UNIVERSITY OF COLOGNE


Photo: Simon Wegener

Faculty of Mathematics and Natural Sciences

PhD student (f/m/x) in the area of Scientific Machine Learning

Department of Mathematics and Computer Science/Division of Mathematics

We are one of the largest and oldest universities in Europe and one of the most important employers in our region. Our broad range of subjects, the dynamic development of our main research areas and our central location in Cologne make us attractive for students and researchers from around the world. We offer a wide range of career opportunities in science, technology, and administration.

The research of our group in the area of Scientific Machine Learning (SciML) focuses on the development and application of machine learning models for the numerical solution of partial differential equations. We develop efficient solvers, in particular domain decomposition and multilevel methods, as well as surrogate models for numerical homogenization methods and classical discretization approaches in fluid dynamics and solid mechanics with applications in medicine and engineering.

YOUR TASKS

- Work on a research project in the field of SciML
- Develop novel hybrid, machine learning accelerated solvers as well as solvers with increased accuracy
- Apply novel SciML solvers in various applications from medicine and solid mechanics, e.g., in medical image processing and segmentation, simulation of fluid flow dynamics or solid mechanic problems, as well as surrogate models for different parts of the chosen numerical simulation
- Algorithmic development and advancement of efficient training methods for the considered machine learning models
- Support teaching activities for 3 SWS (three units of 45 minutes each per week during the semester)

YOUR PROFILE

- Excellent university degree (Master's degree) in mathematics, computational science & engineering or a related field
- Strong background in classical machine learning
- Solid command of Python and common machine learning libraries (TensorFlow, PyTorch etc.)
- Good knowledge of discretization of partial differential equations
- Good English and German language skills, both written and spoken
- Good communication and teamwork skills

WE OFFER

- A diverse working environment with equal opportunities
- Support in balancing work and family life
- Flexible working time models
- Extensive advanced training opportunities
- Occupational health management offers
- Opportunity to work remotely

The University of Cologne promotes equal opportunities and diversity. Women will be considered preferentially in accordance with the Equal Opportunities Act of North Rhine-Westphalia (Landesgleichstellungsgesetz – LGG NRW). We also expressly welcome applications from all suitable candidates regardless of their gender, nationality, ethnic and social origin, religion, disability, age, sexual orientation and identity.

The position is available from 1 May 2025 on a part-time basis (29,87 hours per week). The position is to be filled for a fixed term until 30 April 2028. If the applicant meets the relevant wage requirements and personal qualifications, the salary will be based on remuneration group 13 TV-L of the pay scale for the German public sector.

Please apply online with proof of the required qualifications without a photo under: https://jobportal.uni-koeln.de. The reference number is Wiss2501-24. The application deadline is 15 March 2025.

For further inquiries, please contact Professor Dr Axel Klawonn (stellenausschreibung-klawonn@uni-koeln.de) and take a look at our FAQs.

HR EXCELLENCE IN RESEARCH