

# INSTR 2018

**7<sup>th</sup> International Symposium on Transportation Network Reliability**  
The University of Sydney Business School CBD Campus  
Level 17, 133 Castlereagh Street, Sydney, Australia  
16-19 January 2018



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## TUESDAY 16 JANUARY (TUTORIALS on Floor 17)

**08:30 – 09:00** Registration (Floor 17)

**09:00 – 10:30** Tutorial 1

**Vulnerability and resilience in infrastructure systems – why are they important?**

*Prof. Michael A.P. Taylor*

**10:30 – 11:00** Morning tea (Floor 17)

**11:00 – 12:30** Tutorial 2

**Four approaches to vulnerability analysis: asset inventory, topology, serviceability, and accessibility**

*Prof. Michael A.P. Taylor*

**12:30 – 13:30** Lunch (Floor 17)

**13:30 – 15:00** Tutorial 3

**Vulnerability in road networks and in public transport networks**

*Prof. Michael A.P. Taylor*

**15:00 – 15:30** Afternoon tea (Floor 17)

**15:30 – 17:00** Tutorial 4

**Selected case studies – and where to from here?**

*Prof. Michael A.P. Taylor*

**WEDNESDAY 17 JANUARY (SYMPOSIUM DAY 1)****08:30 – 09:00 Registration (Floor 17)****09:00 – 10:30 Opening (Floor 17)****Opening & Welcome***Michael Bell, Chair of the Local Organising Committee***Keynote presentation 1***Clare Gardiner-Barnes***Keynote presentation 2: Multi-Hazard Resilience Quantification in Transportation***Elise Miller-Hooks***Keynote presentation 3***Philip Davies***10:30 – 11:00 Morning tea (Floor 17)****11:00 – 12:30 Session 1A (Floor 17)  
Theme: Traffic Networks****Chair: Fumitaka Kurauchi****Correlation between the hysteresis of travel time variability and macroscopic fundamental diagrams on a bimodal network***Amr M. Wahaballa and Fumitaka Kurauchi***Adaptive simulated annealing: a new approach for the network vulnerability analyses***Rostislav Vodák, Zuzana Křivánková and Michal Bíl***Resilient disaster transport planning***Seungjae Lee, Jooyoung Kim, Shinhae Lee and Yongjin Kim***11:00 – 12:30 Session 1B (Floor 16)  
Theme: Traffic Flow Modelling****Chair: William H.K. Lam****A study of traffic state estimation by data assimilation in two-dimensional networks***Yosuke Kawasaki, Yosuke Hara and Masao Kuwahara***A cell-based adaptive coordinated traffic control under demand uncertainty***Lubing Li, Wei Huang and Hong K. Lo***Optimization of traffic count locations for estimation of mean and covariance of origin-destination demands under uncertainty***Hu Shao, William H.K. Lam, X.P. Xu, H.P. Lo and Bi Yu Chen***12:30 – 13:30 Lunch (Floor 17)****13:30 – 15:30 Session 2A (Floor 17)  
Theme: Traffic Flow Modelling****Chair: Mohsen Ramezani****A Method for Evaluating Travel Time Distribution on Signalized Arterial Roads***Takeshi Nagae, Ren Toda and Kentaro Wada***Markovian path flow estimator considering the inconsistency of traffic counts for evaluating the fluctuation of path flows***Hiroshi Shimamoto and Atsushi Kondo***Spatiotemporal characterization of commuting flows in urban mobility networks***Homayoun Hamedmoghadam-Rafati, Mohsen Ramezani and Meead Saberi***Issues related to combining link-level measurements for estimating journey time reliability***Emily Moylan, Kasun Wijayarathna, Nikolay Kumsiashvili, Sisi Jian, Vinayak Dixit and S. Travis Waller***13:30 – 15:30 Session 2B (Floor 16)  
Theme: Public Transport / Car Share****Chair: Nigel Wilson****The underlying effect of public transport reliability over user's satisfaction***Jaime Soza-Parra, Juan Carlos Munoz and Sebastián Raveau***Accessibility-Based Reliability Metrics for Public Transport: Application of Automatic Vehicle Location Data with a Boston Case Study***Anson F. Stewart, Jinhua Zhao and Nigel H. M. Wilson***Measuring the Potential of Ride-sharing using Multi-modal Mobility Graphs***Jiwon Kim, Mehmet Yildirimoglu, Sanghyung Ahn and Marty Papamanolis***Closing the gap between perceived and objective accessibility measures: A new approach to measuring public transport accessibility considering comfort, transfers and reliability perception***Ignacio Tiznado-Aitken, Jaime Soza-Parra, Juan Carlos Munoz and Ricardo Hurtubia***15:30 – 16:00 Afternoon tea (Floor 17)**

