Master Thesis: Tool-supported evolutionary exploration of design solutions in MBSE

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**What you will do**

Increasing digitalization and the development towards cyber-physical systems (CPSs) are driving the need for integrated functionalities and stronger connectivity. However, the development of these increasingly integrated systems faces product developers with enormous challenges. Product development requires complex and highly iterative manual optimizations and adaptations. Consequently, new approaches are required that develop design variants automatically and considering all disciplines and restrictions in a resource-saving manner. Generative Design and nature analog principles (especially genetic algorithms) are showing promising potentials. In order to utilize the potentials, a transfer of biological principles to the early design process is necessary. For interdisciplinary product development, the so-called Model Based Systems Engineering (MBSE) has proven its effectiveness. Building MBSE models in the early conceptual phase can support the developer.

The goal of the work is to show the potential benefits as well as the feasibility of a tool-supported evolutionary exploration of design solutions in MBSE.

**What you bring to the table**

- You are studying (business) informatics, computer science or a comparable course of study
- Good programming skills and (ideally) experience with MBSE and SysML
- Analytical mindset and strategic way of working
- You are motivated and like to work independently
- Good language skills in German and/or English

**What you can expect**

- Clearly defined tasks
- Ideal conditions for practical experience
- Cooperation in a committed team

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**Additional questions will be answered gladly by:**
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