

PhD Student / Research Assistant (f/m/d) in the Field of Process Control

Job Description:

The [Digital Process Engineering \(DPE\) Group](#) of the Institute of Mechanical Process Engineering and Mechanics of the Karlsruhe Institute of Technology (KIT) focuses on the development and application of combined model- and data-based methods and concepts for control, automation, and optimization of complex dynamic processes, systems and plants. This also includes interfaces to robotics and autonomous systems and their integration into highly automated process chains. An essential aspect thereby is the interconnection of dynamic subsystems to form systems with desired properties and behavior. This results in links to a wide range of applications in areas such as process engineering and production technology, life science engineering, health technologies, energy technology, the circular economy, and land- and sea-based mobility.

The DPE group is seeking at the earliest possible date for a highly qualified and motivated PhD student to work on dynamic process modeling and in particular the model- and data-based estimation, optimization, and control design for a novel electro-bio hybrid process for the conversion of CO₂ to high-value products. This will include the implementation of the concepts at a test-rig of KIT. The position and the research activities are embedded in a joint German-Canadian project funded by the Deutsche Forschungsgemeinschaft (DFG) and the Natural Sciences and Engineering Research Council of Canada (NSERC). The project will be conducted together with academic partners from KIT and Queen's University in Kingston, Ontario (Canada). Willingness to work in an interdisciplinary team is mandatory.

Personal Qualifications:

You should provide

- a master degree in Process Systems Engineering, Bioprocess Engineering, Technical Cybernetics, Mechanical Engineering, Electrical Engineering, or a related discipline with a major in control theory or control systems engineering focusing on nonlinear and/or distributed parameter systems;
- profound knowledge in mathematical modeling of complex dynamical systems, modern control and observer/estimator design techniques (optimal, predictive, nonlinear), and their implementation and evaluation. Experience in the practical implementation of control and estimation concept on embedded devices, industrial PCs or process control units is beneficial;
- ability to work and to communicate in a team;
- excellent command of the English language in spoken and written form is mandatory. Commandment of the German language in spoken and written form is beneficial.

Salary: Salary category 13 TV-L, depending on the fulfillment of professional and personal requirements.

Organisational Unit: Institute for Mechanical Process Engineering and Mechanics (MVM)

Contract Duration: limited to 3 years

Entry Date: as early as possible

Application Deadline: 23.02.2024

Application Documents one-page cover letter,
curriculum vitae,
diplomas and transcripts,
names and contact information for at least two professional references

Contact Person for Topic-Related Questions: Prof. Dr.-Ing. habil. Thomas Meurer
Email: thomas.meurer@kit.edu.

Karlsruher Institut für
Technologie
Personalservice

