

11<sup>th</sup> Triennial Symposium on Transportation Analysis



LABORATOIRE GRETTIA
TRANSPORTATION NETWORKS
ENGINEERING AND ADVANCED
COMPUTING LABORATORY



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# Bienvenue!



Latifa Oukhellou

Latifa Oukhellou is Research Director and Director of the GRETTIA Lab at Université Gustave Eiffel. France.

### Welcome to the 11th Triennal Symposium on Transportation Analysis

After the past couple of years of living with the pandemic, we are pleased to welcome you to the Island of Mauritius for the Eleventh Triennial Symposium on Transportation Analysis (TRISTAN XI), which takes place from the 19th to the 25<sup>th</sup> of June 2022. This year also marks the 30th anniversary of the symposium, which we are happy to celebrate together. We are pleased to welcome you to the Ravenala Attitude Hotel. This symposium will be an opportunity to showcase recent research and applications in transportation analysis and transportation science. We will also enjoy one full-day excursion, which provides a chance to interact and enjoy the marine treasures of the island. We sincerely hope to maintain the tradition of this symposium as a place of scientific excellence, exchange and potential collaborations, and a place where new relationships within our scientific community can be developed.

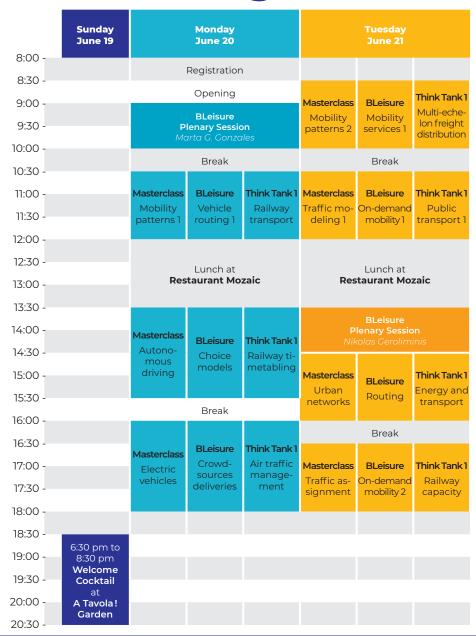
The transport and logistics sectors have undergone major paradigm shifts in recent years. The health crisis and the uncertainties it generates, the changes in use and the sustainability issues facing all players are all paradigm shifts that need to be taken into account, including in their research dimension. The TRISTAN Conference aims to contribute to these research issues

The conference program covers both people and freight transportation and logistics, by all modes, at all geographical scales and planning-operation levels. Innovative presentations of models, methodologies and applications will be given, mainly optimization and operations research-based but also control systems, complex networks and computer science approaches.

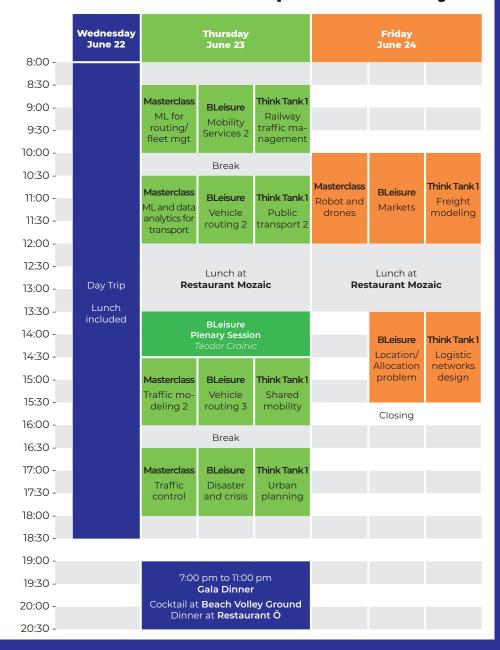
The selection process was particularly competitive this year, as we received 289 extended abstracts. Together with the cochairs of this edition, the members of the Program Committee and the Scientific Committee, we selected 134 extended abstracts (roughly 46%) for presentation at the symposium. We are very grateful to all the reviewers for their voluntary work. The symposium program will run in three parallel sessions with more than 120 participants worldwide. We want to thank all the authors for their work in submitting papers with an excellent scientific level for the TRISTAN XI symposium.

We hope that after Mauritius, the reputation of the conference will be perpetuated and that this will inspire colleagues to organize the next edition of the conference, which will give us another opportunity to meet in other places of the world.

# **Global Program**



### 11th Triennal Symposium on Transportation Analysis



# Plenary session



Marta C. Gonzales

Marta C. Gonzalez is Associate Professor of City and Regional Planning at the University of California, Berkeley, and a Physics Research faculty in the Energy Technology Area (ETA) at the Lawrence Berkeley National Laboratory. She works in the urban science space, focusing on the intersections between people within social networks and the built and natural environments. Her goal is to design urban solutions through new technologies. To that end, she has developed tools that impact transportation research and discovered novel approaches to model human mobility and the adoption of energy technologies. Statistical physics of complex systems and network science informs her scientific approach. Gonzalez's research includes applying big data to understanding human network behavior, with applications in transportation networks, energy efficiency planning, and disease proliferation characterization.

Prior to joining Berkeley, Marta worked as an Associate Professor of Civil and Environmental Engineering at MIT, a member of the Operations Research Center and the Center for Advanced Urbanism. She is a member of the scientific council of technology companies such as Gran Data, PTV and the Pecan Street Project consortium.

# **ay** Monday, June 20

### Modeling and Planning Urban Systems with Novel Data Sources

Urban mobility models are important in a wide range of applications.

Current mainstream models require sociodemographic information from costly manual surveys, which are small in sample sizes and updated in low frequency. I present the TimeGeo modeling framework of individual mobility.

It extracts all required features from passive, and sparse digital traces of mobile phones. In the second part, I present applications of this framework in city planning. Examples are managing the adoption of electric vehicles, extracting behavioral information from credit card transactions and managing traffic demand.

