

CASPT18

TRANSIT DATA

**14th International
Conference on Advanced Systems in Public Transport (CASPT)**

In conjunction with the

**4th International Workshop and Symposium on
Research and Applications on the
Use of Passive Data from Public Transport (TRANSIT DATA)**



23-25 July 2018

Brisbane Convention Centre, Brisbane, Australia

Welcome!

We would like to welcome you to the 14th International Conference on Advanced Systems in Public Transport (CASPT) and the 4th International 4th International Workshop and Symposium on Research and Applications on the Use of Passive Data from Public Transport (Transit Data).

We are very excited to host this joint conference here in Brisbane, at the Brisbane Convention and Exhibition Centre. The Convention Centre is located steps from the South Bank cultural precinct, in the centre of Brisbane's arts, entertainment, and night life district, and it is only a short walk to the Brisbane CBD. With a fully integrated public transport system of rail, bus, busways, and ferries, this world-class city of Brisbane proud to be the host city for CASPT / Transit Data 2018.

Conference on Advanced Systems in Public Transport

This conference is the 14th in the series that serves as a forum for the international community of researchers, practitioners and vendors on all aspects of public transport planning and operations. CASPT covers significant contributions to the theory and application of systems and methodologies for advancing and improving public transport planning and operations. CASPT does not only encourage the generation and presentation of new ideas, but also intends to instigate productive collaborations between participants from academia, industry, and government.

Since 1997, the conference has met every 3 years. The conference originated in 1975, under the name of "Computer-Aided Scheduling of Public Transport". The name was updated in 2009 to better reflect the expanded scope of activities in the conference. Previous conferences have been held in Chicago (1975), Leeds (1980 and 2006), Montréal (1983 and 1990), Hamburg (1987), Lisbon (1993), Boston (1997), Berlin (2000), San Diego (2004), Hong Kong (2009), Santiago (2012), and Rotterdam (2015).

Transit Data

This workshop is the 4th in a series on the use of automated data collection systems in public transport. The focus of these meetings has been to build an international network of researchers working on these topics, and also to bring together researchers and practitioners to discuss recent methodological developments and innovative applications. This workshop continues a series that began in Gifu, Japan in 2014; Boston, USA in 2016; and Santiago, Chile in 2017.

A great debt of appreciation is due to our conference sponsors.

PLATINUM:



GOLD:



SILVER:



PAPER AWARDS:



NS (Dutch Railways)



A great debt of appreciation is also due to the two Scientific Committees that have worked diligently to support this conference and to sustain the larger community of researchers in public transport planning and operations.

CASPT International Scientific Committee:

Hong K. Lo, Hong Kong University of Science and Technology, *Convener*

Avi Ceder, Technion – Israel Institute of Technology

Joachim Daduna, Hochschule für Wirtschaft und Recht Berlin

Charles Fleurent, GIRO

Mark Hickman, The University of Queensland

Fumitaka Kurauchi, University of Gifu

Raymond Kwan, University of Leeds

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Pitu Mirchandani, The Arizona State University

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Maguelonne Chandesris, SNCF

Taku Fujiyama, University College London

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Amer Shalaby, University of Toronto

