Technische Universität Dresden (TUD), as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies 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.

The Faculty of Transport and Traffic Sciences “Friedrich List”, the Institute of Railway Systems and Public Transport, has a vacancy for the Chair of Rail and Public Urban Transport as soon as possible has a vacancy position of a

**Research Assistant / Postdoc (m/f/d)**

(if the personal requirements are met, E 13 TV-L)

initially for 1 year (duration of employment according to WissZeitVG) with the option of further academic qualification. There is the possibility of further employment.

It is expected that in the future railways will carry a larger share of the demand for passengers and freight and will become the most important land transport mode worldwide. However, we face many major challenges on the road to achieving these goals. These include intrinsic challenges such as capacity constraints and complex planning problems, as well as external challenges such as breakdowns, adverse weather conditions, and climate change. At the Chair, we apply advanced quantitative techniques to a wide range of problems, from long term planning to real-time traffic management in passenger and freight transport. We also address a variety of transport systems, from public transit, subways, light rail, and conventional rail to high-speed and hyperloop systems.

**Tasks:**

- Development of AI models (ML, RL, NN) or optimization models for capacity analysis, scheduling or rescheduling.
- Combination of OR and AI techniques for railway timetabling and/or rescheduling.
- Robust rail schedule design considering various new aspects, such as fluctuations in traffic demand, autonomous driving, moving block systems, virtual coupling.
- Multimodal network planning and operation (at urban, national or international level).
- Interactions between traffic demand, rail capacity, and system performance.
- Learning and predicting traffic performance during disruptions (e.g., system failures, floods, attacks).

**Requirements:**

- PhD in transport, operations research, machine learning, computer science, or a related field.
- Experience with optimization models, ML modeling, and/or data analysis.
- Passion for scientific research in collaboration with practice.
- Good communication in English, both written and oral.
- Experience in helping to write project proposals an advantage.
- Knowledge of the German language is not a requirement.

**We offer you:**
- Participate in a dynamic and international research environment in collaboration with industry and leading universities around the world.
- Support defining and preparing scientific project proposals.
- Collaboration in the railway operations laboratory [https://tu-dresden.de/bu/verkehr/ibv/ebl](https://tu-dresden.de/bu/verkehr/ibv/ebl) to integrate and test own models and algorithms in a physical railway model.
- Work in a unique research environment of the Faculty of Transport and Traffic Sciences that unites researchers the fields of planning, management, automation, sustainability, simulation, optimization, analytics and machine learning.

If you have any questions, please contact Dr. Nikola Bešinović at nikola.besinovic@tu-dresden.de.

The TUD strives to increase the proportion of women and therefore explicitly asks them to apply. The university is a certified family-friendly university and has a Dual Career Service. Applications from severely disabled persons are particularly welcome. In case of equal aptitude, these persons or persons who are equal to them by law according to SGB IX will be given preference.

Please send your application with the usual documents (letter of motivation, CV, list of publications, description of a research topic of your interest (1/2 page), 2 references) by **21.10.2022** (stamped arrival date of the university central mail service applies) as a PDF document, preferably via the SecureMail Portal of TU Dresden [https://securemail.tu-dresden.de](https://securemail.tu-dresden.de) to: bsrv@tu-dresden.de or to TU Dresden, Professur für Bahnverkehr, öffentlicher Stadt- und Regionalverkehr, z. Hd. Herrn Dr. Nikola Bešinović, 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](https://tu-dresden.de/karriere/datenschutzhinweis).