University of Stuttgart
Germany

Within the Heisenberg Group for Data Analytics in Engineering at the Institute of Applied Mechanics (CE) and the Stuttgart Center for Simulation Science (SC SimTech) we have a current opening for a

Postdoc (m/f/d)
Metadata schemes and Ontologies
(up to TV-L 14, full time (or part time), until December 31, 2025)

The University of Stuttgart stands for outstanding, globally recognized research and first-class teaching in one of the most dynamic industrial regions in Europe. As a reliable employer, the university supports and promotes the academic careers of its researchers. It is proud of its employees, who currently come from over 170 different countries. The university is a partner for knowledge and technology transfer and focuses on interdisciplinarity.

The Heisenberg Professorship Data Analytics in Engineering (DAE) is equivalently attributed to the SC SimTech and the Institute of Applied Mechanics (CE). The professorship is an essential part of the Cluster of Excellence EXC-2075: Data-Integrated Simulation Science. The aim of DAE is the development of innovative data-integrated methods with emphasis on material simulation and on material-related data-driven approaches. Making material-related data from heterogeneous sources (simulations, models, experiments) accessible in a sustainable FAIR way is our ambition. Within the National Research Data Infrastructure Germany (NFDI) we have a current opening which will boost the digitalization in material science and engineering within the consortium NFDI-MatWerk.

THE PROJECT

Within the NFDI-MatWerk consortium of the National Research Data Infrastructure Germany (NFDI), the digitalization of materials science and engineering is to be implemented in cooperation with all participating groups from all over Germany. To this end, customized software tools, infrastructure concepts and knowledge graphs are being developed. The resulting digital data space will map the complex relationships between different types of materials data and make them easily usable to achieve synergy effects between scientific groups and disciplines.

This knowledge-graph-based infrastructure should be able to be addressed to enable fast, complex search queries and evaluations and make the data sustainably usable for approaches in the fields of Big Data and Artificial Intelligence. The University of Stuttgart is actively contributing to NFDI-MatWerk in the fields of Metadata and Ontologies. The activities are carried out by the Heisenberg Group for Data Analytics in Engineering (DAE). Withing NFDI-MatWerk we are closely linked to the Forschungszentrum Jülich and the FIZ Karlsruhe within the Task Area Ontologies.

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YOUR TASKS

Are you interested in supporting the Data Analytics in Engineering group, located at the Institute of Mechanics (CE) and the SC SimTech, in the implementation of NFDI-MatWerk in the area of domain-specific ontology development? In our international and interdisciplinary team of scientists you work on the following tasks:

- Designing, modelling, developing and adapting structured semantic data and ontologies
- Recording domain-specific needs from the material and simulation sciences in conjunction together with domain experts
- Merging of different semantic data sets by means of manual "ontology matching" and "ontology alignment" as well as (semi-)automatic "ontology mapping", e.g. using machine learning methods
- Development of new tools as well as adaptation of existing tools for visualization and modelling of domain-specific ontologies
- Data description and integration using knowledge graphs as well as methodological development work to enable data mining and analysis of heterogeneous data sets (including simulation and experiment)
- Presentation of results at scientific conferences
- Participation in workshops and training for developers and users of the MSE ontology to be developed
- Research work in the area of domain-specific ontology development and in interplay with ongoing and planned projects is explicitly desired
- Supervision of master and bachelor theses

WE ARE LOOKING FOR

We are looking for a colleague who is interested in supporting science through pragmatic solutions. For this we seek candidates with

- A master's degree in the fields of information science, data science or computer science or comparable fields
- Ideally, a completed PhD in one of the above-mentioned fields or relevant experience in the above-mentioned area of responsibility
- Experience with relevant tools and frameworks (e.g. Protégé, VocBench)
- Knowledge of web-relevant scripting languages (XML, HTML, JavaScript) as well as programming languages (e.g. Python, C++, Java, Ruby) and common database systems is an advantage
- Knowledge of relevant metadata standards from the domain is an asset
- Very good communication skills in English (written & oral)
- The ability to think analytically and conceptually and enjoy collaborative work in an international and interdisciplinary team at the University of Stuttgart and within NFDI-MatWerk.

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OUR OFFER

We support the digital transformation in materials science and engineering. Thereby, we contribute major elements to the international competitiveness in a challenging, international and dynamic environment. You are taking over a key position within our team by making valuable contributions to an infrastructure that will enable sustainable research in materials science and engineering! We support you by:

- An optimally equipped work space in a dynamic and highly interdisciplinary scientific environment comprising international researchers from various disciplines
- Integration into the established Cluster of Excellence EXC-2075: Data-Integrated Simulation Science
- Continuing education for professional and personal skills
- Optimal conditions for work-life compatibility
- Flexible working time models (full time, part time) and 30 holidays per year
- Given conditions are met payment according up to group TV-L E14

At the University of Stuttgart, we actively promote the diversity of our employees. We have set ourselves the goal of recruiting more female scientists and employing more people with an international background and with disabilities. We are therefore particularly pleased to receive such applications.

Female applicants will be given preferential consideration in areas in which women are underrepresented, provided they have the same aptitude, qualifications and professional performance. Severely disabled applicants with the same qualifications will be given priority.

As a certified family-friendly university, we support the compatibility of work and family, and of professional and private life in general, through various flexible modules. Our employees have access to a multi-award-winning company health management system and a wide range of continuing education programs. A Barrier-Free Campus working group is committed to reducing barriers. Our Welcome Center helps international scientists get started in Stuttgart.

HOW TO APPLY

If you are highly motivated and capable of addressing and solving scientifically difficult problems and if you are interested in doing research in an internationally oriented and highly successful team, you should send your application to fritzen@simtech.uni-stuttgart.de . Please submit your complete application by e-mail with a single pdf attachment comprising a cover letter, academic CV, a full publication list, names and contact addresses of up to two referees, as well as academic certificates and transcript of records. If you have any questions regarding this opening or your application, please contact Prof. Felix Fritzen (fritzen@simtech.uni-stuttgart.de).

Information on the collection of personal data in accordance with Article 13 of the GDPR can be found via the following link: www.uni-stuttgart.de/en/privacy-notice/job-application .

Heisenberg Group for
Data Analytics in Engineering
www.mib.uni-stuttgart.de/dae