Martin Trépanier, École Polytechnique de Montréal

Niels van Oort, Delft University of Technology

Nigel Wilson, Massachusetts Institute of Technology

Day 1 – Monday 23 July

7:30	Registration			
8:30	Welcome			
9:00	Plenary 1: Nigel Wilson "Using Automated Data to Improve Public Transport Performance: A Framework and Applications"			
10:00	Morning Tea			
	Boulevard Auditorium	Boulevard B1	Boulevard B2	Boulevard B3
10:30	Automatic bottleneck detection using AVL data: a case study in Amsterdam Ties Brands, Niels van Oort and Menno Yap	Solving periodic timetabling problems with SAT and machine learning Gonçalo P. Matos, Luís M. Albino, Ricardo Saldanha and Ernesto M. Morgado	Passenger Route Choice and Assignment Model for Combined Fixed and Flexible Public Transport Systems Jishnu Narayan, Oded Cats, Niels van Oort and Serge Hoogendoorn	Optimizing mixed-fleet bus scheduling under range constraint Lu Li, Hong Lo and Feng Xiao
11:00	Non-parametric approach for real time prediction Maguelonne Chandesris and Xavier Chapuis	A Mixed Integer Linear Programming Model for Rolling Stock Rebalancing Federico Farina, Dennis Huisman, Roberto Roberti and Shadi Sharif Azadeh	Logit-based transit assignment: Approach-based formulation and paradox revisit Sujun Sun, Wai Yuen Szeto and Sin C. Ho	Towards Optimised Deployment of Electric Bus Systems with On-Route Charging using Cooperative ITS Marcin Seredynski and Francesco Viti
11:30	Assessment of models based on GPS data to identify buses skipping formal stops Nicolás García and Juan Carlos Herrera	A branch-and-price-and-cut method for train unit scheduling with complex minimum turnaround time requirements Zhiyuan Lin, Pedro Jesus Copado-Mendez and Raymond Kwan	The influence of frequency on route choice in mixed schedule- and frequency-based public transport systems – The case of the Greater Copenhagen Area Morten Eltvéd, Otto Anker Nielsen and Thomas Kjær Rasmussen	Optimizing the Preventive-Maintenance Plan of a Public Transport Bus Fleet Charles Fleurent
12:00	Lunch			
13:00	Transit Decision-Making in Transition? Past, Present, and Future Perspectives on the Use of ITS Data in North America for Transit Planning and Management and Related Challenges Brendon Hemily	Resolution of Station Level Constraints in Train Unit Scheduling Li Lei, Raymond Kwan, Zhiyuan Lin and Pedro Jesús Copado-Méndez	A metaheuristic-supported evaluation of the suitability of an urban integrated special transport service Marcus Posada and Carl Henrik Häll	Minimizing the waiting time in timetabling Gert-Jaap Polinder, Marie Schmidt and Dennis Huisman
13:30	Passive tracking of passengers to analyse public transport use in case of disturbances Alessio D. Marra, Henrik Becker, Kay W. Axhausen and Francesco Corman	Relationships between capacity, speed heterogeneity, and robustness in railway networks Lars Wittrup Jensen	Design of Integrated Flexible Transit Service with Given Fixed-Route Services Khaled Saeed and Fumitaka Kurauchi	Frequency and Vehicle Capacity Determination using a Dynamic Transit Assignment Model Oded Cats and Stefan Glück

14:00	Event-Based Passive Tracking of Public Transportation Passengers Yuval Hadas and Boaz Ben Moshe	Train dispatcher desk districting problem in high-speed railway network Jun Zhao, Dian Wang and Qiyuan Peng	Value of Reliability for the Waiting Stage, In-vehicle Stage and Transfer Stage of Demand Responsive Transport (DRT) Services María J. Alonso-González, Sascha Hoogendoorn-Lanser, Niels van Oort, Oded Cats and Serge Hoogendoorn	Ride into the danger zone: avoiding the wrong frequency for an express bus service. Homero Larrain and Juan Carlos Munoz
14:30	Afternoon Tea			
15:00	Plenary 2: Lauren Sager Weinstein "Delivering Better Transport with Data"			
16:00	Bus bunching prediction based on logistic regression considering rare events bias Wenzhe Sun, Jan-Dirk Schmoecker, Toshiyuki Nakamura and Hiroshi Shimamoto	Size Limited Iterative Method: A Hybridized Heuristic for Train Unit Scheduling Optimization Pedro Jesus Copado-Mendez, Zhiyuan Lin and Raymond Kwan	Using passenger flows to determine key interchange connections for public transport synchronization Menno Yap, Ding Luo and Oded Cats	Integrating line planning, timetabling and vehicle scheduling: Integer programming formulation and analysis Philine Schiewe, Anita Schöbel, Christian Puchert and Marco Lübbecke
16:30	Combined use of Smartcard and Wifi detections to estimate real-time operational information of a public transport system Pablo Guajardo and Juan Carlos Herrera	Loaded train combination problem at marshalling station in heavy haul railways Dian Wang, Jun Zhao and Qiyuan Peng	Rail-to-Bus and Bus-to-Rail Transfer Time Distributions Estimation Based on Passive Data Amr M. Wahaballa, Fumitaka Kurauchi, Jan-Dirk Schmöcker and Takenori Iwamoto	Stopping Pattern and Frequency Determination for a Multi-Modal Network Oded Cats and Merlijn van Beurden
17:00	Unsupervised approach to bunching swings phenomenon analysis Viktoriya Degeler, Léonie Heydenrijk-Ottens, Ding Luo, Niels van Oort and Hans van Lint	Hybrid stochastic approaches for train trajectory reconstruction Pier Giuseppe Sessa, Valerio De Martinis, Axel Bomhauer-Beins, Francesco Corman and Ulrich A. Weidmann	Game Theoretic Approach for Reliability Evaluation of Public Transportation Transfers Giorgio Gnecco, Yuval Hadas and Marcello Sanguineti	Modelling Turns in Transit Network Design Antonio Mauttone and Paula Riganti
18:30	Welcome Reception: Drinks and Nibbles at Victoria Park, Brisbane			

