Chair of Computational Modeling and Simulation
TUM School of Engineering and Design
Technical University of Munich

Modeling:
Mathematics:
Programming:
Science:

Software Lab:

Model Re-Parametrizing

Description

The parametric design brings engineers dynamic control on BIM modeling, delivering flexible and adaptive models that can adjust to meet varying design requirements. Parametric design is nowadays thoroughly investigated in early design stages and promising for various analyses in all phases of a project lifecycle. However, the parametrization created in the early stages aims to perform specific design objectives. Predefined parametrization is hardly helpful for models with expected variations and is less robust for other analyses.

The concept of "Model Re-Parametrizing" aims at leveraging the full potential of parametric design. This project will investigate the object-based parametrization in the model and enrich the existing parameter configuration based on customized requirements, such as rebuilding geometric references, creating an accessible family catalog, and detecting design constraints. The project will develop a practical approach for parametric model reproduction, facilitating the execution of various analyses on non-parametric models.

Task

- Perform a brief literature review to identify the state-of-the-art of parametric building design;
- Get familiar with Autodesk Revit API (C# & Python) and learn how to master the parameter configuration;
- Implement algorithms that (re-)parametrize geometric and semantic data in BIM models;
- Implement algorithms that automatically detect design constraints in BIM models;

Supervisor

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