Developing Tomorrow’s Tools: Automatically from Modular Models to Modular Products

Interdisciplinary Project (IDP)

Description
Individualization of customers’ needs lead to a high number of offered product variants. At the same time products become more complex. That challenges both traditional and modern; small- and big-sized companies.

To cope with this problem we developed an innovative approach: (1) based on modular models an overall system model is generated automatically [Roetzer2020b]; (2) a two-level optimization algorithm evaluates the cost-optimized product family design based on Solution Space Engineering (Youtube) [Roetzer2020a].

Task
The approach has already been tested initially with two use-cases: one from industry and one from research. Based on insights from a survey with industry partners, our vision is to build an automated toolbox for model-based product (family) design. We already have a functional prototype, which strives for improvement according to one or more of the following topics: user-friendly interfaces, improvement of existing algorithms (automated model generation, optimization,…), intelligent search algorithms for databases, appealing visualizations. Therefore, we are searching for motivated informatics students, who want to bring our tool to the next level.

Methods of Product Development may serve as a corresponding lecture.

Desired Skills
- Interested in: user interfaces, databases, optimization algorithms, visualization,…
- MatLab experience (optional)
- Structured and well organized

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