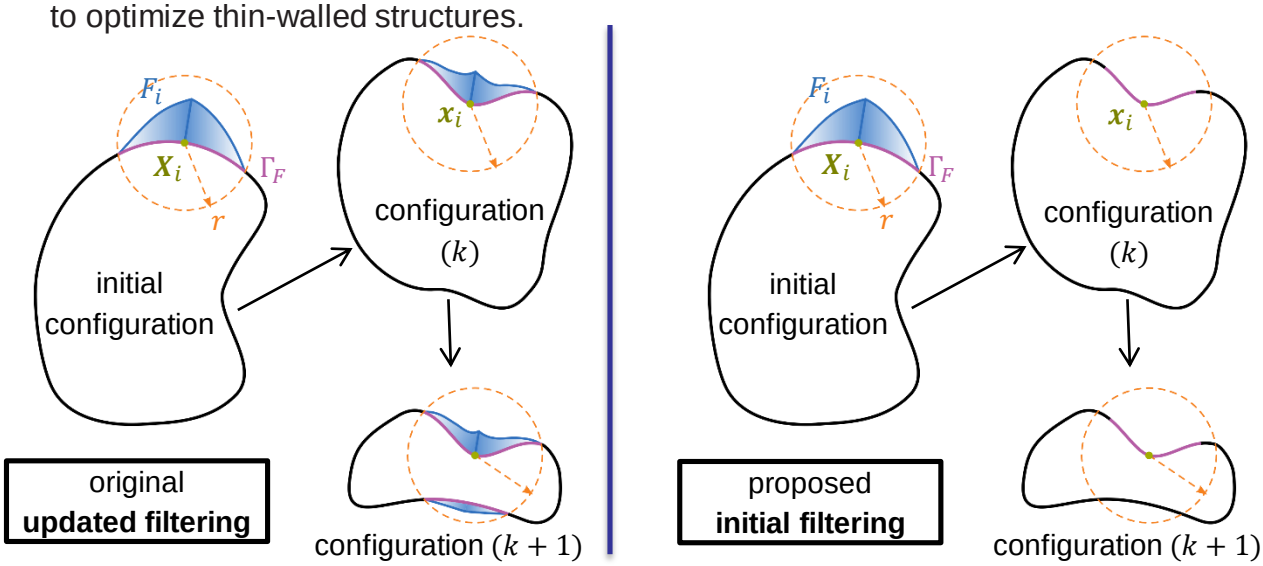
**Lehrstuhl für Statik**
Prof. Dr. –Ing. K.-U. Bletzinger
Arcisstr. 21, 80333 München

# Masterarbeit:

## Shape Optimization with explicit filtering on the initial configuration

Vertex Morphing is explicit filtering technique for node-based shape optimization using gradient-based algorithms. It has emerged as a powerful tool for engineers to optimize thin-walled structures.




The original formulation by [Hojjat] updates the filtering operation according to the new geometry configuration, and hence constructs a non-linear relation between the design control variables and the physical shape. Strictly mathematically speaking this leads to an alteration of the initial optimization problem after each shape change.

In this thesis, an explicit filtering technique based on the initial geometry shall be formulated and differences with the updated approach shall be worked out. Thanks to the new mathematically consistent formulation, other optimization algorithms like the Method of Moving Asymptotes [Svanberg] (popular in Topology Optimization) can be tested out.

Implementations shall be carried out in Kratos Multiphysics. Basic knowledge in C++ and python are essential for a successful work with Kratos Multiphysics.

Betreuer und Kontakt:

David Schmölz
david.schmoelz@tum.de

Bearbeitungs-sprache: Deutsch oder Englisch
Starttermin: variabel