New urban design and analyses methods for transforming mobility and urban morphology

Summary

TalTech Academy of Architecture and Urban Studies opens a PhD position in a research project concerning future urban technology mediated cities. The cooperative project is established by TalTech, City of Tallinn and several private sector partners. The aim of the project is to suggest data-based solutions to analyze and guide built environment, mobility and service development related to various aspects of the ´smart´ future city. Under the topic 'New urban design and analyses methods for transforming mobility and urban morphology', the PhD candidate will study anticipated changes in urban mobility system, and apply computational methods to explore impacts of individual decisions regarding e.g. mode of transportation to emerging implications in urban flows and spatial configurations.

Research field:	Building and civil engineering and architecture
Supervisor:	Jenni Vilhelmiina Partanen
Availability:	This position is available.
Offered by:	School of Engineering Department of Civil Engineering and Architecture
Application deadline:	Applications are accepted between June 01, 2020 00:00 and July 03, 2020 23:59 (Europe/Zurich)

Description

Cities are in a flux: Urban complex spatio-functional system, mobility and urban economics are evolving drastically due to rapid progress and innovations in energy, ICT and other fields of technology, along with life-style changes resulting from these. While the role of corporeal urban environment will retain, it will transform. Urban transformation is intertwined with emerging phenomena such as virtuality and autonomous transport guided by AI and enabled by extremely fast telecommunication connections. However, technology is not only a driver of change, but it also provides tools and methods for better understanding and guiding it. Approaches from data analytics to simulation and machine learning are required to respond to emerging challenges in urbanity, reflected against credible future visions. For uncertainty of the future, making the city becomes crucial, along with new tools and methods of urban planning and design. The research in this position will focus on the topology and (anticipated) use of transportation networks considering novel, emerging modes of transportation in an innovative manner. Furthermore, the resulting changes in mobility, traffic flows and 'urban metabolia' in corporeal city in general are studied with appropriate methods, for example using dynamic, distributed models and simulations or network theoretical methods. The research problems may concern, but are not limited to, the following issues: Impact of the characteristics of future mobile, multi-location and virtual work to the role of accessibility along with the relevance of the related urban theories, e.g. space syntax; the effect of the individual decisions regarding transportation mode (public, private, current, future modes) to the loads in (the parts of) the network, exploring potential threshold values; or relations between the network topology and its actual use, e.g. the emergent, cumulative role of individual drivers in congestion.

Responsibilities and tasks

Based on relevant literature, the PhD candidate will suggest future probable trends regarding the modes of transportation, and the general emerging impacts on mobility patterns in cities. The candidate will simulate the emergent impact of individual mobility decisions on a higher (neighborhood, city and/or regional) scale, and the role of the network structure in that. In the project, the PhD candidate will be responsible for data gathering, processing, analyzing and simulation, including selecting appropriate tools and methods for research. The candidate will reflect the results to relevant theories of urban systems and urban management. The candidate will publish and present the work in seminars, conferences and lectures in Academia and to the stakeholders.

Qualifications

The applicants should fulfill the following requirements:

- University degree (M.Sc.) in urban design, urban planning, architecture or architectural engineering. Consideration will be given to applicants whose previous degrees are in related disciplines in urban studies. Furthermore, we encourage applications from candidates engaged with quantitative methods and/or Geographic Information Systems (GIS). Some programming skills (e.g. Grasshopper, GIS-environment or other) are preferred. Prior contributions or interests related to complex adaptive systems (CAS) are appreciated.
- The candidate must have ability to carry out independent research and work as a part of the team, and have interest in the presentation and publication of scientific results.
- The Academy is international in focus, and good oral and written skills in English are required.

The post is a fully funded position for 4 years. The candidate is expected to work full time as a part of a research team located at the Academy of Architecture and Urban Studies building in Tõnismägi, Tallinn city center. The candidate is obligated to participate and fulfil the requirements of Tallinn University of Technology PhD program. Additional funds will be provided for conferences and other research expenses.
A of A strives to be an inclusive workplace offering equal opportunities, attracting qualified candidates contributing to the Unit's excellence and diversity. We welcome applications from all sections of the community and from people of all backgrounds.

To get more information or to apply online, visit https://taltech.glowbase.com/positions/32 or scan the the code on the left with your smartphone.