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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 searching for a PhD at our site in Munich:

Doctoral Thesis: Generation of Generic Code (f/m/div)

- Promotion, Kennziffer HRC0198958
- Remotearbeit möglich
- Einsatzort: Bayern, München

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

Ihr Aufgabengebiet

- See the full job application [here](#).

The tasks within the thesis will consist of:

- A generic approach for **modeling generic target code** in a language independent way
- **Mapping of this target independent model** to a target code specific model and generation of code by unparsing target code specific models
- **Support of various ways to make a code generic**, when the target language supports this (e.g. C-Macros, if-statements with conditions, constant range loops with/without compiler unrolling)
- **Transformations that fully or partially elaborate the target independent model** to fully or partially reduce the genericity in the target code
- **Application to SW** as well as hardware and verification of the correctness of the generated code, be it fully self generated, partially self generated or nor generic
- The challenge of this work is the aspect of **generating generic code**, which is a bit like generating generators

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 Generic Code, which is a widely used method to make a given piece of code more widely usable. Examples are macros and conditional code in languages as C or generics and generate statements in HDLs like SystemVerilog or VHDL. As these methods make only parts of a code visible, they are also sometimes called self-generating methods.

Since the possibilities of self-generation are limited, code generators come more and more in focus. By completely building a code, code generators overcome most the limitations of self-generating approaches. Code generators however have the disadvantage that even a small change requires a re-generation of the complete design. To get best of both approaches, this PhD Thesis targets the generation of generic code.

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 Elektrotechnik, Physik

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** that help you to present challenging issues clearly and simply
- Are **curious and open** as well as **interested in learning and trying out new things**
- Are **experienced in metamodeling**, (template-based) **code generation** and/or **model-driven architecture**
- Possess knowledge in **object-oriented programming** with languages such as C ++ and Python and embedded programming with C and / or Assembler
- Have good knowledge of **digital design and RTL modeling** in VHDL and / or (System)Verilog and embedded system architectures
- Have knowledge in **embedded programming with C**
- 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

- Bewerbungen bitte an: <https://jobs.infineon.com/careers/job/563808955939456>

Anschrift

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