Postdoctoral Associate – Real-Time Transportation System Management (DynaMIT2.0)
Future Urban Mobility Interdisciplinary Research Group

Singapore-MIT Alliance for Research and Technology Centre

SMART is a major new research enterprise established by the Massachusetts Institute of Technology (MIT) in partnership with the National Research Foundation of Singapore (NRF). SMART serves as an intellectual hub for international research collaborations, not only between MIT and Singapore, but also involving researchers from the region and beyond. At SMART, we identify and carry out research on critical problems of societal importance. SMART is a magnet attracting and anchoring global research talent, while simultaneously instilling and promoting a culture of translational research and entrepreneurship in Singapore. Five interdisciplinary research groups (IRGs) have been established to date: BioSystems and Micromechanics (BioSym), Centre for Environmental Sensing and Modeling (CENSAM), Future Urban Mobility (FM), Infectious Diseases (ID) and Low Energy Electronic Systems (LEES).

Project Overview

DynaMIT 2.0 is a multi-modal multi-data source driven, simulation-based short-term traffic prediction and network control system developed by SMART-FM. The system contains a collection of data modules and algorithms including coupled demand and supply simulators that estimate and predict network states in real-time. Ongoing and future work includes 1) the development of behavioural and supply models to simulate public transit, mobility-on-demand services such as Uber/Grab, car and bicycle sharing, personal mobility devices, etc.; 2) Development of scalable online calibration methodologies using heterogeneous data sources including data from telecom, smartcards, probe vehicles, etc.; 3) context mining and the scenario analyzer for unstructured data, e.g. traffic incident reports; 4) Enhancing the strategy optimization module for real-time network control.

Job Description

The FM IRG is currently seeking to employ a postdoctoral associate, based at the SMART Centre in Singapore, to work on these components of our projects. The job scope is as follows:

- Lead the development of the supply simulator with particular attention to the incorporation of public transit and other modes into DynaMIT2.0
- Lead the design of the behavioural models;
- Implement and validate these new models in the context of DynaMIT2.0, as a modeller and potentially also as code developer;
- Advance research in these and related areas.
**Requirements:**

The ideal person will have excellent skills in network modelling/transportation engineering/simulation/dynamic traffic assignment and experience in programming and computer engineering. A good record in subjects such as simulation, statistics and mathematics is sought.

The candidate should have the following:
- PhD in Transportation Engineering/Simulation/dynamic traffic assignment and strong background in Computer Science or related;
- Experience with simulation, transport modeling and network representation;
- Experience in optimization
- Expertise in discrete choice modeling;
- Good communication skills

Candidate with an experience in any of the following will have an advantage:
- Experience with working with real-time systems is optional but valuable;
- Large scale (e.g. entire city) transport modeling
- Treatment of uncertainty

**To Apply**

Interested applicants should send a cover letter expressing specific interest in the position and a detailed CV with information on education qualifications, work experience, list of publications, and citizenship status to andrew.tong@smart.mit.edu. Subject should read: Postdoctoral Associate – Real-Time Transportation System Management (DynaMIT2.0).

We regret that only shortlisted candidates will be notified.