# **Plenary session**



Nikolas Geroliminis

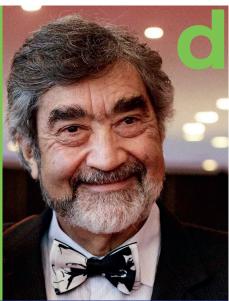
EPFL and the head of the Urban Transport Systems Laboratory (LUTS). Before joining EPFL he was an Assistant Professor in the Department of Civil Engineering at the University of Minnesota, He has a diploma in Civil Engineering from the National Technical University of Athens (NTUA) and a MSc and Ph.D. in civil engineering from University of California, Berkeley. His research interests focus primarily on urban transportation systems, traffic flow theory and control, public transportation and on-demand transport, car sharing, Optimization and Large Scale Networks. He is a recipient of the ERC Startina Grant METAFERW: Modeling and controlling traffic congestion and propagation in large-scale urban multimodal networks. Among his recent initiatives is the creation of an open-science large-scale dataset of naturalistic urban trajectories of half a million vehicles that have been collected by one-of-a-kind experiment by a swarm of drones. Among other editorial responsibilities, he is currently the Editor-In-Chief of Transportation Research part C: Emerging Technologies.

Prof. Nikolas Geroliminis is Full Professor at

## Large-scale monitoring and perimeter control for congested transport networks

Human mobility in congested city centers is a complex dynamical system with high density of population, many transport modes to compete for limited available space and many operators that try to efficiently manage different parts of this system. New emerging modes of transportation, such as ride-hailing and on-demand services create additional opportunities, but also more complexity. The new era of sharing information and 'big data world' has raised our expectation to make mobility more predictable and controllable through a better utilization of existing resources and capacity. The primary motivation of this talk is to study the spatiotemporal relation of congested links in large networks, develop new advancements in the Macroscopic Fundamental Diagram. observe congestion propagation from a macroscopic perspective, identify the effect of multimodal interactions in network capacity and finally, design network-level control strategies to improve multimodal mobility. Investigating the clustering problem over time helps us reveal the hidden information during the process of congestion formation and dissolution. In this framework, we will be able to chase where congestion originates and how traffic management systems affect its formation and the time it finishes. Different control strategies are developed based on principles of optimization and control theory.

# **Plenary session**



Teodor Gabriel Crainic

Teodor Gabriel Crainic is Full Professor of Operations Research, Transportation, and Logistics, and holds the Chair on Intelligent Logistics and Transportation Systems Planning in the School of Management, Université du Québec à Montréal. He is also Adjunct Professor, Department of Computer Science and Operations Research, Université de Montréal, and senior scientist at CIRRELT, the Interuniversity Research Center for Enterprise Networks, Logistics and Transportation, where he is Director of the Intelligent Transportation Systems Laboratory.

Professor Crainic is a member of the Royal Society of Canada – The Academies of Arts, Humanities and Sciences of Canada. He co-founded, in 1991, the TRISTAN - TRienial Symposium on Transportation Analysis and, in 2000, the Odysseus - International Workshop on Freight Transportation and Logistics series of international meetings. He contributes to several editorial boards. He was President of the Transportation Science and Logistics Society of INFORMS, Director of the Centre for Research on Transportation (currently CIRRELT), and received the 2006 Merit Award of the Canadian Operational Research Society.

# Thursday, June 23

## Capacity and Service Planning in Freight Transportation

The shippers, carriers, and intermediaries making up the freight transportation ecosystem wave a dense network of requests and offers of service to move or store loads, and the resulting multimodal vehicle and terminal flows enabling the freight journeys from origins to destinations.

We focus on the consolidation-based component of the field and the planning issues most stakeholders face to efficiently and profitably secure or provide the required capacity and services for their regular operations over a short-medium time horizon. We discuss a number of modelling approaches, combining packing, design, and routing, which address a broad range of these issues, presenting a bit of review, some new developments and work in progress, as well as a number of research challenges and perspectives.

# **30<sup>th</sup> Anniversary Mementos**



Tristan III
San Juan
Puerto Rico
June 17 · 23, 1998



Triennial Symposium on Transportation Analysis

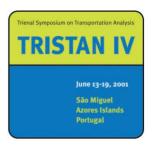
June 13-18, 2004, Le Gosier, Guadeloupe, French West Indies

















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# june 20 Monday

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### 10:30 am - 12:00 pm

### Room Masterclass: Mobility Patterns 1 - Chair: Marta Gonzalez

- 1. Xudong Wang and Lijun Sun, Extracting dynamic mobility patterns by Hankel dynamic modes decomposition
- 2. Paul De Nailly, Etienne Côme, Latifa Oukhellou, Allou Samé and Jacques Ferriere, A «sums and shares» mixture model to study pedestrian flows within a multimodal transport hub
- 3. Shagun Mittal, Fatima Arroyo Arroyo and Satish Ukkusuri, Estimating modal split using mobile phone location data: A case study of Bamako

### Room BLeisure: Vehicle routing 1 - Chair: Michel Gendreau

- 1. Lucas Sippel, Michael Forbes and Joseph Menesch, An Exact Algorithm for a Practical Pickup and Delivery Problem
- 2. Paul Bouman, Gizem Özbaygın Tiniç, Lukas Veelenturf and Rick Willemsen, A column generation heuristic for the Pickup and Delivery Problem with Online Transfers
- 3. Yannik Rist and Michael Forbes, Delayed Disaggregation for Benders Decomposition

