Immediate PhD Student Position – Personalized and Automated Transportation

Future Mobility Lab at Tel Aviv University

Future Mobility Lab is a new 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, 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/

Project Overview

Emerging transport technologies such as automated vehicles (AVs) may hold out great benefits to the urban environment and various travelers, yet AV's impact on specific groups with unique characteristics has hardly been explored in the literature, not to mention the lack of empirical evidence. The main objective of the proposed study is to fill this gap by exploring the mobility behavior, preferences, and needs of unique groups and to develop optimal automated mobility solutions for them using state-of-the-art simulation tools that closely mimic reality. To achieve such goals, we will analyze unique datasets of individual mobility preferences, design and optimize smart mobility solutions such as automated mobility on demand at the operational level, particularly fleet size with multi-class vehicles, along with an operation system including dispatching, scheduling, and pricing strategies designed specifically for the needs of the studied groups; and compare the AV solutions under different scenarios in a large-scale city and evaluate the expected impact on groups' mobility and consequently on their quality of life.

Responsibilities

The specific responsibilities will involve:

- Contribute to the development and implementation of behavioral and optimization models (e.g., demand generation, tour creation, fleet optimization).
- 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 the researchers on publishing research papers.

Requirements

- Master's in Engineering, Applied Mathematics, Operations Research, Computer Science, or related field

- General knowledge of Transportation Systems
- Programming skills
- 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
- Willingness to learn

Preferential advantages:

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

Duration and financing

- 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 receive a high and full-time scholarship.

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 Dr. Bat-hen Nahmias-Biran (bathennb@tauex.tau.ac.il) by **31 May 2024**. We regret that only shortlisted candidates will be notified.