reihe des Instituts für Informatik

Freitag, 25.10.2019, 13:30 Uhr
Institut für Informatik (D5), Albrecht-von-Groddeck-Str 7,
Seminarraum 105 (T1)

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Model Specification and Automatic Model Generation for Multiple Simulators Using the eSES/MB Approach

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 simulation model (SM) can be built from a PES and basic models from the MB. For automatic derivation of PES and generation, simulation, and evaluation of SMs the SES/MB approach was extended. This extended SES/MB (eSES/MB) approach is summarized and explained using a case study.

For the eSES/MB framework software tools were developed in the research group Computational Engineering and Automation (CEA) at the University of Applied Sciences Wismar. Different approaches for the generation of SMs for several simulators are discussed. In this context the Functional Mock-up Interface (FMI) as general simulator interface is introduced. The usage of FMI in the eSES/MB approach is presented on the examples of Simulink and Modelica-based simulators. topic is Amazon Web Services, Docker, On-Premise Cloud Solutions, Pivotal Cloud Foundry, IOT peer to peer and scalable architectures.