TRANSPORTATION
RESEARCH
Part C: Emerging Technologies

30th *anniversary*

TRC -30

**Conference in Emerging Technologies
in Transportation Systems**

September 2-4, 2024
CONFERENCE PROGRAM
HERAKLION, Crete

WELCOME

Welcome to the Conference in Emerging Technologies in Transportation Systems (TRC-30) and a warm welcome in Heraklion. We are delighted to celebrate the 30th Anniversary of Transportation Research Part C: Emerging Technologies journal. To commemorate this important milestone, a special event is organized on September 2-4, 2024, at the prestigious venue of the Cultural Conference Center of Heraklion in Crete, Greece.

While transportation research is a growing field in terms of integrated multidisciplinary methodologies, emerging technologies and new shared services, the physics of the phenomena are inspired by many fundamental principles developed over Transportation Research Part C publications. New challenges related to large-scale networks modeling and control and the need for real-time decisions under fast-evolving dynamics of systems and travellers advance the field in new directions of research. This conference reflects some of the highest quality essential work taking place in the world's leading institutes on the science of traffic and transportation and presents a view of the rich influences in the field. 115 papers have been selected for podium presentation and 70 for poster presentation following a rigorous refereeing process out of 350 submissions.

The focus of the conference is high-quality, scholarly research that addresses development, applications, and implications, in the field of transportation systems and emerging technologies. The interest is not in the individual technologies per se but in their ultimate implications for the planning, design, operation, control, maintenance, and rehabilitation of transportation systems, services, and components. In other words, the intellectual core of the conference is on the transportation side, not on the technology side. The integration of quantitative methods from fields such as operations research, control systems, complex networks, computer science, and artificial intelligence is encouraged. Of particular interest are the impacts of emerging technologies on transportation system performance, in terms of monitoring, efficiency, safety, reliability, resource consumption, and the environment.

We wish you a joyful experience and a pleasant stay in Heraklion, Crete. We hope that you enjoy many scientific and networking opportunities and develop new ideas for research and collaborations.

Nikolas Geroliminis, EPFL

Note:TRC-30 conference is linked to the 5th Symposium on Management of Future Motorway and Urban Traffic Systems (MFTS), which will be held on September 4-6 2024, organized by Prof. Jack Haddad (Technion). The two events will be independently organized, one after the other at the same venue, with some joint events on September 4th, as seen in the program.
Further information can be obtained by accessing the website
https://mfts2024.net.technion.ac.il/.

IOC & TRC-30

COMMITTEE

INTERNATIONAL ORGANIZING COMMITTEE (IOC)

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Ludovic Leclercq, Gustave Eiffel University
Lishuai Li, City University of Hong Kong
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Elise Miller-Hooks, George Mason University
Yanfeng Ouyang, UIUC
Ioannis Papamichail, Technical University of Crete
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Yafeng Yin, University of Michigan

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Yura Tak
Urban Transport Systems Laboratory (LUTS) - EPFL

Keynote Speakers

Alphabetically

Alexandre Alahi, EPFL

Alexandre Alahi is an associate professor at EPFL leading the Visual Intelligence for Transportation laboratory (VITA). Before joining EPFL in 2017, he was a Post-doc and Research Scientist at Stanford University. His research lies at the intersection of Computer Vision, Machine Learning, and Robotics applied to transportation & mobility. He works on the theoretical challenges and practical applications of socially-aware Artificial Intelligence, i.e., systems equipped with perception and social intelligence. His research enables systems to detect, track, and predict human motion dynamics at all scales. In 2022&2023, Alexandre was recognized as the top 100 Most Influential Scholar in Computer Vision over the past 10 years.
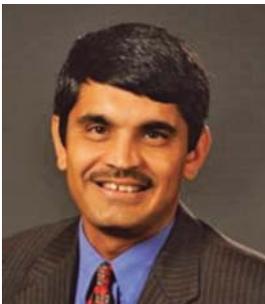
Chandra Bhat, University of Texas at Austin

Chandra R. Bhat is the Joe J. King Endowed Chair Professor in Engineering at the University of Texas at Austin and the Director of the US DOT National Center for Understanding Future Travel Behavior and Demand (TBD). He has been a pioneer in the formulation and use of statistical and econometric methods to analyze human choice behavior for transportation and urban policy design. Dr. Bhat currently serves as the Editor-in-Chief of Transportation Research – Part B, and is the current President of the Transportation and Development Institute (T&DI) of the American Society of Civil Engineers (ASCE).

