

# **TUM Asia doctoral candidate scholarship position**

## **Research Topic: Urban logistics at 2050: Evidence-supported forecasting**

TUM Asia Graduate College in Singapore is focusing on research around New Technologies and Processes for Passenger and Cargo Transport for cities of the future. There is a worldwide trend of growing urban population. At the same time there is the need to reduce the usage of natural resources, to reduce the air and noise pollution and further improve the living quality for the people living in the cities. This will lead to changes, how cities must be planned, constructed, and managed. Cities must move to a more sustainable development. The TUM Asia Graduate College deals with these challenges by focusing on several new Technologies and Processes for Passenger and Cargo Transport. We are looking to fill a doctoral candidate position in the College with the research focus on:

- Urban logistics at 2050: Evidence-supported forecasting

A number of advances and developments are transforming goods and packet transport and delivery in an unprecedented way. For example, autonomous robots are delivering millions of packets per year already (primarily in North America), while large players like Ali-Express and -more recently- temu are disrupting international e-commerce all over the world.

Understanding and forecasting how the packet logistics and last mile-delivery industry will keep involving in the future can enable us proactively create the preconditions for its effective operation. In this doctoral dissertation we combine the following tasks:

- Collection of relevant quantitative data, e.g. from the Singapore Port Authority and also logistics providers, such as DHL and DB Schenker;
- Collection and analysis of available qualitative data, e.g. from expert interviews, focus groups and structured surveys with vehicle manufacturers, fleet operators, transport planners, and logistics experts;
- Macroscopic forecasting of long-term trends, using special models allowing for the structural modelling of future “shocks” at discrete time points in the future;
- Formulation, modelling and evaluation of possible future evolution scenarios (foresight exercise).

The supervision at TUM will be performed by the Chair of Transportation Systems Engineering, Univ.-Prof. Dr. Constantinos Antoniou.

The research position is funded by the German Academic Exchange Service (DAAD) and TUM Asia and offers a full-time, fixed-term position at the TUM Singapore Campus. You will be enrolled as an active doctoral candidate in the TUM Graduate School with the objective to obtain a doctoral degree awarded by TUM. You will be based in Singapore and be a member of a small group of doctoral students working together in

the TUM Asia Graduate College, and will have the opportunity to spend some time at the main TUM Campus in Munich, Germany.

Given TUM's strategic collaboration with the Nanyang Technological University (NTU, Singapore), there is also the option to obtain a joint TUM-NTU doctoral degree, if you also fulfil the NTU PhD requirements and are accepted by NTU.

The scholarship is tenable for one year in the first instance and is renewable subject to good research performance. The maximum period of the Scholarship is 4 years for PhD candidates, as determined by the school, as well as availability of research funding in each case.

- Monthly Scholarship: 3000 SGD
- Starting Date: ASAP, ideally 1st August 2024

Requirements:

- a master's degree in a relevant field (e.g., transportation engineering, data science, computer science).
- Enthusiasm about researching transport-related projects and understand the fundamentals of transportation systems and modeling.
- Strong analytical skills
- Excellent research, academic writing, and presentation skills.
- Interest in programming and experience using Python or R.
- Excellent working knowledge (written and oral) of English.
- Ability to work in a multicultural environment.
- Motivation to publish research papers in relevant high ranked journals / conferences.

Interested candidates should send their full applications via email, including a resume, academic transcripts and a cover letter to: [phd.admission@tum-asia.edu.sg](mailto:phd.admission@tum-asia.edu.sg)