



## **Future Urban Mobility Symposium 2019**

January 28-29, 2019

1 CREATE Way  
CREATE Theatre, Level 2, CREATE Tower  
Singapore 138602

The Symposium will take place on

- January 28 from 9:00 to 17:00 and
- January 29 from 9:00 to 17:00

**Registration will start at 8:30am.**

### Taxi Directions:

Inform the taxi driver that you are going to CREATE, NUS (National University of Singapore) University Town. The directions below are in case the driver does not know how to get there. Travel Via AYE and exit Clementi Road. Turn left to NUS Entrance A, Kent Ridge Crescent (Landmark: University Cultural Centre). Keep going straight until you pass the first bus stop. Make a sharp left onto the College Link bridge. Drive ahead and go past the bus stop along CREATE Way. Just before the roundabout, veer left and alight at the "CREATE Drop-off Point". Walk down the stairs and the CREATE Tower is directly ahead. Take the escalator up to level 2, CREATE Theatre is on your left.

Map: [https://www.streetdirectory.com/sg/university-town-create/1-create-way-138602/57032\\_152758.html](https://www.streetdirectory.com/sg/university-town-create/1-create-way-138602/57032_152758.html)

Lunch and morning and afternoon coffee/tea breaks will be provided on each day.

**Agenda:** Please see below.

**RSVP:** If you plan to attend, please register at <https://fm-symposium2019.eventbrite.sg>

## Day 1 (January 28, 2019)

8:30: Registration

9:00: Welcome and Intro: Future Mobility Scenarios, FM Vision

[Chris ZEGRAS, MIT]

9:15: Q&A, Response

### Control, Optimization & Planning

#### Session 1 [9:20 – 10:45]: Data-Driven Mobility Modeling

[Chair: Patrick JAILLET]

9:20: Estimating Travel Time Distributions by Bayesian Network Inference

[Justin DAUWELS, NTU]

9:40: Bayesian Optimization Meets Bayesian Optimal Stopping

[Zhongxiang DAI, NUS]

9:55: Individual Mobility Patterns in Public Transit: Regularity, Prediction and Change Detection

[Jinhua ZHAO, MIT]

10:15: Experience Using “Big Data” to Improve Public Transportation Performance

[Robert BERTINI, USF]

10:35: Q&A, Discussion

10:45: Break

#### Session 2 [11:00 – 12:05]: Cyber-Physical Security/Resilience

[Chair: Carlo RATTI]

11:00: Transport Network Flow Game: Sustainable Planning under Adversarial Attacks

[Supriyo GHOSH, SMART]

11:15: Security Games on Graphs

[Patrick JAILLET, MIT]

11:35: Cyber-Physical Security of Networked Transportation Systems

[Saurabh AMIN, MIT]

11:55: Q&A, Discussion

12:05: Lunch, Interactive Demos and Poster Session

#### Session 3 [13:05 – 14:00]: Real Time Mobility Control Strategies

[Chair: Moshe BEN-AKIVA]

13:05: Evaluating Smart Highway Operations using Fluid Queuing Models

[Saurabh AMIN, MIT]

13:20: Data-driven Disruption Response Planning for the Singapore Transportation Network

[Iva BOJIC, SMART]

13:35: Real-time Predictive Toll Optimization

[Ravi SESHADRI, SMART]

13:50: Q&A, Discussion

#### Session 4 [14:00 – 15:25]: Shared City I

[Chair: Jinhua ZHAO]

14:00: An Offline-Online Method for Effective Real Time Ride Sharing

[Pradeep VARAKANTHAM, SMU]

14:15: Dynamic Redistribution of Bike Sharing Systems

[Patrick JAILLET, MIT]

14:30: Impact of AV on Cities: Estimating Vehicle Shareability and Parking and Fleet Size Consequences

[Daniel KONDOR, SMART]

14:45: Multi-Class Fleet Sizing and Mobility on Demand as Service

[Malika MEGHJANI, SMART]

15:00: Sustainable Travel Incentives

[Moshe BEN-AKIVA, MIT]

15:15: Q&A, Discussion

15:25: Break

**Session 5 [15:40 – 17:05]: Shared City II**

**[Chair: Chris ZEGRAS]**

15:40: *Optimal Mode Choice: First Results of an MFD Based Model*

[Kay AXHAUSEN, ETH]

