Master Thesis in Singapore

DATA DRIVEN ADAPTIVE TRAFFIC SIMULATION PROJECT:
City scale macroscopic simulation.

Background

. Ubiquitous data from a variety of sources such as smart phones, vehicles equipped with GPS receivers and fixed sensors makes it an exciting time for the implementation of several Advanced Traffic Information and Management Systems (ATMS). Leveraging this data for current traffic state estimation along with short term predictions of traffic flow can have far reaching implications for the next generation of Intelligent Transportation Services (ITS). Your research output if successful will go a long way in developing predictive traffic simulations which could be the future for advanced traffic management systems.

Objective & tasks

A macroscopic traffic simulation models the evolution of traffic flow over a time horizon by aggregating individual vehicles over discrete sections of the road network. In this project you will help build a city scale simulation, modelling the traffic flow of all the expressways in Singapore. This city scale model will serve as a prediction and control test bench for optimizing traffic flow over the all critical expressways of Singapore. For this purpose, the following tasks should be accomplished:

1. Develop a city scale macroscopic model for all expressways in Singapore.
2. Extend the already working prototype of a small expressway section for the full city model.
3. Validate your extended model for accuracy for different traffic scenarios.
4. Report the computational efficiency of your model.
5. **Minimum period of candidature is 6 months.**

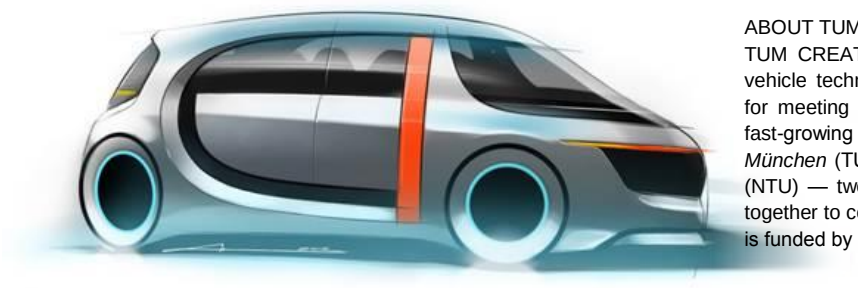
Requirements

1) Knowledge of databases, we use PostgreSQL.
2) Strong programming skills in any object oriented programming language. You should be able to read some java code preferably.
3) Should be comfortable with multithreading and parallel computing.
4) Fluency in English

We offer

- Financial support
- An international and multidisciplinary working environment
- A great experience in one of the most dynamic megacities in Asia

The position is available from approx. June/July 2016. Please address further questions and your application to Abhinav Sunderrajan (abhinav.sunderrajan@tum-create.edu.sg) preferably, or Dr. Suraj Nair (suraj.nair@tum-create.edu.sg). **Note that only shortlisted candidates will be informed.**



ABOUT TUM CREATE

TUM CREATE innovates. We are developing cutting-edge electric vehicle technologies and pioneering future transportation concepts for meeting the growing transport and sustainability challenges in fast-growing tropical megacities. Germany's *Technische Universität München* (TUM) and Singapore's *Nanyang Technological University* (NTU) — two world-leading engineering universities — have come together to collaborate on this ambitious joint research programme. It is funded by Singapore's National Research Foundation.