Technische Universität Dresden (TUD), as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

**Faculty of Computer Science**

At the **Institute of Computer Engineering** the **Chair of Compiler Construction** offers a position in a collaborative project for novel programming methodologies for efficient and safe execution of safety-criticial software as

**PhD or Postdoc researcher**

(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting on **01.04.2023**.

***Research areas:*** **Programming languages, source-to-source compilation, code optimization, predictable execution, cyber-physical systems**

***Terms:*** The position is limited to **31.03.2026** (with the option to be extended). The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz – WissZeitVG).

**Position and Requirements**

At the Chair of Compiler Construction we have the long-term vision of shaping how future electronic systems are programmed. This includes defining novel programming methods through domain-specific abstractions and associated compiler infrastructures to enable optimizing software for heterogeneous computing systems in the embedded and high-performance computing domains. In this context, we are looking for a highly motivated researcher to work on a collaborative project between Germany and France that seeks to define methodologies for safe and efficient execution of safety-critical software. The project combines formal methods and benchmarking to capture the timing behavior of applications and defines rules and transformations to guide the application software synthesis for a more predictable timing behavior on state-of-the-art off-the-shelf heterogeneous multicores. The candidate will interact with experts in formal analysis, certification of safety-critical software in the aerospace and automotive domains, and interference analysis in modern hardware. We are looking for a candidate with

expertise in system-level optimization methodologies, high-level compilation, and with a strong interdisciplinary attitude towards research. Knowledge of streaming and dataflow programming models as well as MLIR-based compilation is extremely beneficial. The selected candidate will work with state-of-the-art compilation frameworks and with system simulators for heterogeneous systems.

We aim at attracting the best talent in the respective research fields and expect the following:

**Basic Requirements:**

- an outstanding university master's/ diploma degree or PhD (or equivalent) in computer science, mathematics, electrical engineering or a relevant area;
- an independent, target- and solution-driven work attitude;
- an integrative and cooperative personality with excellent communication and social skills;
- fluency in English - written and oral.

**Preferred Qualification:**

- knowledge of programming languages and methods;
- strong background in computer architecture;
- knowledge of LLVM, Clang and/or MLIR is beneficial;
- knowledge of fundamentals of safety-critical systems is beneficial;
- experience with dataflow and synchronous models is beneficial;
- initial record of creative research is beneficial.

Informal enquiries can be submitted to Prof. Dr.-Ing. Jeronimo Castrillon, Tel +49 (351) 463 42716; E-mail: jeronimo.castrillon@tu-dresden.de

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university and offers a Dual Career Service. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

**What we offer**

You will join a team of enthusiastic researchers who creatively pursue their individual research agendas. The chair is a part of the “Center for Advancing Electronics Dresden”, which offers plenty of resources and structures for career development.

**Application Procedure**

Complete applications (in English only) including motivation letter, CV, copy of degree certificate, transcript of grades (i.e. the official list of coursework including your grades) and proof of English language skills should be submitted preferably via the TU Dresden SecureMail Portal https://securemail.tu-dresden.de by sending it as a single pdf document quoting the reference number **PhD2212-CCC** in the subject header to jeronimo.castrillon@tu-dresden.de or alternatively by post to: **TU Dresden, cfaed, Professur für Compilerbau, Herrn Prof. Jeronimo Castrillon, Helmholtzstr. 10, 01069 Dresden, Germany**. The closing date for applications is **31.01.2023** (stamped arrival date of the university central mail service applies). Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

**Reference to data protection:** Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: https://tu-dresden.de/karriere/datenschutzhinweis

***About cfaed***

***The cfaed is a cluster which brings together 200 researchers from TU Dresden and ten other research institutions in the areas of Electrical and Computer Engineering, Computer Science, Materials Science, Physics, Chemistry, Biology, and Mathematics. The cfaed addresses the advancement of electronic information processing systems through exploring new technologies which overcome the limits of today's predominant CMOS technology. www.tu-dresden.de/cfaed***