Day 2 – Tuesday 25 July

7:00	Breakfast Meeting of Transit Data ISC (Invitation Only)			
8:00	Registration			
	Boulevard Auditorium	Boulevard B1	Boulevard B2	Boulevard B3
8:30	Understanding Fare Evasion Rates in Public Transport Luis-Angel Cantillo, Juan Carlos Munoz, Sebastián Raveau and Paula Iglesias	Railway timetable rescheduling for multiple simultaneous disruptions Yonqiu Zhu, Rob M.P. Goverde and Egidio Quaglietta	Real-time Transit Operations Using Markov Decision Process Alireza Khani	The utility maximising ferry network design problem Michael Bell, Jingjing Pan, Kam-Fung Cheung, Collins Teye and Supun Perera
9:00	Investigating Paper Ticket Usage on London Underground's Network Tolulope Mohammed and Taku Fujiyama	Train Rescheduling Strategies in a Complete Blockage Shuguang Zhan, S. C. Wong, Qiyuan Peng and S.M. Lo	A stochastic model for bus injection in a public transport service Diego Morales and Juan Carlos Muñoz	Equitable Transit Network Design Under Uncertainty Yu Jiang
9:30	A Methodology for Correcting Smartcard Trip Matrices by Fare Evasion Luis-Angel Cantillo, Juan Carlos Munoz, Sebastián Raveau, Paula Iglesias and Sebastián Tamblay	A train rescheduling algorithm which minimizes passengers' dissatisfaction based on MILP formulation Keisuke Sato, Keita Koinuma and Norio Tomii	Addressing metro line disruptions through boarding limits: The cost and time of system recovery Carlos E. Bueno-Cadena, Juan Carlos Muñoz and Gabriel E. Sánchez-Martínez	Transit Network Design for Intercity Services Considering Time-Varying Demand Andisheh Ranjbari, Mark Hickman and Yi-Chang Chiu
10:00	Morning Tea			
10:30	Plenary 3: Anita Schoebel "Passengers in Public Transport: Integrating Their Routes in the Planning Process"			
11:30	Digital Transformation in Public Transport Stefan Voss and Leonard Heilig	A Next Step in Disruption Management: Combining Operations Research and Complexity Science Mark Dekker, Rolf van Lieshout, Robin Ball, Paul Bouman, Stefan Dekker, Henk Dijkstra, Rob Goverde, Dennis Huisman, Deb Panja, Alfons Schaafsma and Marjan van den Akker	Determinants of passengers' metro car choice revealed through automated data sources: A Stockholm metro case study Soumela Pefitsi, Erik Jenelius and Oded Cats	Time-Dependent Capacitated Transit Routing with Real-Time Demand and Supply Data Omer Verbas, Vadim Sokolov, Joshua Auld and Hubert Ley
12:00	Space-time classification of public transit smart card users' activity locations from smart card data Li He, Martin Trépanier and Bruno Agard	Determining and Evaluating Alternative Line Plans in (Near) Out-of-Control Situations Rolf van Lieshout, Paul Bouman and Dennis Huisman	Estimation of Denied Boarding in Urban Rail Systems: Alternative Formulations and Comparative Analysis Zhenliang Ma, Haris Koutsopoulos, Yunqing Chen and Nigel Wilson	Tradeoff Between Processing Time and Solution Quality for an A*-Guided Heuristic Applied to a Multi-Objective Bus Passenger Trip Planning Problem Sylvain M. R. Fournier, Eduardo Otte Hülse and Éder Vasco Pinheiro

