Master Thesis / Bachelor Thesis / Student Researcher Position

Interval Arithmetic and Generalized Algorithmic Differentiation

Description: At our institute we develop libraries for the computation of derivatives of numerical algorithms (algorithmic differentiation). In the classical sense derivatives are defined for smooth functions but several generalizations for nonsmooth functions exist. Interval arithmetic is a feasible approach that can be used to get rigorous bounds from numerical computation.

Goal: The goal of your thesis is to apply interval-valued algorithmic differentiation in the context of nonsmooth numerical optimization. Depending on your background the focus can be either on implementation of tools and numerical experiments or on the theory of interval-valued differentiation and nonsmooth analysis.

Profile: You should be comfortable with using C/C++ and be open to learning about numerical optimization methods and nonsmooth analysis.

If you are interested in a bachelor or master thesis or a student researcher position (up to 19 hours a week) on this topic, please do not hesitate to contact us!

Contact: Jonathan Hüser
           ITC, Seffenter Weg 23, Room 229
           hueser@stce.rwth-aachen.de