Semester Thesis / Engineering Project

Topic: Development of Software to Convert Finite Element Models between Nastran and KratosMultiphysics Formats

Description

We are offering an opportunity for a motivated student to undertake a semester thesis focused on the development of a software tool to convert Finite Element (FE) models between Nastran and KratosMultiphysics formats.

The general structure of the software tool was already implemented in Python during other projects and the focus of this thesis is to add functionality to the existing code base by test-driven development. This includes parsing, translating and writing model data such as mesh, boundary conditions, material properties, and solver-specific parameters.

Scope of Work

- Analyze and understand the data structures and file formats used in Nastran (e.g. *.bdf) and KratosMultiphysics (e.g. *.mdpa, *.json)

- Add functionality to the existing code base by test-driven development

- Document the tool

- (Optional) Create FE-Models in Nastran and KratosMultiphysics to test the functionality of the tool

Student Profile

- Enrolled in a Bachelor´s or (preferably) Master´s degree in Aerospace Engineering, Mechanical Engineering, Computational Engineering or related fields

- Strong programming skills, ideally in Python, are a must

- Basic knowledge of Git/Gitlab

- Basic knowledge of Finite Element Method (FEM)

- Experience with FE-Preprocessors (e.g. HyperMesh) and Nastran are a plus

- Independent working style and strong problem-solving skills

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Interested?

Please send your application including your CV, transcript of records, and a short motivation letter to tobias.siemer@tum.de

We´re looking forward to your application!