Technische Informationsbibliothek (TIB) - University Library

As the German National Library of Science and Technology, our future-oriented services ensure the infrastructural requirements for a high-quality supply of information and literature for research in science and industry. With the Open Research Knowledge Graph (ORKG), we are working to revolutionise the exchange and use of scientific knowledge in the digital age. TIB, being part of the Leibniz Research Association, is with around 600 employees one of the largest technical information centres in Germany, having three main functions: 1. Acting in the capacity of the Leibniz Information Centre for Science and Technology, our forward-looking services secure the infrastructural requirements for providing researchers in science and industry with high-quality information and literature. 2. Carrying out cutting edge research to further expand TIB's role as a German information centre for the digitisation of science and technology. 3. Offer library services for the Leibniz University Hannover. The Technische Informationsbibliothek (TIB) – Leibniz Information Centre for Science and Technology – is looking to employ a Research Associate/Doctoral Researcher - Natural Language Processing and Causal AI for Scientific Reasoning (m/f/d) in Program Area D, Open Research Knowledge Graph, Data Science and Digital Libraries Research Group (Prof. Dr. Sören Auer), starting as soon as possible. The position is fixed-term for three years. The appointment is subject to final funding approval by the Leibniz Association. The regular weekly working time is 39.8 hours (full-time). The position is generally suitable for part-time work. Mobile work is possible to a certain extent, subject to operational requirements. Remuneration is based on pay scale group 13 TV-L.

Research Associate/Doctoral Researcher - Natural Language Processing and Causal AI for Scientific Reasoning (m/f/d)

City: Hanover; Starting date (earliest): At the earliest possible; Remuneration: 59.300 € - 84.300 €; Reference number: 44/2026; Closing date: 14/11/26

Tasks

The position is part of the Leibniz Collaborative Excellence project EcoAIRE - AI-assisted hypothesis assessment in invasion biology and the restoration of freshwater ecosystems under fragmented and heterogeneous ecological evidence, which brings together expertise in natural language processing and scientific knowledge representation at TIB, ecology at the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB), and causal modeling at the German Research Center for Artificial Intelligence (DFKI).

At TIB, your research will focus on NLP for scientific and causal information extraction. You will develop methods that turn scientific evidence into structured, machine-actionable representations of hypotheses, variables, context, uncertainty, and causal relationships. The research goes beyond extracting isolated facts to modeling how evidence fits together and under which conditions scientific claims hold. Building on this, you will explore causal and world-model-inspired approaches for scientific reasoning, including simulation, intervention-based reasoning, and hypothesis assessment under changing conditions.

Your tasks include

- Develop a multimodal, provenance-aware framework for integrating heterogeneous scientific knowledge sources-including publications, images, supplementary information, datasets, and other research artifacts-into structured representations for hypothesis assessment.
- Develop language-model and agentic methods to extract, normalize, align, and synthesize hypotheses, variables, context, evidence, uncertainty, and causal or mechanistic relationships across these sources.
- Investigate causal and world-model-inspired approaches to scientific reasoning for simulating interventions and assessing how hypotheses generalize across changing conditions.
- Develop multifaceted evaluation frameworks for AI-supported hypothesis assessment, including expert-grounded and LLM-as-a-judge paradigms.
- Publish research findings in peer-reviewed NLP, Semantic Web, AI, and machine learning conferences and journals, and contribute to project reports and dissemination activities.

Requirements

- Completed Master’s degree or equivalent in computer science or a closely related field, such as artificial intelligence, natural language processing, machine learning, data science, or computational linguistics.
- Demonstrable experience in research or software development using Python, together with practical knowledge of modern software engineering practices such as Git-based collaboration, automated testing and reproducible experimentation.
- Demonstrable hands-on experience with transformer-based models and large language models, including the use of frameworks such as PyTorch, Hugging Face Transformers, or comparable technologies for NLP applications.
- Practical experience developing agentic or multi-agent AI workflows, including tool use, structured outputs, orchestration, or iterative reasoning pipelines.
- Very good command of English, at least C1 level, for scientific communication, collaboration and publication.