12:30	Lunch Meeting of CASPT ISC (Invitation Only)			
14:00	Driver schedule efficiency vs. public transport robustness: A framework to quantify this trade-off based on passive data Menno Yap and Niels van Oort	Strategic interactions between minimization of train delays and passenger assignment in Microscopic Railway Delay Management Francesco Corman	A predictive method for public transport operations control Hend Manasra and Tomer Toledo	System Headways in Line Planning Alexander Schiewe, Anita Schöbel, Markus Friedrich and Maximilian Hartl
14:30	Before and After Evaluation of a Bus Network Improvement Using Historical Smart Card Data Renato O. Arbex, Claudio Barbieri Cunha and Bonett João	Modeling delays with generalized linear models for high-speed and suburban train arrivals Marie Milliet de Faverges, Giorgio Russolillo, Christophe Picouveau, Antoine Robin, Boubekour Merabet and Bertrand Houzel	A holding control strategy for diverging bus lines Georgios Laskaris, Oded Cats, Erik Jenelius, Marco Rinaldi and Francesco Viti	An Optimization Model for Planning Limited-Stop Bus Operations Mahmood Mahmoodi Nesheli, Siva Srikukenthiran and Amer Shalaby
15:00	Analysis of tram users' behavior and evaluation of operation by using smart card data Shoshi Mizokami, Takumasa Morita and Yosiaki Nakamura	Rolling Stock Rescheduling in Case of Delays Rowan Hoogervorst, Twan Dollevoet, Dennis Huisman and Gábor Maróti	Bus Bunching Modelling and Control: A Passenger-oriented Approach Dong Zhao and Mohsen Ramezani	A novel approach for the optimal design of skip-stop service in transit corridors Yu Mei, Weihua Gu, and Wenbo Fan
15:30	Afternoon Tea			
16:00	Route Choice Stickiness of Public Transport Passengers: Measuring Habitual Bus Ridership Behaviour using Smart Card Data Jiwon Kim, Jonathan Corcoran and Marty Papamanolis	Assessing disruption management strategies in rail-bound urban public transport from a passenger perspective Dennis Roelofsen, Oded Cats, Niels van Oort and Serge Hoogendoorn	Minimising transfer penalty in public transit network with Constraint Programming Rejitha Nath Ravindra, Mark Wallace, Graham Currie, Daniel Harabor and Chris Loader	Using Continuous Approximation for Service Quality and Fare Level Optimisation Zhihua Jin, Jan Dirk Schmoecker and Saeed Maadi
16:30	Analyzing Interpersonal and Intrapersonal Variability of Transit Use with Smart Card Data Elodie Deschaintres, Catherine Morency and Martin Trépanier	Exploring the dynamic impact zone for conflict prevention in real-time railway traffic management Sofie Van Thielen, Francesco Corman and Pieter Vansteenwegen	Centralized and Decentralized Optimal Frequency Setting for Routes Sharing a Transfer Stop Matan Shnaiderman and Yuval Hadas	Is Flat Fare Fair? Equity Impact of Fare Scheme Change Isak Rubensson, Oded Cats and Yusak Susilo
17:00	Supervised learning: Predicting passenger load in public transport Léonie Heydenrijk-Ottens, Viktoriya Degeler, Ding Luo, Niels van Oort and Hans van Lint	New alternative graph models and methods for the real-time railway traffic management problem Marcella Samà, Andrea D Ariano and Dario Pacciarelli	Multi-Directional Transfer Time Optimization at a Single Transfer Node Zahra Ansarilari, Mahmood Mahmoodi Nesheli, Siva Srikukenthiran, Amer Shalaby and Merve Bodur	Theoretical Evaluation on the Effects of Changes from a Zonal to a Distance-based Fare Structure Saeed Maadi and Jan-Dirk Schmöcker

Day 3 – Wednesday 25 July

8:00	Registration			
	Boulevard Auditorium	Boulevard B1	Boulevard B2	Boulevard B3
8:30	Translating Research to Practice: Implementing Real-time Control on High-Frequency Transit Routes Simon Berrebi, Sean Crudden and Kari Watkins	Agent-based simulation approach for disruption management in rail schedule Nuannuan Leng, Valerio De Martinis and Francesco Corman	Impacts of Autonomous Driving on Public Transport Services Joachim R. Daduna	How far are travellers willing to walk to access a more frequent service: an international comparison? Corinne Mulley, Chinh Ho, Loan Ho, David Hensher and John Rose
9:00	A Smart Dispatching tool based on AVL data Pedro Lizana, Ricardo Giesen, Felipe Delgado, Juan Carlos Munoz, Diego García and Paul Basnak	Maximum Robust Train Path for an Additional Train Inserted in an Existing Railway Timetable Fredrik Ljunggren, Kristian Persson, Anders Peterson and Christiane Schmidt	Deployment Planning of Single-Line Modular-Vehicle Semi-Rapid Transit System Tao Liu, Avishai Ceder and Andreas Rau	Insights into factors affecting the combined bicycle-transit mode Joeri van Mil, Tessa Leferink, Jan Anne Annema and Niels van Oort
9:30	How does considering bus drivers with different driving behaviors impact the performance of interval control tools? Yerly Fabian Martinez, Juan Carlos Muñoz and Felipe Delgado	Evaluation of Bus Bridging Scenarios for Railway Service Disruption Management: A Users' Delay Modelling Tool Aya Aboudina, Alaa Itani, Ehab Diab, Siva Srikukenthiran and Amer Shalaby	Optimal Transit Service Design in a Linear Corridor Connecting Multiple Job Centers Considering Residential Location Choice Liang Xia, Xinguo Jiang, Weihua Gu and Wenbo Fan	Incorporating reliability into Queensland's LUPTAI accessibility model Kelly Bertolaccini, Mark Hickman and Svitlana Pyrohova
10:00	Morning Tea			
10:30	Plenary 4: David Hensher and Yale Wong "Shared Smart Mobility, MaaS and Public Transport - A New Future?"			
11:30	OneBusAway: A Ten Year Retrospective of an Open Source Real-time Information System Kari Watkins	A simulation model for assessment and evaluation of bus terminal design Therese Lindberg, Anders Peterson and Andreas Tapani	How the distribution of arrival times at a railway station varies with headway: A study using smart card data Geoffrey Clifton, Corinne Mulley, Loan Ho, Quoc Chinh Ho and Barbara Yen	
12:00	Route Choice Strategies and Usage of Real Time Information in Public Transport – an empirical survey based on dedicated smartphone application Ulrik Berggren, Carl Johnsson, Helena Svensson and Anders Wretstrand	Social Cost Benefit Analysis for Pre-payment Bus Stops: An Application in Transantiago Guillermo Soto, Sebastián Tamblay, Juan Carlos Herrera and Ignacio Guimpert	Modelling Railway-Induced Passenger Delays in Multi-Modal Public Transport Networks: An Agent-Based Copenhagen Case Study Using Empirical Train Delay Data Mads Paulsen, Thomas Kjær Rasmussen and Otto Anker Nielsen	
12:30	Lunch			