15:55: *Impact of TNC on Car Ownership, Congestion and Transit Ridership*

[Mi DIAO, NUS]

16:10: *Behavioural Preferences towards Flexible Mobility on Demand (FMOD)*

[Fang ZHAO, SMART]

16:25: *Agent-Based Modelling of MaaS*

[Kakali BASAK, SMART]

16:40: *AMOD vs. Mass Transit*

[Ravi SESHADRI, SMART]

16:55: *Q&A, Discussion*

17:05: *Interactive Demos and Poster Session*

## Day 2 (January 29, 2019)

### Devices and Systems

**Session 6 [9:00 – 10:40]: Technologies of Automated Mobility**

**[Chair: Daniela RUS]**

9:00: *3D Perception for Vehicle Detection*

[Daniela RUS, MIT]

9:15: *Autonomous Navigation in Rain*

[Hao SUN, SMART]

9:30: *Context and Intention Aware Planning*

[Malika MEGHJANI, SMART]

9:45: *Safe Path Planning*

[Hongliang GUO, SMART]

10:00: *Towards Precise Vehicle-Free Point Cloud Mapping: An On-Vehicle System with Deep Vehicle Detection and Tracking*

[Mengdan FENG, NUS]

10:15: *Fusion of LIDAR and Vision towards Better Localization*

[Ye Chao BAI, NUS]

10:30: *Q&A, Discussion*

10:40: Break

**Session 7 [10:55 – 12:05]: Automated Mobility Systems: Behavior & Design**

**[Chair: Joseph FERREIRA]**

10:55: *Integrating Autonomous Vehicles and Public Transit: Managing Competition or Encouraging Coordination*

[Jinhua ZHAO, MIT]

11:10: *Understanding Behavioural Preferences towards AMOD in Singapore*

[Ravi SESHADRI, SMART]

11:25: *Human-Centred Methods for Design of AVs for Public Transport*

[Henriette CORNET, TUMCREATE]

11:40: *Planning and Operations Design of Dynamic Autonomous Road Transit (DART) Systems*

[Xiaodong LIU, TUMCREATE]

11:55: *Q&A, Discussion*

12:05: *Lunch, Interactive Demos and Poster Session*

## Modeling, Simulation & Assessment

### Session 8 [13:05 – 14:55]: Automated Mobility Systems: Simulation

[Chair: Ravi SESHADRI]

13:05: *Simulating the Future Mobility of Cities*

[Jaume BARCELÓ, UPC]

13:25: *Modeling an AV District: MATSim Advances*

[Sergio ORDONEZ, FCL]

13:45: *Integrating AVs and EVs: Charging Facility Location Planning*

[Hua WANG, NUS]

14:05: *Long Term Impacts of AMOD*

[Diem-Trinh LE, SMART]

14:25: *Network Impacts of AMOD*

[Simon OH, SMART]

14:45: *Q&A, Discussion*

14:55: *Break*

### Session 9 [15:15 – 17:00]: Freight

[Chair: Lynette CHEAH]

15:15: *Freight Mobility Data Collection and Visualization*

[Linlin YOU, SMART]

15:35: *SimMobility Freight: Incorporating Urban Freight Transport in a Multi-scale Agent-Based Urban Simulation Platform*

[Takanori SAKAI, SMART]

15:55: *Calibration for SimMobility Freight: A Traffic-Count Based Approach for Agent-Based Urban Freight Model*

[Yusuke HARA, SMART]

16:15: *Agent-Based Simulation of Overnight Truck Parking in Cities*

[Gopalakrishnan RAJA, SUTD]

16:35: *Q&A, Discussion*

16:50: *Closing Remarks*

[Chris ZEGRAS, MIT]

The SMART Future Urban Mobility IRG is a research partner with the Singapore University of Technology and Design (SUTD), URA, LTA and JTC Corp studying urban freight transport. Following the Symposium, a half-day workshop on urban freight research will be held at SUTD on January 30, 2019. See: <http://mobility.sutd.edu.sg/freight-workshop-2019>. Part of this collaborative research has contributed to the “Delivering Together: Transforming Urban Logistics” Urban Lab exhibition at URA. This exhibition is a showcase of promising solutions that address the complexities of the urban logistics system and provide benefits to businesses, consumers and the city. See also <http://ura.sg/urbanlogistics>.