16:00 – 18:00

Session 3A (Floor 17)

Chair: Takahiko Kusakabe

Theme: Big Data / Decision Support Systems

**The value of travel time information**

*Leonid Engelson and Mogens Fosgerau*

**Optimum Models for Evacuation Traffic with Ride Sharing**

*Yasuo Asakura and Ryo Itabashi*

**A Stochastic Approach for Assessing Agri-Supply Chain Network Capacity Flexibility: A Case Study of Cassava in Thailand**

*Sarawut Jansuwan, Pareeya Siriwatthanaphan and Anthony Chen*

**Travel time reliability observation in mixed traffic situation by using Wi-Fi MAC addresses**

*Takahiko Kusakabe, Van Hieu Mai, Yoshiki Suga and Takashi Oguchi*

16:00 – 18:00

Session 3B (Floor 16)

Chair: Masao Kuwahara

Theme: Traffic Flow Modelling

**Risk Assessment of Hazardous Materials Transportation Considering Roadside and Traffic Conditions**

*Naoto Ogashira, Yasuo Asakura and Kashin Sugishita*

**Analysing the effects of interdependency on the resilience of urban transport systems: A dynamic network flow approach**

*Nils Goldbeck, Panagiotis Angeloudis and Washington Ochieng*

**Fluctuations of Queuing Congestions by a Markov-Chain Based Day-to-Day Dynamical Model**

*Kazuki Fukuda, Takamasa Iryo, Junji Urata and Masaaki Ishihara*

**Study on evaluation of travel time reliability using MFDs in an urban expressway**

*Toshihiko Kitazawa, Hideyuki Suzuki, Ayaka Ishii, Masakazu Nakanishi, Shinji Nakagawa and Yasuo Asakura*

