

INSTR 2018

7th 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



INSTR 2018 Local Organising Committee

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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: The Challenge of Transport Network Reliability from a National Perspective***Phillip 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 Bil***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, Yusuke 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)
Theme: Big Data / Decision Support Systems

Chair: Takahiko Kusakabe

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)
Theme: Traffic Flow Modelling

Chair: Masao Kuwahara

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)** **Chair: Supun Perera**
Theme: Big Data / Decision Support Systems

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)** **Chair: Maaïke Snelder**
Theme: Traffic Networks

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)** **Chair: Yasuo Asakura**
Theme: Maritime Transport

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)** **Chair: Francesco Viti**
Theme: Traffic Flow Modelling

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)** **Chair: Walter Wong**
Theme: Traffic Networks

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)** **Chair: Nikolas Geroliminis**
Theme: Public Transport / Car Share

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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