



## **Postdoctoral Associate – Smart Mobility Modeling and Simulation Future Urban Mobility Interdisciplinary Research Group**

### **Singapore-MIT Alliance for Research and Technology Centre**

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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**

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Part of the FM research agenda involves the development of SimMobility framework that Integrate and link together various mobility-sensitive behavioral models with state-of-the-art simulators to predict impacts of mobility demands on transportation networks, services and vehicular emissions. The Postdoctoral Associate will work on various aspects of developing a mobility simulation platform integrating demands for transportation, traffic and information control systems, smart mobility services, vehicular emissions and energy consumption. The research will involve developing the microscopic behavioral models, detailed supply simulation (such as traffic representation and control operation) as well as travel demand models and integrating them into the simulation software. The Postdoctoral Associate will also participate in the design and development of the software for the agent-based microscopic simulator.

### **Responsibilities**

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- Participate in the modelling design process and in the implementation of the designed framework within the SimMobility simulation platform.
- Design and evaluate the performance of smart mobility scenarios in a simulated environment.
- Explore new methods, procedure and algorithms to postulate model specifications and estimation of advance models.
- Monitor the progress of the project, supervision of graduate and undergraduate students, regularly meet with PIs and disseminate new findings in journals/conferences.
- Candidates must be willing to participate one or more below research areas:
  - (a) Large-scale traffic simulation,

- (b) Driving and travel behavior and demand modeling
- (c) Microscopic vehicular emissions modeling,
- (d) Soft modes and pedestrian simulation.
- (e) Information provision
- (f) Traffic control systems and optimization
- (g) Public transportation operations
- (h) Safety or environmental impact assessment
- (i) Smart mobility services
- (j) Microscopic model calibration

## Requirements

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- PhD in transportation systems, computer science, networks and optimization, or a related field.
- Excellent academic standing, the ability to conduct research on transportation simulation
- Knowledge/past experience in any of the above mentioned research area is desirable..
- Possess experience with programming in scientific languages (e.g. Python, LUA, R, Matlab, Octave, Julia)
- Experience with big data is preferred
- Knowledge about C++ or any other Object Oriented Programming language is preferable.
- Positive work attitude, good communication and interpersonal skills and an ability to work independently and in multi-disciplinary teams .

The position will be based at the SMART FM Offices on the new campus of the National University of Singapore (NUS), with the possibility of traveling to MIT (up to a few months) as part of the international collaboration. The postdoctoral associate will work with an integrated team of faculty, researchers and students from MIT and Singaporean University partners, including: Prof. Moshe Ben-Akiva, MIT; Prof. Christopher Zengras, MIT.

## To Apply

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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](mailto:andrew.tong@smart.mit.edu). Subject should read: **Postdoctoral Associate – Smart Mobility Modeling and Simulation**.

We regret that only shortlisted candidates will be notified.