18:00 – 20:00

Reception (drinks & canapes) at The Hyde Room, St James Hotel

**THURSDAY 18 JANUARY (SYMPOSIUM DAY 2)****09:00 – 10:30****Session 4A (Floor 17)**  
**Theme: Traffic Networks****Chair: Anthony Chen****Design method of emergency links and reinforcement sections to secure connectivity among disaster prevention bases**  
*Satoshi Sugiura, Fumitaka Kurauchi and Akiyoshi Takagi***Evaluation of Road Network Performance Considering Capacity Degradation of Numerous Links**  
*Hironori Nakajima and Riki Honda***A Route Diversity Redundant Network Design Problem**  
*Xiangdong Xu, Anthony Chen, Chao Yang and William H.K. Lam***09:00 – 10:30****Session 4B (Floor 16)**  
**Theme: Traffic Flow Modelling****Chair: Jan-Dirk Schmöcker****Analysis on long-term trend of OD pattern of expressway based on ETC data**  
*Hiroki Goto, Toshiyuki Nakamura, Nobuhiro Uno and Jan-Dirk Schmöcker***Travel time reliability and vulnerable link identification using functional data analysis, geometric Brownian motion process and probabilistic sensitivity analysis**  
*Jiachen Luo, Renxin Zhong and Agachai Sumalee***A Dynamic Model for Time Budget Surplus Maximisation Three-objective User Equilibrium (TBSmaxTUE)**  
*Wei Xu, Judith Y. T. Wang, Abhishek Gupta and Matthias Ehrgott***10:30 – 11:00****Morning tea (Floor 17)****11:00 – 12:30****Session 5A (Floor 17)**  
**Theme: Public Transport / Car Share****Chair: Hong Lo****Car-Sharing Pricing Strategy under Travel Time Variability**  
*Gege Jiang and Hong Lo***Robust Bike Station Location Design**  
*Chin Sum Shui and Wai Yuen Szeto***Analysis of delay propagation within a bus network based on GPS data**  
*Wenzhe Sun, Jan-Dirk Schmöcker and Toshiyuki Nakamura***11:00 – 12:30****Session 5B (Floor 16)**  
**Theme: Traffic Networks****Chair: Michael Bell****Estimation of cognitive travel time in road networks exposed to risks of natural disasters**  
*Ryuichi Tani and Kenetsu Uchida***Use of the spectral partitioning method to evaluate the connectivity of road networks**  
*Hiroe Ando, Fumitaka Kurauchi, Shuhei Myoko, Michael Bell and Supun Perera***Network travel time reliability metrics and their connection with network traffic characteristics**  
*Fangfang Zheng, Xiaobo Liu, Henk Van Zuylen, Jie Li and Chao Lu***12:30 – 13:30****Lunch (Floor 17)****13:30 – 15:30****Session 6A (Floor 17)**  
**Theme: Traffic Networks****Chair: David Levinson****Distribution-free reliability-based user equilibrium in a transport network with speed limits under supply uncertainty**  
*Bei Wang and Wai Yuen Szeto***Robust evaluation for transportation network capacity under demand uncertainty**  
*Muqing Du, Xiaowei Jiang, Lin Cheng and Changjiang Zheng***Mesoscale modelling of a road network for the assessment of connectivity reliability**  
*Shun-Ichi Kobayashi, Shoichiro Nakayama and Keita Wakabayashi***Traffic Flow Variation and Network Structure**  
*Alireza Ermagun and David Levinson***13:30 – 15:30****Session 6B (Floor 16)**  
**Theme: Big Data / Decision Support Systems****Chair: Fangfang Zheng****Adaptive Park-and-ride Decision along a Corridor with Time-dependent and Uncertain Travel Times**  
*Alireza Khani***Dynamics of the ticket booking behavior during the Chinese New Year**  
*Yuhan Gao, Jan-Dirk Schmöcker and Toshiyuki Nakamura***Impact of Long-Continuous Driving Vehicles on Accident Risks**  
*Takahiro Tsubota, Toshio Yoshii and Koichi Ogura***Travel time reliability: how reliable are the measurements?**  
*Jie Li, Henk Van Zuylen and Fangfang Zheng***15:30 – 16:00****Afternoon tea (Floor 17)**

16:00 – 18:00 NeLT Session (Floor 17)

Chair: Sung-Jin Kim

**The Improvement of Railway Logistics of Bulk Cargo in Korea**

*Yong-Jang Kwon, Young-Joo Kim and Suk Lee*

**Study on Port Work Accident Preventing/Diminishing with IoT and Big Data**

*Hyongmo Jeon*

**The Design framework for Cargo Hub Facilities**

*Kap Hwan Kim, Chulung Lee and Hun-Koo Ha*

**A new approach to urban rail networks for freight**

*Hag-Seoung Kim and Dae-Seop Moon*

16:00 – 18:00 Transport Modelling and Analysis Session  
(Floor 16)

Chair: Xiaowen Fu

**Climate Change and Adaptation Planning for Ports**

*Adolf Ng*

**Can Airfares Tell? A New Perspective of Airport Congestion Internalization**

*Changmin Jiang*

**How Aviation and Maritime Research Connect or Differ from Each Other – A Visual Analysis Using CiteSpace**

*Fan Wang*

**Modeling the Potential for Aviation Liberalization in Central Asia - Market analysis and implications for the Belt and Road initiative**

*Xiaowen Fu*

19:00 – 23:00 Conference Dinner (Sydney Harbour Cruise)

