Chair for Computation in Engineering
Deparment of Civil, Geo and Environmental Engineering
Technical University of Munich

Automatic mesh generator in a python environment

Project Characteristics

Modeling:	★★★☆☆
Mathematics:	★★★☆☆
Programming:	★★☆☆☆
Science:	★★★★☆

Setting:

The “Theory of Plates” Python Tool (ToP) of the chair of Structural Analysis provides the possibility to do a Finite Element analysis of plates in bending and of plates in membrane action. So far only simple quadrilaterals can be used to mesh 4 sided geometries.

Your Tasks:

Implement an algorithm (e.g. „advancing front“) to mesh arbitrary geometries using trianglular elements. Rewrite the existing 4-node Finite Element in the ToP to a 3-noded element to enable the use of the new meshes.

Advanced goal: Investigate possibilities to deal with quadrilateral elements (e.g. Trimming).