
Postdoc Position on Data-driven Modeling of Materials and Engineering Physics (m/w/d)

Professorship of Data-driven Materials Modeling

Department of Engineering Physics and Computation - Technical University of Munich

email: contmech@mw.tum.de

A post-doctoral position is available in **Data-driven Modeling of Materials and Engineering Physics**. The successful candidate will be expected to work at the interface of Computational Science, Physics-based modeling and Probabilistic Machine Learning. The problems of interest pose unique challenges in un/semi-supervised learning due to the high dimensionality, the presence of physical invariances and symmetries and the scarcity of data as compared to typical machine learning applications.

In terms of **Physical Modeling**, this particular position requires experience in the one or more of the following areas:

- Continuum Thermodynamics (i.e. solid/fluid mechanics)
- Molecular Dynamics

In terms of **Computational and Data-driven Modeling**, this particular position requires experience in the one or more of the following areas:

- numerical solution of (stochastic/deterministic) PDEs/ODEs.
- fundamentals of probability and statistics with preference given to candidates with experience in Bayesian formulations.
- supervised/unsupervised (probabilistic) machine learning.
- scientific programming (independently of language).

The Professorship of Data-driven Materials Modeling (*formerly* Continuum Mechanics) is part of Department of Engineering Physics and Computation in the School of Engineering and Design at the Technical University of Munich. The research efforts of the group center around topics such as uncertainty propagation in physical and engineered systems, design and optimization in the presence of uncertainty, Bayesian inverse problems with applications in biomechanics, coarse-graining of atomistic descriptions and model-order reduction. Interested candidates should check on arxiv.org our latest work.

Qualifications:

Candidates should be proficient in scientific computing and probabilistic modeling and should have a Ph.D. by the time of appointment in any Engineering discipline or Applied Mathematics/Statistics or in Machine Learning. Experience in Bayesian modeling is very desirable.

Interested candidates should apply by emailing **Prof. P.S. Koutsourelakis** by **December 1st 2022** at the following address:

contmech@mw.tum.de

with the Subject: **Postdoc position on Data-driven Modeling of Materials** and include (in PDF format):

- a CV with the names of up to three references.
- a statement of research experience, interests and goals. This should describe how these relate to the topics of **physical and data-driven modeling mentioned on the first page of this document. Generic statements that do not address these matters will result in the automatic rejection of the application without further consideration.**
- up to 3 indicative publications/preprints.

Evaluation of applications will start immediately. The initial contract duration will be up to 2 years and will depend on the candidate's qualifications. The salary is in accordance with the German public service salary scale (100% TV-L E13). Teaching duties will be in accordance with TUM regulations. TUM is an equal opportunity employer. TUM aims to increase the proportion of women and therefore particularly welcomes applications by women. Applicants with severe disabilities will be given priority consideration given comparable qualifications.

As part of your application for a position at the Technical University of Munich (TUM), you submit personal data. Please note our privacy policy in accordance with Art. 13 General Data Protection Regulation (DSGVO) <http://go.tum.de/554159> for the collection and processing of personal data in the context of your application. By submitting your application, you confirm that you have read the privacy notice of TUM.