

Research Assistant (m/f/d)

**in the Faculty of Civil Engineering and Environmental Sciences
at the Institute for Mathematics and Computational Simulation**

(Salary according to pay group E13 TVöD)

Starting as soon as possible, initially on a two-year fixed-term basis with the possibility of extension (employment duration according to the Academic Fixed-Term Contract Act, WissZeitVG), either full-time or part-time. The position is expressly geared towards qualification for a doctorate (Dr.-Ing.), and active support is provided to achieve this goal.

As part of the project *PICO—Physics-Informed Machine Learning for Nonlinear Problems in Solid and Contact Mechanics* cutting-edge physics-informed machine learning techniques, such as artificial neural networks and neural operators, are being applied to nonlinear solid and contact mechanics problems. Beyond fundamental research on methods, a key objective is the industrial applicability of the software solutions developed, which is why this project is being carried out in close collaboration with the world market leader for FEM simulation software, Ansys Inc. The research associate will work independently and in close collaboration with the project leaders and institute head, contributing to the realization and further development of the research vision. The research associate will work independently and in close collaboration with the project leaders and institute head, contributing to the realization and further development of the research vision.

About Us:

The University of the Bundeswehr Munich is firmly established in both the national and international research landscape. As a campus university with excellent foundational resources, it offers ideal conditions for high-quality teaching and research. The [Institute for Mathematics and Computational Simulation \(IMCS\)](#) provides a unique interdisciplinary environment with expertise in numerical modeling and method development. The institute's research and teaching focuses include Finite Element Methods (FEM) for solid, structural, and contact mechanics, as well as multi-field and multi-scale problems, High Performance Computing (HPC), machine learning, and digital twins.

Applications range from civil engineering and environmental sciences (e.g., critical infrastructure) to aerospace engineering, advanced manufacturing technologies (e.g., composite materials), biomechanics, and biomedical engineering. Our research projects cover the entire spectrum from model creation and numerical methods development to code development, optimization, and uncertainty quantification (UQ).

To this end, the IMCS, in collaboration with research partners at the Technical University of Munich (TUM), develops and maintains the software projects [4C](#), one of the most powerful FEM research codes worldwide, and [QUEENS](#), a unique library for comprehensive analyses of large-scale computational models—from parameter studies to inverse problems. Since 2020, the institute has operated the Data Science & Computing Research Lab, which includes an HPC cluster with over 1,000 computing cores, providing optimal conditions for internationally recognized top-tier research.

Your Responsibilities:

- Working on innovative research projects, including their presentation and documentation
- Scientific publishing and contributing to research grant applications
- Supporting academic teaching in **German** (exercises, labs, teaching materials) within the programs of the Faculty of Civil Engineering (BAU) and in Mathematical Engineering
- Research-related administrative tasks, such as those related to HPC software development

Qualification Requirements:

- Excellent university degree (Diploma or Master's degree) in Civil Engineering, or a comparable degree in Mechanical Engineering, Aerospace Engineering, Electrical Engineering, or in Applied Mathematics, Physics, or Computer Science
- For postdoctoral applicants: a high-quality Ph.D. in one of the fields mentioned above
- Strong theoretical skills and a solid foundation in basic principles (e.g., mechanics, mathematics), computational mechanics (e.g., FEM), and programming (e.g., C++)

What We Expect:

- High motivation and commitment to scientific work at an international top-level
- Strong independence, team spirit, and determination
- A high degree of initiative and the ambition to "get things done" in a small team
- Strong communication and teaching skills, as well as the ability to supervise students
- A responsible and self-directed approach to work
- Excellent communication and teamwork skills, along with an interest in scientific collaboration
- Competency in promoting gender equality and diversity
- Commitment to upholding democratic values and principles as outlined in the German Basic Law

What We Offer:

- High degree of freedom in research and teaching
- A positive working atmosphere in an excellent, dedicated team within a well-equipped environment
- Opportunities for professional development and advancement
- Flexible work hours, with options for remote work/telecommuting upon agreement
- Close mentorship and interaction with postdoctoral researchers, lab leaders, and professors
- Opportunities for further academic qualifications (e.g., Ph.D., habilitation)
- Active engagement with numerous leading research groups and universities worldwide
- Excellent career prospects in academia or industry
- A campus university with excellent infrastructure, including an on-site daycare and kindergarten (run by a parent initiative), and a family support office offering guidance on balancing family, caregiving, and professional responsibilities
- Placement in pay grade 13 under the public sector collective agreement (TVöD), subject to § 12 TVöD and based on actual duties and fulfillment of personal/tariff requirements
- Work at a reputable, family-friendly employer with secure financial standing
- Access to targeted professional development and a wide range of training and educational opportunities
- Participation in company health promotion programs
- Competitive salary under the public sector collective agreement (TVöD)

Employment can also be arranged on a part-time basis if desired. The Bundeswehr promotes gender equality in the workplace and, therefore, especially welcomes applications from women.

Under the German Social Code IX (Sozialgesetzbuch IX) and the Equal Opportunities for Disabled Persons Act, we expressly welcome applications from individuals with disabilities; applications will be individually reviewed to ensure compliance with the position's requirements.

The Bundeswehr supports the goals of the National Integration Plan and welcomes applications from individuals with a migration background.

Have we sparked your interest?

If so, please send your complete application documents (cover letter, CV, diplomas, and work certificates) in PDF format via email by **December 31, 2024** to:

Prof. Dr.-Ing. Alexander Popp
Phone for inquiries:

imcs@unibw.de
+49-89-6004-4628

Additional Requirements:

- A certified German translation must be provided if application documents are in a foreign language.
- For foreign educational qualifications, proof of recognition in Germany is required.

By submitting your application, you consent to the storage, processing, and transfer of your personal data to those involved in the application process. For more information on data privacy, please refer to the following link: <https://www.unibw.de/home/footer/datenschutzerklaerung>

We look forward to receiving your application!