HiWi position
for students of Mechanical Engineering, CES, SiSc, etc.

Finite Element Code Development in Python

Finite element codes are essential tools for engineers, and researchers to model and simulate real-world complex problems, such as structural analysis, fluid dynamics, and heat transfer. Open-source and commercial softwares typically include innumerable models and computational options, making them vast and complex.

In our research team, we are developing a simple object-oriented Finite Element (FE) code written in Python, able to simulate a wide range of physical problems, from heat transfer to fluid dynamics and structural mechanics. We aim to create a flexible, extentendable code, easy to understand and manipulate, especially for inexperienced users. This HiWi position consists in contributing to the development and improvement of the code.
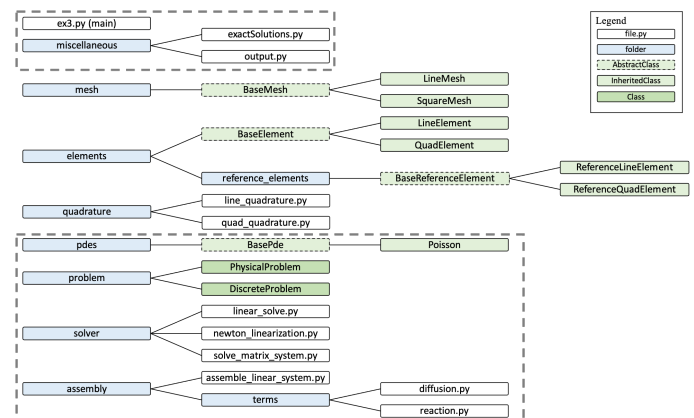

Fig.1: Basic FE code structure.

What we offer

You'll learn how to structure and develop finite element software, gaining hands-on experience with object-oriented programming applied to engineering problems. You will also strengthen yoru knowledge on numerical methods and finite element analysis.

Your tasks will consist of:

- Develop and improve a finite-element object-oriented code
- Participate in debugging, performance enhancement, and documentation of the code

Prerequisites

- Experience with Python programming
- Familiarity with the finite element method (FEM)
- Enthusiasm for problem-solving and research
- Ability to work independently and in a team

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