### Room Think Tank 1: Railway transport - Chair: Marcella Samà

- **1**. Joris Wagenaar, Evelien van der Hurk, Richard Lusby and Marie Schmidt, A Robust Rolling Stock Rescheduling Approach
- 2. Rim Saddem-Yagoubi, Julie Beugin and Mohamed Ghazel, Verification Framework for Moving Block System Safety: application on the Loss of Train Integrity Use Case
- **3.** Bianca Pascariu, Marcella Samà, Paola Pellegrini, Andrea D'Ariano, Joaquin Rodriguez and Dario Pacciarelli, Generalization of the train routing selection problem for real-time traffic management

### 1:30 pm - 3:30 pm

### Room Masterclass: Autonomous driving - Chair: Maximilian Schiffer

- 1. Weijiang Xiong, Lorenzo Bertoni, Taylor Mordan and Alexandre Alahi, Simple Yet Effective Action Recognition for Autonomous Driving
- 2. Linji Chen and Mohsen Ramezani, Modeling and Managing Operations of Mixed Human-driven and Autonomous Ride-sourcing Fleets
- 3. Anye Zhou and Srinivas Peeta, Alleviating String Instability of Adaptive Cruise Control using Trajectory Shaper
- 4. Junji Urata, Solving a Simultaneous Behavioral Decision Problem During Interactions Using Quantum Optimization

### Room BLeisure: Choice models - Chair: Hans Van Lint

- 1. Tom Haering, Claudia Bongiovanni and Michel Bierlaire, A Benders decomposition for maximum simulated likelihood estimation of advanced discrete choice models
- 2. Louis Balzer and Ludovic Leclercq, Mode share equilibrium with tradable credit scheme over different time cycles
- 3. Xiao Lin and Lorant Tavasszy, Towards multi-class, multi-objective traffic management based on values
- 4. Takuma Murahashi and Eiji Hato, Dynamic scheduling auction using time-expanded decision diagram

### Room Think Tank 1: Railway timetabling - Chair: Mahdi Zargayouna

- 1. Tim Sander and Karl Nachtigall, Introducing an Optimization Model for Timetable Based Railway Network Design
- 2. Edwin Reynolds, Matthias Ehrgott and Judith Y. T. Wang, An evaluation of the fairness of railway timetable rescheduling in the presence of competition between train operators
- 3. Vera Grafe and Anita Schöbel, A Model for Finding Recoverable Robust Periodic Timetables
- **4.** Guillaume Joubert, Antoine Jouglet, Dritan Nace and Marion Postec, An adaptive procedure for railway periodic timetabling and tracks assignment

### 4:00 pm - 6:00 pm

### Room Masterclass: Electric Vehicles - Chair: Jakob Puchinger

- 1. Manuel Trotta, Claudia Archetti, Dominique Feillet and Alain Quilliot, A pickup and delivery problem with a fleet of electric vehicles and a local energy production unit
- 2. Patrick S. Klein and Maximilian Schiffer, Branch-and-Price for the electric vehicle charge scheduling problem with flexible service operations
- 3. Gaute Messel Nafstad, Guy Desaulniers and Magnus Stålhane, Branch-Price-and-Cut for the Electric Vehicle Routing Problem with Nonlinear Charging Function
- 4. Marianne Guillet and Maximilian Schiffer, Multi-Agent Charging Station Search in Stochastic Environments

### Room BLeisure: Crowdsourced deliveries - Chair: Yousef Maknoon

- 1. Michel Gendreau, Fabian Torres and Walter Rei, Crowd-shipping under Uncertainty: Models and Solution Approaches
- 2. Patrick Stokkink and Nikolas Geroliminis, A Continuum Approximation Approach to the Hub Location Problem in a Crowd-Shipping System
- 3. Adam Behrendt, Martin Savelsbergh and He Wang, Joint Order Pricing, Partitioning, and Routing for Hybrid Courier Fleets on Crowdsourced Delivery Platforms
- **4.** Julius Luy, Gerhard Hiermann and Maximilian Schiffer, On the design of crowdsourced delivery fleets: Strategic decisions and operational implications

### Room Think Tank 1: Air Traffic Management - Chair: Alexandre Jacquillat

- 1. Hani S. Mahmassani and Haleh Ale-Ahmad, Operational Strategies and Demand Consolidation in Urban Air Mobility
- 2. Richard Klophaus and Matthias Viehmann, Survival analysis of new intra-European scheduled air services
- 3. William Bonnell and Eddie Wilson, Improving Unmanned Aerial Vehicle Traffic Flow at a Crossroads by Splitting Demand into Parallel Streams
- **4.** Georges Mykoniatis, Sibusiso Moyo, Innocent Davidson, Rafael Lima de Carvalho and Felix Mora-Camino, Air Traffic Restructuring with Airstreams.

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# Program june 21 Tuesday

### 8:30 am - 10:00 am

### Room Masterclass: Mobility Patterns 2 - Chair: Tom Haering

- 1. Ruben A. Kuipers and Carl-William Palmqvist, The spread of passengers on platforms and dwell times for commuter trains: A case study using automatic passenger count data
- 2. Ismaïl Saadi, Etienne Côme, Liem Luong, Sylvain Lassarre and Mahdi Zargayouna, Estimating high-resolution daily encounter networks with activity-travel diaries
- 3. Xiyuan Ren and Joseph Chow, A random-utility-consistent machine learning method to estimate agents' joint activity scheduling behavior from ubiquitous data

### Room BLeisure: Mobility services 1 - Chair: Nikolas Geroliminis

- 1. Xiaoshu Ding, Qi Qi and Sisi Jian, Mechanism design for Mobility-as-a-Service platform considering travelers' strategic behavior and multidimensional requirements
- 2. Claudia Bandiera, Richard D. Connors and Francesco Viti, Competition and cooperation between suppliers in multimodal network design problems
- 3. Guipeng Jiao and Mohsen Ramezani, Incentivizing Shared Rides in e-hailing Systems: Dynamic Discount Pricing

