Future Urban Mobility Symposium 2015
July 6-7, 2015

NUS University Hall Auditorium
National University of Singapore
21 Lower Kent Ridge Road, Singapore 119077
Level 2, Lee Kong Chian Wing

The Symposium will take place on
• July 6 from 8:30 to 18:00 and
• July 7 from 8:30 to 18:00

Taxi Directions:
If you are traveling by cab, ask the driver to bring you to NUS (National University of Singapore) via the NUH (National University Hospital) route. Travel along Lower Kent Ridge Road. The University Hall of NUS is on the left hand (south) side of Lower Kent Ridge Road after Science Drive 4. When you alight at the University Hall, you will see Lee Kong Chian Wing. Take a lift to level 2 and get to the Symposium’s Auditorium.
Map: http://www.streetdirectory.com/asia_travel/travel/travel_id_22753/travel_site_7154/

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 http://bit.ly/1eeSw7N
Day 1 (July 6, 2015)

8:45 Welcome and overview [Emilio FRAZZOLI, MIT]

Technological Capabilities

Session 1 [9:00 – 10:15]: Autonomy for Urban Mobility [Chair: Emilio FRAZZOLI (MIT)]

9:00 Driverless Buggies at Chinese Gardens Public Trial [James FU, SMART]
9:15 A Spatial-Temporal Approach for Moving Object Recognition with 2D LIDAR [Baoxing QIN, SMART]
9:30 Spatio-Temporal Motion Features for Laser-based Moving Objects Detection and Tracking [Xiaotong SHEN, NUS]
9:45 Stereoscopic Teleoperation for On-Road Vehicles [Scott PENDLETON, SMART & NUS]
10:00 Multi-robot navigation in formation via a local non-linear optimization [Javier Alonso MORA, MIT]

10:15 Break

Modeling and Control of Urban Mobility Systems

Session 2 [10:30-12:00] Control and learning for urban mobility [Chair: Emilio FRAZZOLI (MIT)]

10:30 Distributed Traffic Prediction on Smartphones [Muhammad Tayyab ASIF, NTU]
10:45 Video Summarization for Activity Recognition [Daniela RUS, MIT]
11:00 A supervised topic model for overcrowding prediction [Stanislav BORYSOV, SMART]
11:15 Extended Back-pressure Traffic Signal Control Algorithm [Nan XIAO, SMART]
11:30 Iterative Tuning Strategy in Traffic Signal Control [Yu WANG, SMART & NTU]
11:45 Signalless Intersections for Autonomous Vehicles [Sertac KARAMAN, MIT]

12:00 Lunch, and Interactive Demos and Poster Session

Session 3 [13:00 – 17:30]: Mobility on Demand [Chair: Daniela RUS (MIT)]

13:00 (Sustainable) Mobility on Demand [Shih-Fen CHENG, SMU]
13:30 Design and Operation of a Last Mile Transportation System [Hai WANG, MIT & SMU]
13:50 Design and Management of Vehicle Sharing Systems under Uncertainty [Yinghan DENG, NUS]
14:10 Optimal Tourist Algorithm [Jay ASLAM, SMART]
14:30 Dynamic Redeployment to Counter Congestion/Starvation in Vehicle Sharing Systems [Pradeep VARAKANTHAM, SMU]
14:50 Gaussian Process-based Decentralized Data Fusion, and Active Sensing for Spatiotemporal Traffic Modeling and Prediction in Mobility-on-Demand Systems [Jie CHEN, SMART]
15:10 Maximizing coverage probabilities under demand uncertainty: a simple and effective cutting plane method  
[Dominik JENA, SMART]

15:30 Break

15:40 Demand Matching Algorithm and Experiments  
[Afian ANWAR, NUS]
16:00 Mobility on Demand: Fleet Data Collection and Autonomous System Implementation  
[Erik WILHELM, SUTD]
16:20 Predictive Rebalancing for Autonomous Mobility-on-Demand Systems  
[Katarzyna MARCZUK, SMART & NUS]
16:40 Fundamental Performance Limitations of Mobility-on-Demand Systems  
[Emilio FRAZZOLI, MIT]

17:00 Interactive Demos and Poster Session

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Day 2 (July 7, 2015)

Urban Mobility Data

**Session 4 [9:00 – 9:45]: LIVE Singapore!**  
[Chair: Carlo RATTI (MIT)]

- 9:00 ThreesiumJS: A Generic Approach of Building Visualisations  
[Riki PRIBALDI, SMART]
- 9:15 Improved processing engine & Abstract processing layer on top of Hadoop  
[R. SIVAPRAKASAM, SMART]
- 9:30 Visualising networks  
[Martina MAITAN, SMART]

**Session 5 [9:45 – 11:30]: Next-Generation Transportation Apps**  
[Chair: Chris ZEGRAS (MIT)]

- 9:45 Overview of FMS and recent extensions  
[Fang ZHAO, SMART]
- 10:00 Using FMS to study the relationship between happiness and travel behavior  
[Sebastian RAVEAU, SMART]
- 10:15 Using FMS to measure bus users satisfaction  
[Chris ZEGRAS, MIT]
- 10:30 Testing the reliability of FMS: An experiment in Seoul  
[Jae Seung LEE, MIT & Hongik U.]

10:45 Break

- 11:00 Leveraging the barometer for next-generation transportation apps  
[Mun Choon CHAN, NUS]
- 11:15 Leveraging device-to-device communications for next-generation transportation apps  
[Li-Shiuan PEH, MIT]

11:30 Guest Speaker:
Uber and the future city: Prelim evidence of a changing paradigm  
[Shomik MEHNDIRATTA, Uber]

12:00 Lunch, and Interactive Demos and Poster Session
Modeling and Simulation

Session 6 [13:00 – 14:45]: SimMobility

13:00 Overview of SimMobility and recent enhancements  
[Chair: Li-Shiuan PEH (MIT)]
13:15 Simulating intelligent intersections: driving behavior, control and applications  
[Carlos AZEVEDO, SMART]
13:30 Analysis of traffic safety using microscopic simulation  
[Carlos AZEVEDO, SMART]
13:45 Travel decisions: activities and multimodal mobility  
[Sebastian RAVEAU, SMART]
14:00 Case study on off-peak pricing in Singapore MRT  
[Milan LOVRIC, SMART]
14:15 Residential markets: development, mobility and market outcomes  
[Chris ZEGRAS, MIT]
14:30 Autonomous Mobility on Demand case study  
[Carlos AZEVEDO, SMART]

14:45 Break

Session 7 [15:00 – 15:45]: Urban Freight

15:00 Urban freight research agenda  
[Vittorio MARZANO, SMART & Univ. of Naples “Federico II”, Italy]
15:15 Urban freight data collection initiatives  
[Fang ZHAO, SMART]
15:30 Modeling urban freight in SimMobility  
[Joel TEO, SMART]

Session 8 [16:00 – 17:00]: DynaMIT

16:00 Overview of DynaMIT and recent enhancements  
[Chair: Moshe BEN-AKIVA (MIT)]
16:15 Real time optimization for crisis management  
[Gary TAN, NUS]
16:30 Incident scenario demo  
[Ravi SESADRI, SMART]
16:45 Discussion

17:00 Interactive Demos and Poster Session