Infineon Technologies Dresden GmbH & Co. KG

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Infineon hat rund 58.600 Mitarbeiterinnen und Mitarbeiter aus über 100 Ländern und gehört zu den weltweit führenden Unternehmen der Halbleiterbranche. Der Fertigungsstandort Infineon Dresden wurde 1994 gegründet – damals noch als Teil von Siemens. Heute ist Dresden einer der modernsten und größten Standorte für Fertigung, Technologie- und Produktentwicklung – und beschäftigt inzwischen ca. 3.700 Mitarbeiter*innen. Damit ist Infineon Dresden einer der wichtigsten industriellen Arbeitgeber der Region.

We are looking for a PhD on our site in Munich

Doctoral Thesis: Functional Software Generation (f/m/div)

- Promotion, Kennziffer HRC0198827
- Remotearbeit möglich
- Einsatzort: Bayern, München

- Berufsfeld: Elektronik, Elektrotechnik, Naturwissenschaften
- Vollzeit
- Einstiegstermin: ab 01.01.2025
- Bewerbungsfrist: 07.02.2025

Ihr Aufgabengebiet

- Find the complete job application **here**.

  The tasks within the thesis will consist of:

  - A generic approach for **modeling functionality in a language independent way**
  - Mapping of this target independent model to a **target code specific model** and **generation of code** by un-parsing target code specific models
  - Targeting **C, C++ and RUST** and as an optional extension SystemC, VHDL and Verilog functional code
  - **Assembler and special instruction support** in models and translation to target code
  - **Multi-Precision Floating Point in SW** for general and specialized hardware for AI and DSP
  - Provide an **end-to-end validation with RISC-V** as a target processor
  - **Open Source Contribution**

  This doctoral thesis should also study existing approaches and prove the applicability and get feedback to enhance the methodology.

  The learnings out of the thesis will be:

  - Generic **firmware and hardware design** and implementation
  - **Methodology of 'code generation'** in an industrial environment
  - **Modeling and Meta-Modeling**
  - Various **Modeling and Abstraction concepts** and their implementation

  The industrial doctorate at Infineon: Pursue a doctoral degree at a university and gain professional experience simultaneously - an ideal start for your career. Advance your research with us and profit from our vast network of doctoral candidates and the expertise of a university. Mentorship is handled by both professors and dedicated Infineon employees.

  We are offering a doctoral thesis dealing with code generation, which is a widely accepted approach to boost design productivity be it in hardware (RTL HDL) or software (C, C++, ...). The generation covers at the moment mainly structural aspects as RTL netlists or C++ class diagrams. Functionally is only rarely supported, and if then state diagrams only. Since state diagrams are inefficient to describe e.g. DSP functionality, it becomes clear, that generation of functional software is quite limited today. That is the starting point for this PhD thesis. The goal is to enable and proof the benefit of functional software generation.

  We offer:
  • Realistic, challenging, and impactful problems
  • The possibility of putting problems into an overall context
  • Collaboration with colleagues and teams that is seldom found anywhere in the world in terms of depth and breadth
  • A potential 3 months research stays at top universities worldwide and / or Europe wide cooperation of experts as part of funded research activities
  • An Infineon internal PhD community

  The thesis will be written in cooperation with Technical University Munich and under the supervision of Prof. Dr. Wolfgang Ecker.

Ihr Profil

- Abgeschlossenes Studium

Qualifikationen:

As the ideal candidate you:

- Graduated in **computer engineering, electrical engineering** or a related field with very good grades
- Are interested in **complex, interdisciplinary and interlinked tasks** and should like to solve them together with colleagues
- Possess **good presentation skills**, helping you to present challenging issues clearly and simply
- Are **curious and open** as well as **interested in learning and trying out new things**
- Gained **first experience with metamodeling**, (template-based) **code generation** and/or **model-driven architecture**
- Have knowledge in **object-oriented programming** with languages such as **C ++ and Python** and embedded programming with C and/or Assembler
- Possess **good knowledge of digital design and RTL modeling** in VHDL and/or (System)Verilog and embedded system architectures
- Are **interested in generation and recursive application of generation**, e.g. generation of generators
- Possess very good language skills in **English and ideally German**

We are looking forward to your **online application.**

Kontakt

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- Bewerbungen bitte an: https://jobs.infineon.com/careers/job/563808955939457

Anschrift

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