### Room Think Tank 1: Multi-echelon freight distribution - Chair: Fabien Lehuédé

- 1. Christopher Bayliss, Tolga Bektas, Vernon Tjon-Soei-Len and Remo Rohner A multi-modal and variable-echelon last-mile delivery system
- 2. Frederic Semet, Matteo Petris, Claudia Archetti, Diego Cattaruzza and Maxime Ogier, A branch-price-and-cut algorithm for a Multi-Commodity two-echelon Distribution Problem
- 3. Wenjing Guo, Teodor Ğabriel Crainic, Michel Gendreau and Walter Rei planning for many-to-one-to-many freight transportation Operational

### 10:30 am - 12:00 pm

### Room Masterclass: Traffic Modeling - Chair: Carlos Canudas De Wit

- 1. Chiwei Yan, James Johndrow and Dawn Woodard, Efficiency of Travel Time Prediction
- 2. Tatiana Seregina, Mostafa Ameli, Nicolas Coulombel and Mahdi Zargayouna, A calibration quideline for agent-based passenger mobility models
- 3. R. Eddie Wilson and Tianyu Fan. Spatially-driven Instability in Lane-changing Models

### Room BLeisure: On-demand Mobility 1 - Chair: Selin Atac

- 1. Juan Carlos Martinez Mori, Samitha Samaranayake and M. Grazia Speranza, On the Value of Dynamism in Transit Networks
- 2. Mahsa Farhani, Caspar Chorus and Yousef Maknoon, Assortment Optimization for Boundedly Rational Customers
- 3. Yousef Maknoon, Alp Arslan, Shadi Sharif Azadeh and Martin Savelsbergh, Supply and Demand Steering in On-demand Meal Delivery

### Room Think Tank 1: Public Transport System 1 - Chair: Srinivas Peeta

- 1. Dilay Aktas, Pieter Vansteenwegen and Kenneth Sörensen, A demand-responsive bus system for peak hours with capacitated vehicles
- 2. Matthieu Guillot, Angelo Furno, El-Houssaine Aghezzaf and Nour-Eddin El Faouzi, Optimal downsizing of the bus network in Lyon during the COVID-19 pandemic
- 3. Muhammad Naeem, Mehdi Katranji, Guilhem Sanmarty, Sami Kraiem, Mahdi Zargayouna and Fouad Hadj Selem, Understanding the buses delay caused by the geometry of the roads using unsupervised learning

# june 21 Tuesday

### 2:30 pm - 4:00 pm

### Room Masterclass: Urban networks - Chair: Mike Hewitt

- 1. Yechen Li, Neha Arora and Carolina Osorio, On the fundamental diagram of signal controlled urban roads
- **2.** Sérgio Batista, Daniel Bramich, José Balsa and Monica Menendez, Partitioning of urban networks for MFD applications
- 3. Satoki Masuda and Eiji Hato, Macroscopic network design for dynamic evacuation scheduling with MFD-based assignment using the recursive logit model

### Room BLeisure: Routing - Chair: Frédéric Semet

- 1. Prateek Agarwal and Tarun Rambha, Scalable Algorithms for Bicriterion Trip-Based Transit Routing
- 2. Simen Vadseth, Henrik Andersson and Magnus Stälhane, An Improvement MIP model for Routing Problems
- 3. Alexandre Jacquillat, Kai Wang, Shuaian Wang and Wei Zhang, Routing Optimization with Vehicle-Customer Coordination

### Room Think Tank 1: Energy and transport - Chair: Francesco Viti

- 1. Michael Burger, Alexander Schiewe and Anita Schöbel, Energy-optimal Public Transport
- 2. Marko Kapetanović, Nikola Bešinović, Alfredo Núñez, Niels van Oort and Rob M.P. Goverde, Optimal network electrification plan for operation of battery-electric multiple unit regional trains
- 3. Davide Cazzaro, David Franz Koza and David Pisinger, Balanced and unbalanced networks in offshore wind farms

### 4:30 pm - 6:00 pm

### Room Masterclass: Traffic assignment - Chair: Ludovic Leclercq

- 1. Ricardo de La Paz Guala, Cristián E. Cortés, Benjamin Heydecker and Pablo A Rey, Markovian Dynamic Traffic Assignment: A new approach for stochastic DTA
- 2. Timothy Tay, Claudia Bongiovanni and Carolina Osorio, A time-dependent analytical traffic model to tackle dynamic Bayesian optimization problems in urban transportation

### Room BLeisure: On demand mobility 2 - Chair: Francesco Ciari

- 1. Louis Zigrand, Roberto Wolfler Calvo, Emiliano Traversi and Pegah Alizadeh, A Scalable Logic-based Benders Decomposition to Optimize a Dynamic Demand-Responsive Transport System
- 2. Yue Yang and Mohsen Ramezani, Addressing supply and demand heterogeneity: Trip order menus in Ride-hailing platforms
- 3. Kayla Cummings, Alexandre Jacquillat and Vikrant Vaze, Activated Benders Decomposition for Paratransit Workforce Scheduling Under Cancellation Uncertainty

### Room Think Tank 1: Railway Capacity - Chair: Mohamed Ghazel

- 1. Bart van Rossum, Twan Dollevoet and Dennis Huisman, Operational Railway Crew Scheduling With Equity Concerns
- 2. Christopher Szymula, Nikola Besinovic and Karl Nachtigall, Assessing Practical Railway Network Capacity using Petri Nets
- 3. Alexander Schiewe, Anita Schöbel and Linda Sieber, Line Planning for Different Demand Periods

# Program june 22 wednesday

# june 22 Wednesday

# Day trip

# Catamaran Cruise and snorkelling with stop at Île aux Cerfs

Spend the whole day between sky and sea!

On board the catamaran, you will sail along the charming east coast of Mauritius to discover the wonders of this picturesque part of the island: its long sheltered lagoon, the blue and green shades of the crystal clear water





and the breath-taking coastal scenery, set against a backdrop of mountains.

