For the Institute of Computer Engineering (ITEC – Institut für Technische Informatik), Chair for Embedded Systems (CES), we are currently seeking to recruit, limited to four years with the possibility to obtain a Ph.D., a

**Research associate / PhD candidate (f/m/d)**

in the Transreg. Collaborative Research Center (TCRC) 89 »Invasive Computing«
on the topic »Secure and Scalable Distributed Resource Management«

Since many years, the Chair for Embedded Systems works internationally successful in the areas of computer engineering, such as multi-/many-core systems. Many interesting and open problems in these areas need to be addressed to successfully deploy such systems in modern application domains. As example, the most urgent questions about secure and scalable distributed resource management for many-core systems are highlighted in the following.

The quantity and heterogeneity of different computation and memory components in a single chip are rising continuously. This ranges from simple management cores over specialized real-time cores and powerful application cores to graphic processing units and (reconfigurable) hardware accelerators, all combined on a single complex many-core system-on-chip. In order to process the diverse and sometimes very complex resource requests from the applications efficiently, a distributed resource management is needed that is directly integrated into the operating system. In addition to high scalability, security is a prime concern for such systems. For instance, it should not be possible that malicious requests of the application software negatively affect the operating system and the resource management system. At least, such attempts need to be detected timely and their effects need to be isolated. For instance, repeated complex resource requests by an application that demand challenging internal communication and calculation in order to fulfill the request, may reduce the responsiveness of the operating systems to other applications, similar to denial-of-service attacks. Such recent research questions for modern distributed operating systems shall be investigated and addressed in this research project.

**You must have** a very good Master’s degree (or equivalent) in CS or EE with background or specialization in the above-mentioned topics. The ideal candidate (f/m/d) shows a strong interest and motivation to deepen in these topics to a level required for a doctorate. Programming skills in C/C++ and scripting languages will be required, and fluency in written and spoken English is a prerequisite. Knowledge on and practical experience with operating system concepts, operating system programming, and parallel programming/synchronization will be very beneficial. We are looking for a highly motivated candidate (f/m/d) with a strong commitment to research ethics and teamwork. Good communicative skills are mandatory due to the interdisciplinary structure of the project and the team.

**We offer** an attractive and modern workplace with access to excellent facilities of KIT, diverse and responsible tasks, and a wide scope of advanced training options. We also offer interdisciplinary collaboration in scope of the TCRC 89 “Invasive Computing” that covers all aspects of research and development of multi-/many-core systems ([www.invasic.de](http://www.invasic.de)).

We prefer to balance the number of employees (f/m/d). Therefore, we kindly ask female applicants to apply for this job.

If equally qualified, severely disabled persons will be preferred.

Please apply online ([http://www.pse.kit.edu/karriere/joboffer.php?id=3309&language=en](http://www.pse.kit.edu/karriere/joboffer.php?id=3309&language=en)) until Sept. 27th, 2019 using the vacancy number 1044/2019 and reference number 8. Personnel support is provided by Ms. Brückner, Personalservice, Karlsruhe Institute of Technology (KIT), Campus Süd, Kaiserstraße 12, 76131 Karlsruhe. For technical information, please contact Prof. Henkel ([henkel@kit.edu](mailto:henkel@kit.edu) topic: Application CES_C1).

Further details can be found on our website: [www.kit.edu](http://www.kit.edu).

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