Data Engineering Research Group
TUM School of Computation, Information and Technology
Technische Universität München

Doctoral Researcher (TVL E-13 100%)

Bias in Large Language Models

About Us

The Data Engineering research group at the Technical University of Munich (Campus Heilbronn) is looking for a doctoral researcher for an interdisciplinary project on **Bias in Large Language Models**, focusing on political bias.

The project develops novel methods to predict the performance of LLMs, design routing strategies in federated multi-LLM environments, and mitigate political bias by aggregating diverse model outputs. The goal is to build fairer and more transparent AI systems. The project is conducted in close collaboration with the **University of Queensland (Australia)**, offering exciting opportunities for international research stays.

Job Description

The research tasks include:

- Conduct research on query performance prediction for LLMs
- Design and implement federated querying strategies for routing and combining answers from multiple LLMs
- Develop and evaluate methods to measure and mitigate political bias in generated answers
- Collaborate with international project partners and contribute to joint publications
- Support the organization of a research workshop and dissemination activities

As part of the team, you are expected to:

- Lead teaching activities (exercises, seminars, practical courses) offered by the research group
- Collaborate with the other members of the team
- Participate in project meetings, colloquiums, and retreats
- Supervise undergraduate theses and seminars on topics related to the project

The possibility of doctoral studies is given in the case of fulfillment of the admission requirements of the corresponding TUM doctoral regulations.

Requirements

We seek an outstanding candidate who brings the following:

- Excellent master's degree in computer science or related subjects
- Strong background in at least one of the following:
    - Natural Language Processing or Large Language Models
    - Information Retrieval or Knowledge Graphs
    - Machine Learning
- Interest in responsible AI, fairness, and bias in data and algorithms
- Strong demonstrable commitment to research
- Proficiency in the programming language Python
- Proficiency in English, excellent speaking and writing skills
- Strong interpersonal and communication skills
- Ability to work in an interdisciplinary team
- Experience in software development projects is a plus

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We Offer

- The position as a doctoral researcher (m/f/d) (remuneration group TV-L E13, 100%) for three years. The earliest starting date is October 2025
- A working place at the Data Engineering group (https://www.cs.cit.tum.de/cde/) located at the modern TUM Campus Heilbronn (https://bildungscampus.hn/en/)
- Research stays at the University of Queensland, Australia (https://www.uq.edu.au)
- Vast opportunities to develop your research, professional, and entrepreneurial skills with courses available at the TUM Graduate School

Application

Please send your application documents in a single PDF file by email to maribel.acosta@tum.de. The application is open until 30. September 2025.

Motivational letter and curriculum vitae are mandatory. References, thesis, certificates, list of publications, are optional.

TUM strives to raise the proportion of women in its workforce and explicitly encourages applications from qualified women.

The position is suitable for disabled persons. Disabled applicants will be given preference in case of generally equivalent suitability, aptitude and professional performance.

Data Protection

As part of your application for a position at the Technical University of Munich (TUM), you will submit personal data. Please note our data protection information in accordance with Art. 13 of the General Data Protection Regulation (GDPR) on the collection and processing of personal data in the context of your application https://portal.mytum.de/kompass/datenschutz/Bewerbung/. By submitting your application, you confirm that you have taken note of TUM's data protection information.

Contact

Prof. Dr. Maribel Acosta (maribel.acosta@tum.de) will be glad to answer any questions.