Settle down and enjoy the sun and breeze on your face as you cruise past locations that made history in Mauritius, from the arrival point of the early Dutch settlers to the naval battle between the French and the English navy that determined the island's fate.

The trip continues to Île aux Cerfs famous for its white sandy beaches and lagoon, where you will have a coffee-break. The Island offers a range of water sports and activities for a small supplement (not included).





# Program june 23 Thursday

# june 23 Thursday

### 8:30 am - 10:00 am

### Room Masterclass: Machine learning (ML) for routing/fleet management - Chair: Cristián E. Cortés

- **1.** André Hottung and Kevin Tierney, Learning to solve a stochastic orienteering problem with time windows
- 2. Kai Jungel, Axel Parmentier, Maximilian Schiffer and Thibaut Vidal, Structured-Learning-Based Fleet Control for Autonomous Mobility-on-Demand Systems
- 3. Arthur Ferraz, Quentin Cappart and Thibaut Vidal, Deep-Learning for Data-Driven Districting and Routing

### Room BLeisure: Mobility services 2 - Chair: Mohsen Ramezani

- 1. Caio Vitor Beojone, Nikolas Geroliminis and Yafeng Yin, Repositioning ridesplitting vehicles through pricing: A two-region simulated study
- 2. Qingyang Xiao, Jee Eun Kang and Roger Chen, Service Bundle Sizing and Pricing in Ride Sourcing Services
- 3. Anton Kleywegt and Hongzhang Shao, Optimizing Pricing, Repositioning, En-Route Time, and Idle Time in Ride-Hailing Systems

### Room Think Tank 1: Railway Traffic Management - Chair: Matthias Ehrgott

- 1. Matteo Petris, Federico Naldini, Paola Pellegrini and Raffaele Pesenti, A dynamic decomposition approach for the real-time Railway Traffic Management Problem
- 2. Carlo Meloni, Marco Pranzo and Marcella Samà, Risk evaluation of a real-time Railway Traffic Management solution under uncertain dwell times
- 3. Emily Morey, R. Eddie Wilson and Kevin Galvin, On a Theory for Potential Capacity Gains due to Connected and Autonomous Trains

### 10:30 am - 12:00 pm

### Room Masterclass: ML and Data Analytics for Transport - Chair: Lijun Sun

- 1. Juan Pineda-Jaramillo, Federico Bigi and Francesco Viti, A data-driven model for short-term prediction of arrival delay times in freight rail operations
- 2. Thomas Bapaume, Etienne Côme, Jérémy Roos, Mostafa Ameli and Latifa Oukhellou, Passenger flow forecasting framework based on vision transformer and inpainting: Application to a public transport system,
- 3. Yu Fujiwara, Junji Urata, Makoto Chikaraishi and Akimasa Fujiwara, Destination choice set enumeration using a behavior-similarity human network

### Room BLeisure: Vehicle Routing 2 - Chair: Teodor Gabriel Crainic

- 1. Maxime Agius, Nabil Absi, Dominique Feillet and Thierry Garaix, Workload equity for a dynamic multi-period routing problem in the context of medical transportation
- 2. Maha Gmira, Michel Gendreau, Andrea Lodi and Jean-Yves Potvin, Managing in real-time a vehicle routing plan with time-dependent travel times on a road network
- 3. Benedikt Lienkamp and Maximilian Schiffer, Large scale column generation for multi commodity flow problems: Application to transport optimization

### Room Think Tank 1: Public Transport System 2 - Chair: Ricardo Giesen

- 1. Hongyi Jiang and Samitha Samaranayake, Multi-modal Transit Design with Stochastic Demands
- 2. Sven Müller, Knut Haase and Lorena S. Reyes Rubiano, Revenue Maximizing Tariff Zone Planning for Public Transport Companies
- 3. Gyugeun Yoon and Joseph Chow, Sequential transit route design by link expansion using knowledge gradient with correlated beliefs

### 2:30 pm - 4:00 pm

### Room Masterclass: Traffic Modeling 2 - Chair: Carolina Osorio

- 1. Venkata Karteek Yanumula, Panagiotis Typaldos, Dimitrios Troullinos, Milad Malekzadeh, Ioannis Papamichail and Markos Papageorgiou, Lane-free Traffic with Connected and Automated Vehicles An Optimal Control Approach
- 2. Jean-Patrick Lebacque, Mostafa Ameli and Ludovic Leclercq, System optimum formulation for departure time choice problem in the generalized bathtub model
- 3. Liudmila Tumash, Carlos Canudas de Wit and Maria Laura Delle Monache, A Multidirectional Aggregated Model for Large Urban Networks

### Room BLeisure: Vehicle Routing 3 - Chair: Claudia Archetti

- 1. Alexandre Jacquillat, Alexandria Schmid and Kai Wang, Vehicle routing optimization with relay: an arc-based column generation approach
- 2. Klaas Fiete Krutein, Giacomo Dalla Chiara and Anne Goodchild, Improving Commercial Vehicle Routing Through the Consideration of Cruising for Parking
- 3. Samuel Vercraene, Fabien Lehuédé, Thibaud Monteiro and Olivier Péton Integrated School Bell Time Adjustment and Vehicle Routing for Paratransit Optimization

### Room Think Tank 1: Shared mobility - Chair: M. Grazia Speranza

- **1.** M.Grazia Speranza, Claudia Archetti, Maurizio Bruglieri and Gianfranco Guastaroba, The value of anticipating information in free-floating carsharing systems
- 2. Sebastien Martin, Sean Taylor and Julia Yan, Trading flexibility for adoption: Dynamic versus static walking in ridesharing
- 3. Selin Ataç, Nikola Obrenović and Michel Bierlaire, Evaluation of demand forecasting in bike sharing systems: A general framework and selected case studies