**FRIDAY 19 JANUARY (SYMPOSIUM DAY 3)****09:00 – 10:30****Session 7A (Floor 17)**  
**Theme: Big Data / Decision Support Systems****Chair: Wafaa Saleh****Real-Time Rescheduling for Tramway Systems via a Decision Support System***Kam-Fung Cheung, Yong-Hong Kuo, David S.W. Lai and Janny M.Y. Leung***Investigating HGV accidents: Can we reliably measure fatigue?***Wafaa Saleh and Lucy Downey***ITS Related Pedestrian Crossing Features at Signalized Intersections: Do they reduce delays for pedestrians?***Lucy Downey, Wafaa Saleh, Deepti Muley and Mohamed Kharbeche***09:00 – 10:30****Session 7B (Floor 16)**  
**Theme: Traffic Networks****Chair: Maaïke Snelder****Delays caused by incidents – a validated link vulnerability indicator for road networks***Maaïke Snelder***Two-lane highway reliability***Krzysztof Ostrowski, Chodur Janusz and Adrianna Kaczor***Study on evaluation of reliability ratio by integrated approach in an urban expressway***Ayaka Ishii, Toshihiko Kitazawa, Shinji Nakagawa, Daisuke Fukuda and Yasuo Asakura***10:30 – 11:00****Morning tea (Floor 17)****11:00 – 12:30****Session 8A (Floor 17)**  
**Theme: Maritime Transport****Chair: Yasuo Asakura****Planning liner shipping routes and schedules under uncertain weather and sea conditions: a robust optimization approach***Mingyu Li and Chi Xie***Probabilistic assessment of container shipping route disruption costs from natural disasters – An application to the KIX Australia-New Zealand Service Line***Nina Jirouskova, Pablo Achurra-Gonzalez, Nils Goldbeck and Panagiotis Angeloudis***Analysis of the world shipping network by eigenvalue decomposition***Jingjing Pan, Michael Bell, Kam-Fung Cheung, Somwrita Sarkar and Supun Perera***11:00 – 12:30****Session 8B (Floor 16)**  
**Theme: Traffic Flow Modelling****Chair: Francesco Viti****Improving Origin-Destination Matrix Estimations Through Qualitative Data***Christopher Mukuye, Saeed Maadi, Jan Dirk Schmoeger, Toshiyuki Nakamura and Nobuhiro Uno***Evaluating the Reliability of the Utility-Based Dynamic OD Estimation on Large Networks***Guido Cantelmo and Francesco Viti***Travel demand estimation using heterogeneous data pieces: addressing stochasticity and observability issues***Yudi Yang, Yueyue Fan and Roger Wets***12:30 – 13:30****Lunch (Floor 17)****13:30 – 15:30****Session 9A (Floor 17)**  
**Theme: Traffic Networks****Chair: Walter Wong****Solving Transport Network Vulnerability Bound under Simultaneous Multi-Link Disruptions: A Random Key Genetic Algorithm Approach***Seungkyu Ryu, Anthony Chen, Xiangdong Xu and Keechoo Choi***An eigenvalue analysis of Laplacian matrix of emergency transportation roads in Ishikawa and Hokuriku, Japan***Shoichiro Nakayama and Shun-Ichi Kobayashi***Transport network vulnerability by capacity weighted spectral analysis: an application on large scale networks***K.I. Wong, Michael G H Bell, Fumitaka Kurauchi and Supun Perera***Hierarchical control for large-scale urban road traffic networks***Anastasios Kouvelas and Nikolas Geroliminis***13:30 – 15:30****Session 9B (Floor 16)**  
**Theme: Public Transport / Car Share****Chair: Nikolas Geroliminis****A method for analysing the vulnerability of a high-speed rail network***Suhyeon Kim and Minchoul Park***Measuring Passengers' Reliability Experience from AFC Data***Daniel Wood, Anne Halvorsen, Haris N. Koutsopoulos, Nigel H.M. Wilson***Experienced Public Transport Service Reliability: Integrating Travel Time and Travel Conditions***Erik Jenelius***Modelling One-way Station-based Car Sharing Systems***Kai Huang and Kun An***15:30 – 16:00****Afternoon tea (Floor 17)**

16:00 – 17:30

Session 10 (Floor 17)

Chair: Suh-Wen Chiou

Theme: Traffic Networks

**Vulnerability analysis of network observability in link flow inference problems**

*Marco Rinaldi and Francesco Viti*

**Time-dependent robust signal timing for urban road network with hazmat transportation**

*Suh-Wen Chiou*

**Testing urban planning network capacity and reliability in response to all-hazards approach**

*Cheng-Kai Hsu and Tzu-Chang Lee*

17:30 – 18:00 Conference Closure (Floor 17)

**Word from the Chairman of the INSTR Scientific Advisory Committee**

*Michael G. H. Bell*

**Word from the host of INSTR 2020**

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