

Research Assistant Position

Efficient Global Optimization for Aircraft Design

Temporary Position (initial contract of 2 years), Salary Level TV-L E13, 100%

Background:

Smart, green and integrated transport is one of society's grand challenges. Research in mobility systems today requires a fundamental different concept from previous vehicles and aircraft, of the optimal properties for the user, and the demands of the changing society. This transformation involves safety, environmental compatibility (e.g. energy budget, noise, pollution emissions), and also new business models from user-owned vehicles toward public transport and shared-mobility concepts. Aircraft design optimization is a challenging task, as various disciplines are involved, and the design space is non-convex and multi-modal. Besides, the disciplinary analysis can be computationally very expensive. Therefore, efficient methods for optimizations are required, which can deal with the mentioned difficulties and be able to find the global optimum of the design problem.

Employment:

The position is located at the Institute of Aircraft Design and Lightweight Structures in Braunschweig. The position is part-time suitable, but should be occupied 100%. The entry date is March 1st 2020, and the duration is initially limited for two years. Based on the outcome of the project, the extension can be considered. Depending on fulfilment of personal requirements, the remuneration is based on the salary level TV-L E13. International applicants may have to successfully complete a visa process before hiring can take place. We are an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin, disability status, or any other characteristic protected by German law. TU Braunschweig aims to increase the share of women in academic positions. Applications from female candidates are explicitly encouraged. Where candidates have equal qualifications, preference will be given to female applicant. Besides, candidates with disabilities will be preferred if equally qualified.

Task:

The main task of this position is to develop a multidisciplinary design optimization (MDO) toolbox, for an under-development aircraft design tool. The MDO toolbox is based on surrogate modeling and global optimization algorithms. Several available toolboxes for optimization and surrogate modeling need to be coupled to each others within the MDO toolbox. The MDO toolbox, later needs to be coupled with the aircraft design tool. After verification of the coupling, the whole framework should be used to design and optimize a test case aircraft.

Who we are looking for:

The requirements for this position are as follows:

- A Master of Science degree in aerospace engineering.
- Knowledge and experience of aircraft design.
- Knowledge and experience of multidisciplinary design optimization.
- Strong programming skills (Python and C++).
- Excellent communication skills in spoken and written English and German.
- Creativity, positive attitude, and perseverance.

Application Process:

Applications should be sent by e-mail to Prof.Dr. Ali Elham (a.elham@tu-braunschweig.de) and must contain the following documents:

- Motivation Letter
- Curriculum Vitae including complete address, phone number, email address, educational background, language skills, and work experience
- Copies of bachelor and master diploma and transcript of grades (and English translation if the original documents are not in English)
- Additional Documents must be provided on request

All documents should be in PDF format in a single file. Personal data and documents relating to the application process will be stored electronically. Please note that application costs cannot be refunded. The deadline for applications is Feb. 15th 2020.