Desirable additions to your profile

- Experience with fine-tuning or adapting large language models and/or building advanced RAG pipelines, using technologies such as PyTorch, Hugging Face Transformers, Sentence Transformers, LangChain, LlamaIndex, FAISS, Qdrant, or similar, including embedding-based retrieval, reranking, vector search, and structured generation.
- Knowledge of causal modeling and causal inference, such as causal graphs, structural causal models, or intervention-based reasoning.
- Experience with Semantic Web technologies.
- Domain knowledge in ecology, particularly freshwater ecology, invasion biology, or restoration ecology, or experience working in interdisciplinary scientific projects.

What we offer

Our mission is to keep rethinking and innovating the provision and use of research data and information. In TIB's Research and Development Department, you have the opportunity to advance your career in a sizable, dynamic and excellent environment. We provide a scientifically and intellectually inspiring environment with an entrepreneurial mindset embedded in a leading technical university and one of the largest technical information centers being part of the Leibniz Association. TIB collaborates closely with the L3S Research Center at Leibniz University Hannover, one of the world's leading research institutes in the field of Web & Data Science, within the Leibniz Joint Lab Data Science & Open Knowledge. Last but not least, we attach great importance to an open, creative and fun work atmosphere.

Furthermore, we offer

- a job in the public service oriented toward the common good under the collective agreement for the public service of the German states (TV-L), with remuneration according to pay scale group 13 TV-L.
- a flexible workplace in terms of time and space with offers to reconcile work and family life, such as mobile and remote work options as well as flexible working time models (flexitime).
- a special annual payment at the end of the year and 30 days of vacation per year with a five-day working week as well as additional days off on Christmas Eve (December 24th) and New Year's Eve (December 31st).
- a modern workplace in a central location of Hannover with a collegial, attractive and versatile working environment.
- an employer with a wide range of internal and external further education and training measures, workplace health promotion and a supplementary pension scheme for the public sector (VBL).
- employee discount in the canteens of the Studentenwerk Hannover as well as the possibility to use the various offers of the University Sports Hannover at a discount.
- independent and future-oriented activities that offer variety and room for personal development.
- funding for necessary equipment, conference and research visit travel.
- to work in the context of a national research and innovation project.
- a portfolio of research infrastructure and technology components to build on, including TIB AIssistant, the Open Research Knowledge Graph (ORKG), ORKG Ask and research software from the SciKnowOrg ecosystem.

Application

We look forward to receiving your application until November 14, 2026. To submit your application, please use our online application form at https://tib.eu/bewerbungsformular-44-2026eng.

Paper applications are also possible on an equal basis. In this case, please send your complete application documents with the subject 44/2026 before November 14, 2026 addressed to

Technische Informationsbibliothek (TIB)
Personalservice

Herrn Daniel Ridder
Welfengarten 1 B
30167 Hannover
Germany

or alternatively as a single PDF document file to bewerbung@tib.eu. For applications in digital from, please send a PDF file with a maximum size of 10 MB.

We invite you to include an indication of your annual salary expectations with your application.

In the case of foreign university degrees, it is mandatory to submit a Statement of Comparability from the Central Office for Foreign Education (ZAB) for the final assessment of the hiring requirements during the hiring process. A fee will be charged for this. This obligation does not apply if the foreign university degree has already been assessed by an expert and is listed in the ANABIN database of the ZAB as an equivalent university degree.

TIB is an equal opportunity employer, providing ideal working conditions, and continuously taking action to enable its employees to combine career interests with family life. It wants to promote equal career opportunities for women and men in particular and therefore urges qualified women to apply.

Severely disabled candidates and those with equivalent status will be given preferential consideration in the event of equal suitability. If you wish your rights as a person with a severe disability or as a person deemed equivalent to a person with a severe disability to be taken into account during the selection process, please inform us of this voluntarily at an appropriate place in your application (e.g. in the cover letter or CV, or at another clearly highlighted point) and enclose appropriate proof (e.g. a copy of the disability certificate).

Equal opportunity is one of our core organizational values. We therefore welcome applications regardless of nationality, ethnic and social origin, gender identity, gender expression and/or gender characteristics, religion and worldview, age, sexual orientation, and identity.

Please indicate in the subject of your application which job exchange brought our offer to your attention.

Please note that your application documents will not be returned, and application and travel costs cannot be reimbursed.

For more information about the TIB, please visit: www.tib.eu/en/

More information at https://stellenticket.de/208060/TUBS/
Offer visible until 15/11/26