



Karlsruhe Institute of Technology

Karlsruhe Institute of Technology KIT

Institute for Anthropomatics and Robotics,  
Vision and Fusion Laboratory (IES)  
Prof. Dr.-Ing. habil. Jürgen Beyerer

Vincenz-Prießnitz-Straße 3  
76131 Karlsruhe

## Postdoc Research Position (f/m/d) in the field of AI in Manufacturing

### Job description:

Funded by the German Research Foundation (DFG), [Research Unit 5339 "AI-based Methodology for the Fast Maturation of Immature Manufacturing Processes"](#) was established in 2023 at KIT and the Fraunhofer IOSB.

You will be part of a large, interdisciplinary team from the fields of production engineering and computer science and will explore fundamentally new approaches in seven sub-projects to make the complex development phases of new production processes faster, more cost-effective and efficient through the targeted use of AI methods.

Your research will be mainly related with two sub-projects of the research group.

[Sub-project F "Management and quantification of maturity improvement"](#): Investigation and development of mathematical methods which allow to quantitatively and meaningfully assess the process maturity of new, still immature production processes along their process development and optimization. The concepts of "observability" and "controllability" known from systems theory are to be generalized and advanced so that a probability-based statement about the maturity of the production process can be derived. Methodologically, approaches of PAC-Learning (Probably Approximately Correct), Bayesian statistics, systems theory and artificial intelligence are to be used as a basis in order to explore and implement a continuous calculation chain starting from observable and controllable process variables up to an easily understandable probabilistic statement about the process maturity.

[Sub-project M1 "Systematic over-instrumentation"](#): The aim of this sub-project is to research and develop methods to initiate, to place and to parametrize additional sensors and actuators to gain more insight into and more influence on the manufacturing process in order to support its improvement and maturation.

Moreover, you should guide and instruct the doctoral candidates who are already doing research with respect to the quantification of process maturity and concerning the systematic over-instrumentation of manufacturing processes.

### Qualification:

- Applicants should hold a PhD degree in the STEM areas and should also have strong English communication skills (both oral and writing).
- A strong background in systems theory and in AI methods.

- Furthermore, candidates should possess a strong willingness for doing research in a team and should have good communication skills.

- We offer:** We offer you an attractive and modern workplace with access to the excellent equipment of the KIT and of the Fraunhofer IOSB, a varied work, a wide range of training opportunities, flexible working time models, an allowance for the job ticket BW and a casino/cafeteria.
- Salary:** The remuneration occurs on the basis of the wage agreement of the civil service in TV-L E13.
- Institute:** [Institute for Anthropomatics and Robotics, Vision and Fusion Laboratory \(IES\)](#)
- Contract duration:** Limited to 2 years.
- Starting date:** July 1, 2025
- Application up to:** April 25, 2025
- Contact person:** For technical details please contact Prof. Dr.-Ing. Jürgen Beyerer, [juergen.beyerer@iosb.fraunhofer.de](mailto:juergen.beyerer@iosb.fraunhofer.de), Phone +49 721 6091 210
- Application:** Please send your application including a cover letter, your CV, and all certificates/referees in electronic form to Prof. Dr.-Ing. Jürgen Beyerer [juergen.beyerer@iosb.fraunhofer.de](mailto:juergen.beyerer@iosb.fraunhofer.de)

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

Recognized severely disabled persons will be preferred if they are equally qualified.