# Program june 25 Thursday

# june 24 Friday

### 4:30 pm - 6:00 pm

### Room Masterclass: Traffic Control - Chair: Joseph Chow

- 1. Majid Rostami-Shahrbabaki, Simone Weikl, Meisam Akbarzadeh and Klaus Bogenberger, A two-layer approach for vehicular flocking in lane-free environment
- 2. Maxime Tréca, Dominique Barth, Julian Garbiso and Mahdi Zargayouna, Green Wave Coordination For Traffic Signal Control Using Deep Reinforcement Learning

### Room BLeisure: Disaster and Crisis - Chair: Satish Ukkusuri

- 1. Bastián Bahamondes, Mathieu Dahan, Andrew Lee and Saurabh Amin, Multimodal Prescriptive Analytics for Rapid Post-Disaster Inspection Operations
- 2. Aiko Kondo, Junji Urata and Eiji Hato, Dynamic evacuation location choice model with risk-responsive survival of alternatives
- 3. Ketut Gita Ayu and Pitu Mirchandani, Evacuation Decision Tree Analysis for Disaster Response in a Stochastic-Dynamic Network

### Room Think Tank 1: Urban planning - Chair: Samitha Samaranayake

- 1. Irecis Azcuy, Ricardo Giesen and Niels Agatz, Public transport services in support to the last mile freight deliveries
- 2. Michael Forbes and Mitch Harris, A New Formulation of a Parking Lot Design Problem



### 10:00 am - 12:00 pm

### Room Masterclass: Robots and drones - Chair: Alexandre Alahi

- 1. Mikele Gajda, Nils Boysen and Olivier Galay Impact of bot-return policies in truck-and-bot transportation systems
- 2. Catherine Lorenz, Alena Otto and Daniele Vigo, Polynomial approximate dynamic programming scheme for the weight constrained two-echelon routing problem with a drone
- 3. Claudio Sterle, Maurizio Boccia, Andrea Mancuso, Adriano Masone and Antonio Sforza, Optimal management of an AGV based internal distribution system: MILP formulation and heuristic approach
- 4. Pitu Mirchandani, Monica Gentili and Zabih Ghelichi, Drone Location and Scheduling Problems in Disaster Relief Management

### Room BLeisure: Markets - Chair: Hani S. Mahmassani

- **1.** Bingqing Liu and Joseph Chow, A subsidy-stabilized assignment game for Mobility-as-a-Service markets with both fixed route and on-demand operators
- 2. Alberto Giudici, Jan van Dalen, Tao Lu and Rob Zuidwijk, Online learning for two-sided sequential transport matching markets with temporal effects
- 3. Virginie Lurkin, Stable allocations for collaborative choice-based pricing in transport markets
- 4. Dipayan Banerjee, Alexander Stroh, Alan Erera and Alejandro Toriello, Who Has Access to E-Commerce and When? Time-Varying Service Regions in Same-Day Delivery

### Room Think Tank 1: Freight Modeling - Chair: Mostafa Ameli

- 1. Ali Nadi, Neil Yorke-Smith, Hans Van Lint, Lóránt Tavasszy and Maaike Snelder, A Datadriven Time-Dependent Routing and Scheduling for Activity-Based Freight Transport Modeling
- **2.** Claudia Archetti, Diego Delle Donne and Alberto Santinirateek, An extended IP formulation for the Freight on Transport problem
- 3. Ioannis Fragkos, Joris Wagenaar and Martin Faro, Strategic planning under uncertainty in transportation networks
- 4. Simona Mancini, Margaretha Gansterer and Chefi Triki, Impact of lockerboxes location on routing planning in last mile delivery with uncertainty in demand and capacity availability

### 1:30 pm - 3:30 pm

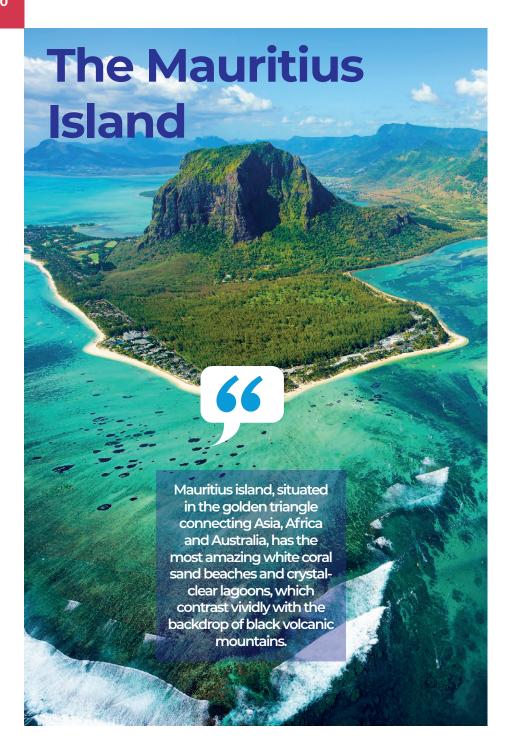
### Room Masterclass: Location/allocation problem - Chair: Rob Zuidwijk

- **1.** Fotios A. Katsigiannis and Konstantinos G. Zografos, Optimising airport slot allocation decisions with stability considerations
- 2. Merve Keskin and Konstantinos Zografos, A Modelling Framework for Solving the Network-Wide Airport Slot Allocation Problem
- 3. Bernardo Martin-Iradi, Dario Pacino and Stefan Ropke, The multi-port continuous berth allocation problem with speed optimization
- **4.** Stefano Fazi and Sourabh Choudhary, The Multi Trip Container Truck Scheduling with Synchronized Empties Re-positioning in a Dry-port Setting

### Room BLeisure: logistics network design - Chair: Thibaut Vidal

- 1. Onkar Kulkarni, Mathieu Dahan and Benoît Montreuil, Hyperconnected Logistics Hub Network Design Under Reliability and Adversarial Disruptions
- 2. Simon Kwon, Benoit Montreuil and Mathieu Dahan, Hyperconnected Service Network Design
- 3. Lacy Greening, Mathieu Dahan and Alan Erera, Middle Mile Consolidation Network Design with Robust Lead Time Constraints
- 4. Mike Hewitt and Fabien Lehuédé, The Service Network Scheduling Problem

3:30 pm - 4:00 pm Closing session





Port-Lou

### **About Mauritius island**

An islander once told Mark Twain that "Mauritius was made first and then heaven; and heaven was copied after Mauritius". Mauritius is considered the dreamed destination by many with its heavenly beaches and turquoise waters. This small gem in the middle of the Indian Ocean hides far more treasures that deserve to be discovered during your vacations. The population, its history, cuisine, culture, and nature are just some of the facets that make the island unique and rich.

