

## Research Associate (m/f/d) on Data-Driven Optimization in Hospital Operations – TUM School of Management

(Pay group TV-L E13, 75%)

We are currently seeking a highly motivated **Research Associate** (m/f/d) - a PhD student - to work on the research project "Data-driven robust admission and discharge control for hospitals with readmissions," funded by DFG and supervised by the Professor of **Business Analytics** at the Center for Digital Transformation of TUM Campus Heilbronn. This project focuses on developing advanced methodologies to optimize hospital admission and discharge decisions under uncertainty, aiming to balance resource utilization and patient outcomes. The ideal candidate will have a strong background in operations research, machine learning, and data analytics, with proficiency in programming and statistical/stochastic modeling. This position is available immediately for a fixed term of 2 years. An extension is possible depending on the funding availability.

### About Us

The TUM Campus in Heilbronn is part of the renowned **Technical University of Munich**, which is ranked among the top universities in Europe. Top performance in research and teaching, interdisciplinarity and talent promotion are its hallmarks. In addition, it has strong alliances with companies and with scientific institutions around the world. TUM is one of the first three universities of excellence in Germany. The TUM School of Management is also the first management school at a technical university in Germany to receive Triple Crown accreditation. Worldwide, only about 80 institutions (about 1%) can boast this distinction.

The **Center for Digital Transformation** at TUM Campus Heilbronn conducts research on the challenges and opportunities of digitalization, with the goal of developing practical solutions that benefit both society and the economy. Our research outcomes directly influence our teaching, preparing students for future challenges in a rapidly evolving world.

### Your Tasks ...

- Constructing a mathematical framework that integrates predictive and prescriptive analytics
- Analyzing healthcare data to support decision-makers
- Participation in high-quality research projects aimed at publication in top journals
- Presentation of research findings at international conferences
- Collaboration with other universities, research institutions, and industry

### Your Profile ...

We are seeking a highly motivated candidate with a strong interest in operations research and analytics, particularly with applications in healthcare. The ideal candidate should possess a solid foundation and expertise in the following areas:

- **Mathematical Programming and Optimization:** Deep understanding of operations research principles, industrial engineering, and optimization techniques.
- **Advanced Probability and Statistics:** Proficiency in applied probability, stochastic processes, and control theory to analyze complex systems.
- **Advanced Econometrics and Theoretical Computer Science:** Strong knowledge in econometric methods, algorithm design, and the theoretical aspects of computer science.
- **Programming Skills:** Proficiency in programming, particularly in Python, and experience with data analysis tools and techniques.
- **Data Analysis Expertise:** Demonstrated experience in handling and analyzing large datasets, with the ability to derive meaningful insights.
- **Language Proficiency:** Excellent command of English, both written and spoken, to effectively communicate research findings and collaborate within an international research environment.

You must have, or be close to obtaining, a master's degree or PhD from a university or department with a strong international research reputation. You must hold a bachelor's degree with solid training in the above courses in a well-known institute.

### We Offer...

- A highly interdisciplinary research unit (Center for Digital Transformation) with currently 6 professors and 23 PhD students,
- A position as academic staff, starting from the earliest date possible,
- The prospect of creating and teaching knowledge about current issues within the framework of digitization,
- An excellent working atmosphere in a success-oriented team, and
- The opportunity to experience and shape exciting research projects.

### Application Process

We look forward to receiving your informative and complete application documents as a single PDF document via e-mail by **15 January 2025** to [bewerbungen.cdt@mgt.tum.de](mailto:bewerbungen.cdt@mgt.tum.de) quoting the keyword "**Business Analytics**". For any questions you may have, do not hesitate to contact Ms. Corina Häußermann ([bewerbungen.cdt@mgt.tum.de](mailto:bewerbungen.cdt@mgt.tum.de)).

Your application should include:

- Cover Letter (One page including GPA, GPA ranking (X/XX), university ranking for all degrees; a list of core and related courses to the program as well their grades; IELTS/ TOEFL/GRE scores; any other rewards and evidences).
- CV
- Degrees and transcripts
- IELTS/ TOEFL/GRE scores
- Reference letters (One letter of recommendation sending from an international scholar who knows you well and the names and e-mail addresses of two further referees (university professors))
- English writing sample
- Research proposal (about 2 pages) motivating your specific interest in the abovementioned position

If you apply in writing, we request that you submit only copies of official documents, as we cannot return your materials after the completion of the application process.

TUM is committed to increasing the representation of women in its workforce and strongly encourages applications from qualified female candidates. Candidates with disabilities will be given preference in the case of equivalent qualifications. The position can also be filled on a part-time basis. Remuneration is based on the collective wage agreement of the federal states (TV-L E13), depending on qualifications.

### Data Protection

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.mytum.de/kompass/datenschutz/Bewerbung>. By submitting your application, you confirm to have read and understood the data protection information provided by TUM.