

## **Faculty of Computer Science**

At the **Institute of Computer Engineering** the **Chair of Compiler Construction** offers a fixed-term project position in the context of the Center for Scalable Analytics and Artificial Intelligence (ScaDS.AI) starting **May 1, 2022** as

### **Research Associate**

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

*Research area:* **Machine learning for code optimizations for emerging artificial intelligence systems**

*Terms:* The position is limited to **June 30, 2026** (with the option to be extended – subject to further third-party funded projects). 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 the way future electronic systems are to be programmed. We have a strong focus on high-level source to source compilation for parallel, heterogeneous and emerging computing systems. Given the complexity of the optimization space, we investigate means to leverage advances in machine learning to help optimize code. We are interested not only in developing optimizations for today's computing systems for artificial intelligence applications, but also for emerging federated architectures and neuromorphic chips. In this context, we are looking for a highly motivated researcher to work on machine learning models for code and optimization heuristics using bleeding edge machine learning algorithms. The selected candidate will become a member of the vibrant network of researchers at the ScaDS.AI Dresden/Leipzig center, profiting from state-of-the-art machine learning algorithms and working directly with experts in future neuromorphic architectures. In this melting pot, the selected candidate will work with established compiler frameworks (like LLVM and MLIR), with state-of-the-art frameworks for machine learning and code optimizations, and with state-of-the-art simulators, emulators and prototypes of emerging neuromorphic systems.

ScaDS.AI Dresden/Leipzig extends the national competence center for Big Data, ScaDS, established in 2014. Our research bridges the gap between the efficient use of big data and advanced AI. We offer creative scientific work on a fascinating future topic with internationally known experts in an interdisciplinary team at an excellence university and one of the leading high-performance computers for AI in Germany. The position offers the chance to obtain further academic qualification, flexible working hours and a family-friendly working environment, as well as living in a city of science and culture surrounded by a unique landscape.

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

- an outstanding university degree (master/diploma or equivalent) in computer science, mathematics, electrical engineering or a relevant area;
- first research experience, preferably in compilers, applied mathematics (e.g., graph algorithms) and optimization techniques;

- sound knowledge of computer architecture;
- knowledge of artificial intelligence, machine learning, data analytics, data mining or high performance computing;
- Experience with HPC systems, cloud computing, and data management methods is desirable.
- an independent, target- and solution-driven work attitude;
- inter- and multidisciplinary thinking;
- an integrative and cooperative personality with excellent communication and social skills;
- fluency in English - written and oral.

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

Applications from women are particularly welcome. The same applies to people with disabilities.

### What we offer

You will join a team of enthusiastic researchers who pursue creatively their individual research agenda. 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 **PhD2202-ScaDSAI** in the subject header to [recruiting.cfaed@tu-dresden.de](mailto:recruiting.cfaed@tu-dresden.de) or alternatively by post to: **TU Dresden, Fakultät Informatik, Institut für Technische Informatik, Professur für Compilerbau, Herrn Prof. Jeronimo Castrillon, Helmholtzstr. 10, 01069 Dresden, Germany**. The closing date for applications is **March 15, 2022** (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.

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**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](http://www.tu-dresden.de/cfaed)



### About TU Dresden

The TU Dresden is among the top universities in Germany and Europe and one of the eleven German universities that were identified as an 'elite university' since 2012. As a modern full-status university with 17 faculties it offers a wide academic range making it one of a very few in Germany.