Doctoral thesis

Incremental Model Synchronization

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Abstract

Model-driven software development is seen as a promising approach to increase the software quality and reduce the costs and complexity of software development at the same time. For this purpose, the software system under construction is described with different models.

However, a problem with this is that the different interrelated models overlap in their information content and the overlappings can result in contradictory statements being made on the software system. In order to obtain an error-free software system the contradictions between the models have to be resolved, i.e., the models have to be synchronized with each other. A manual synchronization is however not only tedious and prone to errors, but also time-consuming and therefore inefficient.

This thesis presents an automatic model synchronization approach. The model synchronization synchronizes related models and therefore resolves existing contradictions between the models. The model synchronization can hereby either be fully executed in a single step or step by step, i.e., incrementally. The presented model synchronization approach is therefore also suitable for large models.