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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 two PhD candidates within the “TIRAMISU” project @ Infineon Munich.

Doctoral Thesis: Detection and recovery mechanisms for analog edge AI hardware (f/m/div)

- Promotion, Kennziffer HRC1022410
- Remotearbeit möglich
- Einsatzort: Bayern, München

- Berufsfeld: Elektronik, Elektrotechnik, Informatik
- 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:

- Development of **low/zero overhead mechanisms** that can be integrated in **digital edge AI platforms** in order to improve the overall reliability and safety
- Investigation of **dedicated mechanisms** to facilitate the evaluation and the assessment of hardware health, e.g., the number of occurred bit-flips or wrong computation results
- Exploration of **in-field, run-time monitoring techniques of hardware health**, and **mechanisms to collect error measurements** by using functional communication units, e.g. on-chip busses for system evaluations
- Development of **schemes to ensure reliability by design** and **by activating in-field mechanisms** which ensure the intended functionality or recover the hardware
- Implementation of **mechanisms to stress the hardware** or to **emulate a relevant stress** to enable a thorough verification of the various assessment methods for the hardware health
- Evaluation of these solutions **on real chips** and **under stress of atomic particles**

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 looking for two PhD candidates within the “TIRAMISU” project (Training and Innovation in Reliable and Efficient Chip Design for Edge AI), which will be funded by the Marie Skłodowska-Curie Actions (MSCA) Doctoral Networks/Industrial Doctorates (DN-ID) in 2023, as part of the European Union's EU Framework Programme for Research and Innovation Horizon Europe.

This thesis aims to develop detection and recovery mechanisms for analog devices in edge AI hardware. It will evaluate mechanisms that can be integrated into analog edge AI platforms to improve their reliability and safety. Due to the different nature of analog circuits, the intended solutions for digital edge AI platforms (DC1.4) cannot usually be reused, except for passing deviation information to higher-level functionalities. In-field mechanisms that can detect or compensate for relevant deviations of circuit-specific parameters or performances will be developed. Similar to DC1.4, mechanisms to stress the analog hardware or emulate relevant stress will be implemented to enable verification of the developed assessment methods.

The thesis will be written in cooperation with Taltech University and under the supervision of professor Maksim Jenihhin.

Ihr Profil

- Abgeschlossenes Studium (Business) Informatik, Electrical Engineering
- Oder gleichwertig qualifiziert.

Qualifikationen:

A doctoral student is a research enthusiast,

- > ...whose interests are scientific research combined with the passion for Infineon's innovative products and applications.
- > ...who enjoys working in an industrial environment in combination with an Infineon partner university.
- > ...who appreciates open communication and the contribution of an international environment.
- > ...and is thus an excellent candidate for a further academic or industrial career after completion of their thesis.

As the ideal candidate you:

- Have **not been working or studying in Germany for more than 12 months in the last 36 months** immediately before your date of recruitment
- Are **eligible for full-time PhD studies** and have a master's degree 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**
- 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/563808956478640>

Anschrift

*Infineon Technologies AG
Sophia Dechant
Stichwort: WIKWAY-Anzeige HRC1022410
Am Campeon 1-15
85579 München
Deutschland*