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)

Software Engineer – Future Mobility Sensing for Freight
Future Urban Mobility Interdisciplinary Research Group

Project Overview

Future Mobility Sensing (FMS) is a next-generation automated travel and freight survey system that leverages advanced sensing technologies, and machine learning techniques to deliver previously unobtainable mobility behavioral data and insights. It integrates sensing devices, such as GPS loggers and pervasive smartphones, to collect geo-referenced data; implements back-end machine learning engine to infer stops, activities and modes of transportation; provides interfaces on both web and phone for users, such as truck drivers and shipment handlers, to validate their activities and provide feedback, and also supports performance evaluation by presenting insights derived from the collected data in intuitive and comparative views. In the continuous effort of innovating FMS to better support the study of urban freight, a logistic performance evaluator is being designed and implemented. In general, it works not only as an informative incentive but also as an analytical tool to assist users, such as drivers, establishments and government agencies, to facilitate more efficient logistics and transport operations.

Responsibilities

We are currently seeking a research/software engineer to join our FMS Freight team at the Future Urban Mobility Group for the development of the above mentioned system. The job scope is as follows:

- Contribute to the design of the FMS Freight system architecture
- Design and develop intuitive and interactive visualization components to present analysis results derived from data management and fusion components
- Design and develop the logistic performance evaluator web system:
  - Develop and maintain the backend system/database
  - Design and develop API endpoints to support the integration with FMS Freight APP
- Coordinate with the team to deploy the system on production, address issues/bugs reported by testers/users, and support the system maintenance
• Improve FMS Freight system in terms of code efficiency, scalability, and customize the system to support on-going projects.

Requirements

• Bachelor or Master’s degree in Computer Science, Software Engineering, or other related disciplines
• Independent and self-motivated, yet able to work as part of a multidisciplinary team.
• Good communications, and interpersonal skills.
• Have 1 to 3 years’ experience in web application design and development
• Good at user interface and data visualization design and implementation
• Have expertise with the following:
  o Ruby on Rails 4.1+ (5.1+ preferred), Nodejs
  o Relational databases (MySQL and PostgreSQL) and No-relational database (Mongodb)
  o Javascript, HTML, CSS, D3.js, Leaflet.js, Cesium.js and jQuery.js
  o Test Driven Development
  o Git, usage of workflows such as the Github workflow
  o RESTful API’s and back-end services
  o UNIX systems proficiency (Ubuntu, Debian)
• Other useful experience for candidates to have:
  o Building highly scalable applications
  o Familiarity with location-based data (GIS)
  o Knowledge of the AWS Stack (EC2, S3)

The position will be based at the SMART FM offices on the campus of the National University of Singapore (NUS). The software engineer will work with an integrated team of faculty, researchers and students from SMART, MIT and Singapore partners, namely: Dr. Andre Romano Alho (SMART), Dr. Fang Zhao, Prof. Christopher Zegras (MIT), and Prof. Moshe Ben-Akiva (MIT).

Application: Interested candidates should send full CV/resume electronically to Andrew Tong <andrew.tong@smart.mit.edu> and Dr. Andre Romano Alho <andre.romano@smart.mit.edu>. Subject should read: Software Engineer – Future Mobility Sensing for Freight.
We regret that only shortlisted candidates will be notified.