Technische Universität Dresden - Collaborative Research Center "AgiMo"

TUD Dresden University of Technology, as a University of Excellence, is one of the leading and most dynamic research institutions in the country. TUD has established the Collaborative Research Center (CRC) “Data-driven agile planning for responsible mobility” (AgiMo), funded by the German Research Foundation (DFG). This interdisciplinary center, involving four universities and the German Aerospace Centre (DLR), will conduct research on 20 research topics with 25 PhD candidates within the next years. The following main research goals are pursued by this Center: (1) develop a new set of consistent scientific methods for mobility planning and management, (2) integrate a new set of modular metrics for responsible mobility, (3) embed the planning methods into the open data AgiMo Digital Twin, (4) develop participatory planning methods based on the technical outcomes from the digital twin to create future scenarios for responsible mobility that are technically well-grounded and at the same time represent stakeholder preferences. The integrated Research Training Group (RTG) will provide doctoral researchers with an attractive qualification program, foster networking, enable internationalization and mobility, and create a collaborative environment. TUD and the CRC embody a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD, diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

Research Associate / PhD Student (m/f/x)

The Collaborative Research Center "AgiMo", funded by the DFG, offers a position, subject to the availability of resources, as Research Associate / PhD Student (m/f/x) (subject to personal qualifications employees are remunerated according to salary group E 13 TV-L) starting October 1, 2025. The position is limited until June 30, 2029. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG). The position aims at obtaining further academic qualification (usually PhD). Job ID: TRR408-B4 Investigators: Prof. Dr. Meng Wang, Chair of Traffic Process Automation, and co-supervised by another expert in traffic control Requirements: excellent or very good university degree (diploma, master's degree) in transport engineering or civil/electrical/control engineering or mathematics, or related study programs with a solid basis in optimization Description of the PhD topic (subproject B4 - Multiobjective optimization of traffic signals for multimodal traffic): This project aims to develop a cooperative and adaptive traffic signal control approach that addresses the needs of multiple modes of buses, AMOD vehicles, private cars, cyclists, and pedestrians, and optimizes multicriteria involving passenger delays, traffic efficiency, environmental impact, and equity, among others. To achieve these objectives, the project will leverage the potential of connectivity and autonomy of AMOD vehicles while mitigating the potential negative effects of a large volume of AMOD vehicles in the traffic flow. The project will build on multidisciplinary methods from traffic flow theory, dynamical systems, and optimal and cooperative control. These methods include accurate detection of queues and prediction of queue dissolution by combining traffic flow theory with data from roadway and AMOD sensors, nonlinear optimization of the signal plan, cooperative control of traffic signals and AMOD vehicle trajectory, and performance evaluation in traffic simulation.

City: Dresden; Starting date (earliest): 01/10/25; Duration: limited until June 30, 2029; Remuneration: subject to personal qualifications employees are remunerated according to salary group E 13 TV-L; Reference number: TRR408-B4; Closing date: 15/07/25

Working field

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Independent and cooperative qualification through scientific research within the project; training in the technical tasks of the individual dissertation topic through study of the literature and in making the objectives more precise; working on the individual PhD study project with its focus on queue estimation and traffic signal optimization in collaboration with other CRC members (fellow students and supervising professors); implementation of the planned research program, evaluation and interpretation of the results, elaboration and presentation of the research; participation in lectures, workshops and summer schools according to the guidelines of the RTG curriculum; supporting scientific graduation work (Bachelor/Master/Diploma) in the subject-specific research field; regular reporting on research progress to the supervising professors; publishing the results of the research work individually and in concert with others; cooperative maintenance of internal ex-change platforms (database, information pages, etc.); summarizing the results of the individual doctoral study project in a dissertation within the due time of 3 years and 9 months. Successful candidates will work together with approx. 15 researchers at the Chair of Traffic Process Automation and together with the other universities and chairs being part of the CRC.

Requirements

We are looking for first-class graduates with expertise in the CRC-addressed PhD subjects, high interdisciplinary desire to learn and willingness to cooperate, openness for internationalization and diversity, very good verbal and written English communication skills as well as the absolute determination to submit the dissertation after 3 years and 9 months of research.

What we offer

• Pioneering Research Environment: Shape the future of data-driven transport planning and mangement through the involvement in collaborative research.
• Cross-Disciplinary Collaboration: Immerse yourself in a highly collaborative and interdisciplinary research environment, where you'll work alongside experts from fields such as transport and urban planning, engineering, data science, computer science.
• Skill Development: Our extensive qualification concept goes beyond research, offering targeted training in research methods, project management, and leadership skills. This ensures you graduate not only as a specialist in your field but also as a well-rounded professional.
• Global Networking: Collaborate with our network of local and international partners, fostering connections that transcend geographical boundaries and enrich your academic and professional network. This includes a paid research stay abroad for three months.
• Career Advancement: Receive dedicated support for fellowship applications and tailored guidance for your career.
• Quality of Life in Dresden: Experience a high quality of life in Dresden, with its dynamic urban scene, relatively affordable living, rich cultural offerings, and vibrant nightlife.

Application

Further questions regarding the open PhD positions can be discussed with the supervisor, Prof. Dr. Meng Wang (vpajob@tu-dresden.de).

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Please submit your detailed application including a cover letter detailing your research interests stating the job-ID “TRR408-B4” along with your curriculum vitae, academic transcripts with marks, a letter of recommendation and your publications (if applicable) by July 15, 2025 (stamped arrival date of the university central mail service or the time stamp on the email server of TUD applies), preferably via the TUD SecureMail Portal https://securemail.tu-dresden.de by sending it as a single PDF-file to vpajob@tu-dresden.de or to: TU Dresden, Chair of Traffic Process Automation, Prof. Dr. Meng Wang, Helmholtzstr. 10, 01069 Dresden, Germany. Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: https://tu-dresden.de/karriere/datenschutzhinweis.