13:30	Short-Term Multi-Step Ahead Forecasting of Railway Passenger Flows During Special Events With Machine Learning Methods Florian Toqué, Etienne Côme, Martin Trépanier and Latifa Oukhellou	Intelligent Mobility and MaaS - Designing Mobility Packages and Contracts Yale Wong and David Hensher	Investigating Sampling Biases in Transit Onboard Surveys and Associated Impacts on Resulting Passenger Socioeconomic and Travel Characteristics Rabi Mishalani, Mark McCord, Andre Carrel and Jakob Zumfelde	User satisfaction issues that public transport integration has brought to Bogotá, Colombia – The case of SITP Carlos Andres Poveda Benitez, Clara Isabel Arango Ruiz and Alvaro Rodriguez
14:00	Crowding on Trains and Platforms: A New Approach to Big Data Chinh Ho and Loan Ho	Assessing the Impact of Future Personalised Public Transport Yu Jiang and Avisahi Ceder	Analysing the influence of station characteristics and perceived safety on public transport ridership: A case study from the Greater Copenhagen Area Jesper Bláfoss Ingvardson, Otto Anker Nielsen and Shahbaz Altaf	What factors determine the variability of the level of service experienced by users? Jaime Soza-Parra, Juan Carlos Munoz and Sebastián Raveau
14:30	A Machine Learning Approach to Detecting Long Term Changes in Weekly Trip Patterns of Public Transport Passengers Chun Yong Moon, Jiwon Kim and Mark Hickman	Potential for mode shifts due to Mobility-as-a-Service: results from the Netherlands Mobility Panel Lucas Harms, Anne Durand and Sascha Hoogendoorn-Lanser	Can Passenger Flow be Explained by Network Topology in Public Transport? Ding Luo, Oded Cats and Hans van Lint	The underlying effect of public transport reliability over users' satisfaction Jaime Soza-Parra, Juan Carlos Munoz and Sebastián Raveau
15:00	Afternoon Tea			
15:30	Quantifying Transit Travel Experiences from the Users' Perspective with High-Resolution Smartphone and Vehicle Location Data Andre Carrel, Peter S.C. Lau, Rabi G. Mishalani, Raja Sengupta and Joan L. Walker	Identifying quick win opportunities for surface transit, delay reductions obtained through traffic signal timing distribution Alejandro Schmidt, Sebastián Tamblay, Francisco Garrido-Valenzuela, Marina Dragicevic and Juan Carlos Herrera		
16:00	Big Data Sources from GPS-enabled Smartphone Applications: An Exploratory Analysis of Transit App Data Candace Brakewood, Niloofar Ghahramani, Coline Remy and Jonathan Peters	User Equilibrium Model of Ridesharing Transport with High-Occupancy Vehicles Lane Phathinan Thaitatkul, Toru Seo, Takahiko Kusakabe and Yasuo Asakura		
16:30	Improving railway passengers experience: two perspectives Mark van Hagen and Niels van Oort	Methodology for Transit Priority Lanes Design Problem Intended for Real Road Networks Saeed Asadi Bagloee and Majid Sarvi		
18:30	Conference Dinner at the Customs House, Brisbane CBD Canapes at 18:30, Dinner at 19:00			

Boulevard Level Layout