Below is a list of the things to do and see, to bring back home unforgettable memories from your stay in Mauritius:

# Port-Louis, the vibrant capital city

Port-Louis, the capital of Mauritius, is a must see when you stay in the island. Port-Louis is a colourful

city steeped in history and culture, where every corner reveals something different, a scent, a style, a period, and above all, the diversity of the Mauritian population. It is the city where the ancient and the modern meet

### Pamplemousses Botanical Garden

Pamplemousses Botanical Garden, or Sir Seewoosagur Ramgoolam Botanical Garden, is one of the most visited sites in Mauritius, and the oldest in the southern hemisphere. Created under the management of Mahé de Labourdonnais by the king's intendant, Pierre Poivre, more than 300 years ago, the garden houses an extraordinary flora with a myriad of native and endemic plants. Animals have also taken up residence there: turtles, deer, and birds of all species. For nature lovers, Pamplemousses garden is the ideal place to stroll with the family or





your partner along the paths bordered with greenery. You might get a chance to see a Talipot tree blooming – it only happens every 30 to 80 years, before the tree dies. The famous ponds with giant water lilies are also worth a visit, perfect place to take some souvenir photos.

### The 7-Coloured Earth in Chamarel

Another key attraction of Mauritius is the Seven-coloured Earth located in the heights of Chamarel. An unexpected site formed by a geological phenomenon that gave to the earth a palette of seven colours. This unique place deserves to be seen. Nearby, you will be amazed by the view of the Chamarel

waterfall from the viewpoint. If you are lucky, you will see monkeys or the elegant Mauritian Tropicbird. Parks and nature reserves are also within easy reach, such as Ebony Forest or Lavilleon Park, where you can recharge your batteries and learn more about Mauritian nature, while the more adventurous will try some supervised openair activities.

### Ile aux Cerfs Island

Crystal-clear waters and white sand beaches shaded by casuarina and palm trees surround this tiny island which caters for those seeking peace and solitude or the thrills of para-sailing and other water sports.





### **Black River Gorges**

A trip into the mountains will reveal the lush green and unspoilt beauty of this National Park. You may be lucky enough to spot a kestrel or straw-tailed tropic bird as you gaze towards the far-distant ocean and enjoy the calm beauty of the surrounding countryside.

### The Tea Route

The Tea Route, in the southern part of the island, will immerse you in the history of this delicious beverage through several sites. You will visit the tea plantations, the factory, and museums. Tastings are also on the menu, and you can bring home various flavours of teas and unexpected by-products such as tea chutney!

### L'Aventure du Sucre

In Pamplemousses, L'Aventure du Sucre, a former sugar factory converted into a

museum, features a beautiful pedagogical tour on the history of cane sugar in Mauritius. The shop will enchant you with all its sweet treats and other souvenirs to bring back in your luggage. Stop for a rum tasting, followed by a gourmet break at the museum's restaurant before continuing your tour.

### The idyllic beaches

The beaches of Mauritius are evocative of dream, escape and heat. They are the typical dreamed getaway for many continental inhabitants. The island is surrounded by beautiful white sandy beaches and cliffs that offer, together with the blue lagoon, an extraordinary scene that varies according to the seasons and the time of the day. The coastal landscapes also change according to the region, they are nothing alike. Holidaymakers often choose their accommodation according to the beaches nearby.







# Accommodation

### The Ravenala Attitude

The Ravenala Attitude is the first 4\* all-suite hotel in Mauritius. It sits on the island's north-west coast in the small village of Balaclava, tucked between the sea and river. The views are spectacular, surrounded by emeraldcoloured gardens and a backdrop of soaring mountains.

This hotel is big on nature, blurring indoor and outdoor spaces harmoniously with colonial rchitecture and exotic, tropical accents. Imagine sand floors and open-air dining among towering palms. There are 272 suites with options for couples, adults and families. In the adults-only wing, all suites overlook the Indian Ocean and have views of the sunset every evening.

For half-board and all-inclusive quests, the hotel offers a Dine Around experience in seven of the 10 restaurants. Each restaurant has its own style,



The Ravenala

found both in the arty décor and on the plate. Guests can hoose what they fancy, from beachside barbecues to authentic Italian.

Activities include cooking classes, kayaking along the river and a bicycle tour to Pointe aux Piments. For youngsters, there's the Ayo Le Dodo kids' club and, for grown-ups, there's the spacious spa.

### 4\*\*\*\* Hotel

Ravenala Attitude is part of Attitude Hotels' Positive Impact movement, creating a future where travel benefits all. Because of the hotel's continued efforts to care for the local community, protect the environment and support the local economy, Ravenala Attitude has been awarded a Travelife Gold certification. There is no single-use plastic in the guest journey. Supplies and products are local, wherever possible. The hotel has also its own Bulk Shop, where guests can help themselves to tea and coffee for their room in reusable glass jars.

lounge

3. After nightclub

4. Laboutik - Mini bar. Bulk shop

4. Laboutik - Otentik bazar

4. Little MDC

5. Conference rooms

6. Balcony bar

7. Mozaik restaurant

8. A Tavola restaurant

9. The Bistrot restaurant

10. The Bistrot bar

11. Pool bar

12. Madame Ming

15. Lime restaurant

16. Juice bar

17. Towel Cabana -

Entertainment kiosk

18. O beach bar

19. O restaurant

20. Kot Nou restaurant

21. Boat house

22. Spa POZ

23. Kids club

24. Riviera restaurant

25. Sports village

26. Diving centre

27. Jetty



### The Ravenala Attitude



### Restaurants

**Mozaik** - *Buffet, local and international* Breakfast: 07:00 to 10:00 Dinner (2 seatings), First seating : 18:30 to 20:00, Second seating : 20:30 to 22:00.

