Immediate PhD Student Position –
A Decision-Making System for Extreme Natural Hazards Events

Tel Aviv University (Israel) and Technical University of Denmark (Denmark)

Tel Aviv University

Tel Aviv University (TAU) is the largest, most comprehensive, and most dynamic research and teaching institution in Israel, offering the country's most diversified range of study and research fields, with nine faculties and over 30,000 students, 1,200 researchers and 125 schools and departments across the sciences, humanities, and arts. Located at the heart of Israel's economic, technological, and cultural center, TAU is proud of its liberal and pluralistic spirit. TAU ranks first in Israel (Times & Taiwan rankings); as a global top 100 innovation university (Reuters); and seventh in the world – and first outside the USA – for producing successful, VC-backed entrepreneurs (PitchBook). The University's cutting-edge advancements are reinforced through ties with prominent research institutions ranging from NASA and Harvard to Tsinghua University and CERN.

Future Mobility Lab at Tel Aviv University

Future Mobility Lab is a cutting-edge lab in the field of Smart Mobility. In the lab we investigate the potential and impacts of innovations and New Mobility forms on transportation systems and urban environment with an explicit focus on large-scale complex systems, transport-environmental policies, future/automated mobility solutions, machine learning and equity. For this purpose, we develop and use state-of-the-art methodologies in behavioral models, simulation, data collection, and analytical tools. For more information see: https://futuremobilitylab.sites.tau.ac.il/

Technical University of Denmark

DTU develops technology for people. With our international elite research and study programmes, we are helping to create a better world and to solve the global challenges formulated in the UN's 17 Sustainable Development Goals. Hans Christian Ørsted founded DTU in 1829 with a clear mission to develop and create value using science and engineering to benefit society. That mission lives on today. DTU has 13,500 students and 6,000 employees. We work in an international atmosphere and have an inclusive, evolving, and informal working environment. DTU has campuses in all parts of Denmark and in Greenland, and we collaborate with the best universities around the world.

Intelligent Transportation Systems at DTU

The Intelligent Transportation System Section belongs to the Transport division of the Department of Technology, Management and Economics (DTU Management) at DTU. The division conducts research and teaching in the field of traffic and transport behaviour and planning, with particular focus on behaviour modelling, machine learning and systems modelling and simulation.

DTU Management conducts excellent research in the intersection between management, technology and economics. We develop solutions in close cooperation with companies and public authorities. Our research aims at strengthening welfare, productivity, and sustainability within the society. A key element is the role of technology and its interaction with industry and individuals. Explore more at www.man.dtu.dk.

Project Overview

Climate change is intensifying extreme weather events, particularly urban flooding, across many regions worldwide. Coastal cities face compounded risks from both climate-driven flooding and tsunami threats from seismic activity, both of which can severely damage transportation networks and disrupt urban mobility. As these escalating risks demand urgent adaptation responses, reinforcement learning (RL) emerges as a valuable approach for identifying optimal intervention strategies. RL can determine the most effective timing and placement of adaptation measures despite inherent uncertainties. This research integrates RL methodologies with advanced simulation-based tools to optimize flood risk reduction strategies, targeting both immediate flood impacts and cascading disruptions to urban systems.

Responsibilities

The specific responsibilities will involve:

- Contribute to the development and implementation of research framework and models
- Solve abstract complex problems/ideas and convert them into useable algorithms/software modules.
- Work with other research scientists to turn transport models into working code, involving the design, implementation, and testing of the models and code.
- Data preparation and analysis
- Work with researchers on publishing research papers
- Participate in scientific dissemination activities, such as scientific conferences, workshops, etc.

Requirements

- Masters in Transportation, Applied Mathematics, Operations Research, Computer Science, or related field
- General knowledge of Transportation Systems
- Programming skills (preferably Python)
- Data analysis and data preparation skills
- Quantitative methods used in exact science, such as Statistics and Modelling
- Independent and self-motivated, yet able to work as part of a multidisciplinary team
- Demonstrated ability to effectively manage concurrent technical tasks with competing priorities
- Proficient verbal and written communication skills in English
- Willingness to learn

Preferential advantages:

- Knowledge of Machine Learning
- Relevant experience in the transport engineering field
- Experience using transport simulation software
- Able to work with GIS programs, especially QGIS

Duration and financing

- The candidate is expected to complete a PhD at Tel Aviv University, in collaboration with the Technical University of Denmark.
- The doctoral degree is granted after writing a doctoral thesis, which is typically based on the student's scientific publications, and a public defense.
- The PhD studies take approximately 4 years. The candidate is expected to spend roughly half of the time in each of the universities. This requirement is flexible, but a minimum of one year must be spent at each university, placed within the relevant research groups. Detailed arrangements will be negotiated with the selected candidate.
- The candidate is expected to receive a full-time salary/scholarship from the host universities for the entire duration of the PhD.
- Tel-Aviv University offers international students housing, and Israel has a comprehensive health and social security system. Tel Aviv University's proximity to the artistic and commercial capital of Israel allows students to absorb the best of Israeli culture and society. English is spoken everywhere. For more information about living in Tel-Aviv: https://en-environment.tau.ac.il/International/City.
- At the Technical University of Denmark, the student will join the Intelligent Transportation Systems section. Housing will be self-catered. For more information about living in Lyngby and Copenhagen: https://www.dtu.dk/english/education/graduate/admission-and-deadlines/application_procedure/after-application/accommodation

To Apply

Interested applicants should submit their full CV/resume, a 1-page cover letter, and a list of three referees, compiled in a single PDF document, to Prof. Bat-hen Nahmias-Biran (bathennb@tauex.tau.ac.il) and Prof. Francisco Camara Pereira (camara@dtu.dk) by **Sep 1 2025**. We regret that only shortlisted candidates will be notified.