

We are looking for a new team member, full-time, as soon as possible:

Research Associate Position in Contrastive Learning and GeoAI

The Professorship Big Geospatial Data Management is seeking to fill a research associate position (doctoral candidate) to support research activities around hard negative sampling for contrastive learning and its applications in geospatial artificial intelligence.

About us

The Professorship Big Geospatial Data Management concentrates on the methodology of acquisition, organization, compression, analysis, and visualization of georeferenced or geometric data on large scales. We put emphasis on methods of distributed computing, machine learning, image and text analysis, randomized data structures, high-performance computing, and quantum algorithms. Beyond this research, we aim to support computational thinking and computational problem-solving in the Earth sciences at large.

Project description

The intended research is part of a project funded by the German Research Foundation (DFG) and focuses on hard negative sampling for contrastive representation learning. We want to develop sampling strategies that go beyond similarity in the embedding space by integrating domain knowledge such as spatial distance, sensor metadata, or existing maps. A second part of the project investigates how such strategies can be used to identify informative subsets (coresets) of large geospatial datasets. Application domains include cross-view geo-localization and visual place recognition on aerial, street-view, and LiDAR data.

Your responsibilities

- Research related to the topics of the project and beyond
- Taking a leading role in pursuing the objectives of the project by proactively developing solutions
- Regular publication and presentation of research results in peer-reviewed journals and conferences

Your qualifications

- Completed master's degree in mathematics, computer science, physics, geoinformatics, data science, or related fields
- Ability to work independently, willingness to learn and acquire new skills
- Interest in working in a highly international research team
- Background in machine learning is required; familiarity with contrastive learning, computer vision, or geospatial data is welcome
- Very good programming skills (Python, C++, etc.) are essential
- Fluent English language skills (written and spoken) are required, German is a plus

Our offer

- A full-time position (100 %, TVL-E13) as a research associate for 3 years
- Participation in visionary research projects
- The opportunity to pursue a doctoral degree
- Access to a modern and international workplace with a close connection to the research institutes and industry in the Munich "Space Valley"

Your application

The Professorship Big Geospatial Data Management (TUM) strives to raise the proportion of women in its workforce and explicitly encourages applications from qualified women. Applications from disabled persons with essentially the same qualifications will be given preference.

If you are interested in working in our team, please send your application consisting of a motivation letter, curriculum vitae, copies of your degrees and transcripts, employment certificates, and any other relevant documents as a single PDF file to **applications.bgd@ed.tum.de** no later than **1 August 2026**. The envisaged starting date is between September and November 2026.

As part of your application, you provide personal data to the Technical University of Munich (TUM). Please view our privacy policy on collecting and processing personal data in the course of the application process pursuant to Art. 13 of the General Data Protection Regulation of the European Union (GDPR) at <https://portal.my-tum.de/kompass/datenschutz/Bewerbung/>. By submitting your application, you confirm that you have read and understood the data protection information provided by TUM.

Technische Universität München

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