The Bistrot - À la carte, Salads & burgers at lunch; meat & rotisserie at dinner Lunch: 12:00 to 15:00 Dinner (2 seatings), First seating: 18:30 to 20:00, Second seating: 20:30 to 22:00 (Closed on Monday).

### **Beach BBQ** - Buffet

Lunch (open seating for lunch): 12:30 to 15:00 Dinner (2 seatings), First seating: 19:00 to 20:15, Second seating: 20:45 to 22:00 (Open 6 days a week upon reservation and weather permitting, closed on Friday).

A Tavola! - À la carte, Italian
Dinner (2 seatings), First seating: 18:30 to
20:30, Second seating: 20:30 to 22:00
(Open 6 days a week upon reservation, closed on Saturday).

Madame Ming - À la carte, Asian fusion Dinner (2 seatings), First seating: 18:30 to 20:00, Second seating: 20:30 to 22:00 (Open 6 days a week upon reservation, closed on Tuesday and Wednesday). Ō - À la carte, Mediterranean Lunch: 12:30 to 15:00 Dinner (2 seatings), First seating: 19:00 to 20:15, Second seating: 20:45 to 22:00 (Open 6 days a week upon reservation, closed on Saturday).

**Lime** - À la carte, Japanese À la carte Lunch: 12:00 to 15:00 Set menu Dinner: 19:00 to 22:00 With a supplement (Open 6 days a week weather permitting and upon reservation, closed on Thursday).

**Riviera** - À la carte, Seafood and meat Dinner: 19:00 to 22:00 (Restaurant with a supplement; open 6 days a week weather permitting and upon reservation, closed on Sunday).

Kot Nou - À la carte, Mauritian revisited Cuisine: Mauritian revisited Dinner (2 seatings): First seating: 19:00 to 20:00, Second seating: 20:30 to 22:00 (Open 6 days a week upon reservation, closed on Tuesday and Wednesday).



### Ō Beach Bar

Open: 10:00 to 23:00 Lunch (Snacks): 12:30 to 15:00.

### **Balcony Bar**

Open: 10:00 to 23:00 Piano bar as from 18:30 three times a week.

### Pool Bar

Open: 10:00 to 23:45 (last order at 23:30) Continental late breakfast: 10:00 to 11:00 Pool bar and beach lunch menu: 12:30 to 15:00.

### The Bistrot

Open: 12:30 - 15:00 & 18:30 to 23:00 Afternoon tea: 16:00 to 18:00 (included for guests with the All-in-All-out package, closed on Monday).

**Sky Bar** - Conference room bar Open on request for events After - Night club bar Open: as from 23:00 till late. Juice Bar - Fresh fruit and vegetables await at the Juice Bar on the beach.
We'll blend a delicious drink just for you. All our produce is seasonal and grown locally, so it's packed full of flavour. At extra cost.
Open: 10:00 to 17:00.

**Teabaz** – *Self Service* Open: 10:30 to 18:00.

### **Dress Code**

Wet clothes, swimsuits and pareos are not accepted in our restaurants. After 18:30, no shorts, tank tops, singlets and flip flops are allowed in the restaurants. Elegant bermuda shorts are accepted.



### Services and informations

- · Check-in time at 14:00 and check-out time at noon
- Beach towels (with deposit)
- Otentik Bazar open everyday from 08:30 to 20:00
- Bulk shop at Laboutik open every day from 08:00 to 23:00
- Laundry service (at extra cost): available through housekeeping department
- Foreign currency exchange service facilities at the reception (with commission)
- Credit cards accepted: American Express, Visa, MasterCard, Unionpay and Maestro
- Free Wi-Fi in rooms and in public areas
- · A computer with internet access available at reception
- · 24h reception and security services
- Shower and luggage rooms for arrivals and departures
- Parking facilities (upon availability)
- Car rental service
- Taxis
- · Charging sockets available at the lobby.



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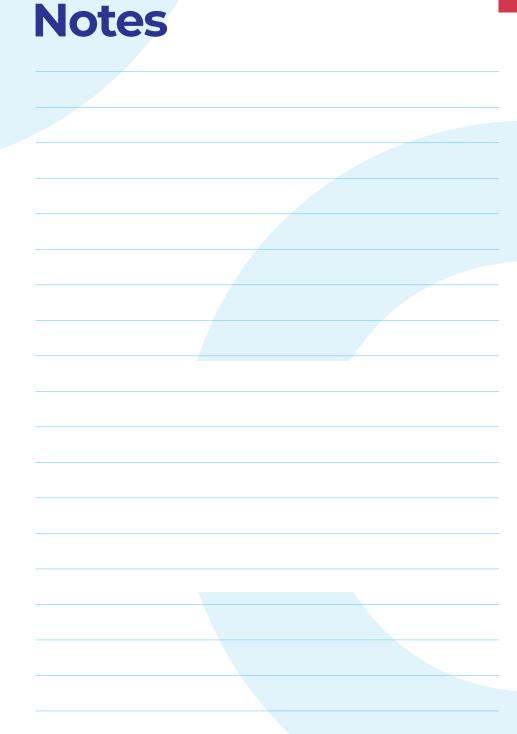
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# Notes

# **Notes**

# **Thank You!**







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