Elisabetta Cherchi, New York University Abu Dhabi

Elisabetta Cherchi is Professor of Civil and Urban Engineering at New York University Abu Dhabi and Global Network Associate Professor of Civil and Urban Engineering at the New York University Tandon School of Engineering. She is the Editor-in-Chief of Transportation Research Part A: Policy and Practice and past Associate Editor of Transportation. She is the Chair of the Steering Committee of the European Association for Research in Transportation (hEART), past Chair of the International Association for Travel Behaviour Research (IATBR), as well as past Secretary and Treasurer of the IATBR. Her research interest is in modelling transport consumers' behaviour and decision process especially for sustainable transport modes and transport innovations. Her research spans from data collection (including the use of immersive virtual reality environments), demand modelling, with particular reference to discrete choice analysis, demand forecasting, user benefit evaluation., and behavioural background of how individuals take decision.

Dirk Helbing, ETH Zurich

Dirk Helbing is Professor of Computational Social Science at the Department of Humanities, Social and Political Sciences and associated at ETH Zurich's Department of Computer Science. His current studies discuss the digital society, smart cities, as well as challenges and opportunities of digital democracies. Among others, he coordinated the doctoral program "Engineering Social Technologies for a Responsible Digital Future" at TU Delft. Furthermore, he is an elected member of the German Academy of Sciences "Leopoldina" and a member of the External Faculty of the Complexity Science Hub Vienna.

Ludovic Leclercq, Univ. Gustave Eiffel

Ludovic Leclercq is a Research Director (eq. Full Professor) at Université Gustave Eiffel (France). He is also a Full Professor (part-time) at TU Delft (Netherlands), holding a chair in Transportation Systems Modelling in the Era of New Mobility. His research interests correspond to multiscale and multimodal dynamic traffic modeling and the related environmental externalities. Smart cities, mobility as a service, sustainable and reliable transportation systems are some of the applications his researches are targeting. He is the current chair (2021-2024) of the committee "Traffic Flow Theory and Characteristics" ACP50 of the TRB. He is also a member of the international advisory committee of ISTTT. He has co-authored 114 publications in top peer-reviewed journals, has supervised 15 PhD and is currently supervising 7 PhD students. In 2015, he was awarded for 5 years an ERC consolidator grant in Social Science and Humanities. In 2020, he was awarded the 'Grand Prix de l'Université de Lyon', a career award for my achievement in the Transportation field.

Markos Papageorgiou, Technical University of Crete

Markos Papageorgiou was a (tenured) Professor of Automation at Technical University of Munich (1988-1994). Since 1994 he has been Professor (since 2021 Professor Emeritus) at the Technical University of Crete. Since 2021 he has an appointment at Ningbo University. He was Visiting Professor at Politecnico di Milano, Ecole Nationale des Ponts et Chaussées, MIT, UC Berkeley, University of Rome La Sapienza and Tsinghua University. His research interests include automatic control and optimisation theory and applications to traffic and transportation systems, water systems and further areas. He is Life Fellow of IEEE and Fellow of IFAC. He served as Editor-in-Chief of Transportation Research – Part C (2005-2012). He received several awards, including the 2020 IEEE Transportation Technologies Award, and two ERC Advanced Investigator Grants.

Yafeng Yin, University of Michigan, Ann Arbor

Yafeng Yin is Donald Cleveland Collegiate Professor of Engineering and Donald Malloure Department Chair of Civil and Environmental Engineering at University of Michigan, Ann Arbor. He works on transportation systems analysis and modeling, and has published over 150 refereed papers in leading academic journals. He currently serves as Area Editor of Transportation Science and Associate Editor of Transportation Research Part B: Methodological and was the Editor-in-Chief of Transportation Research Part C: Emerging Technologies between 2014 and 2020. Dr. Yin has received recognition from different institutions, including the Stella Dafermos Best Paper Award, Ryuichi Kitamura Paper Award, and Kikuchi-Karlaftis Best Paper Award from Transportation Research Board of the National Academies of Sciences, Engineering, and Medicine. Dr. Yin received his Ph.D. from the University of Tokyo, Japan in 2002, his master's and bachelor's degrees from Tsinghua University, Beijing, China in 1996 and 1994 respectively.

SCHEDULE & LOCATION
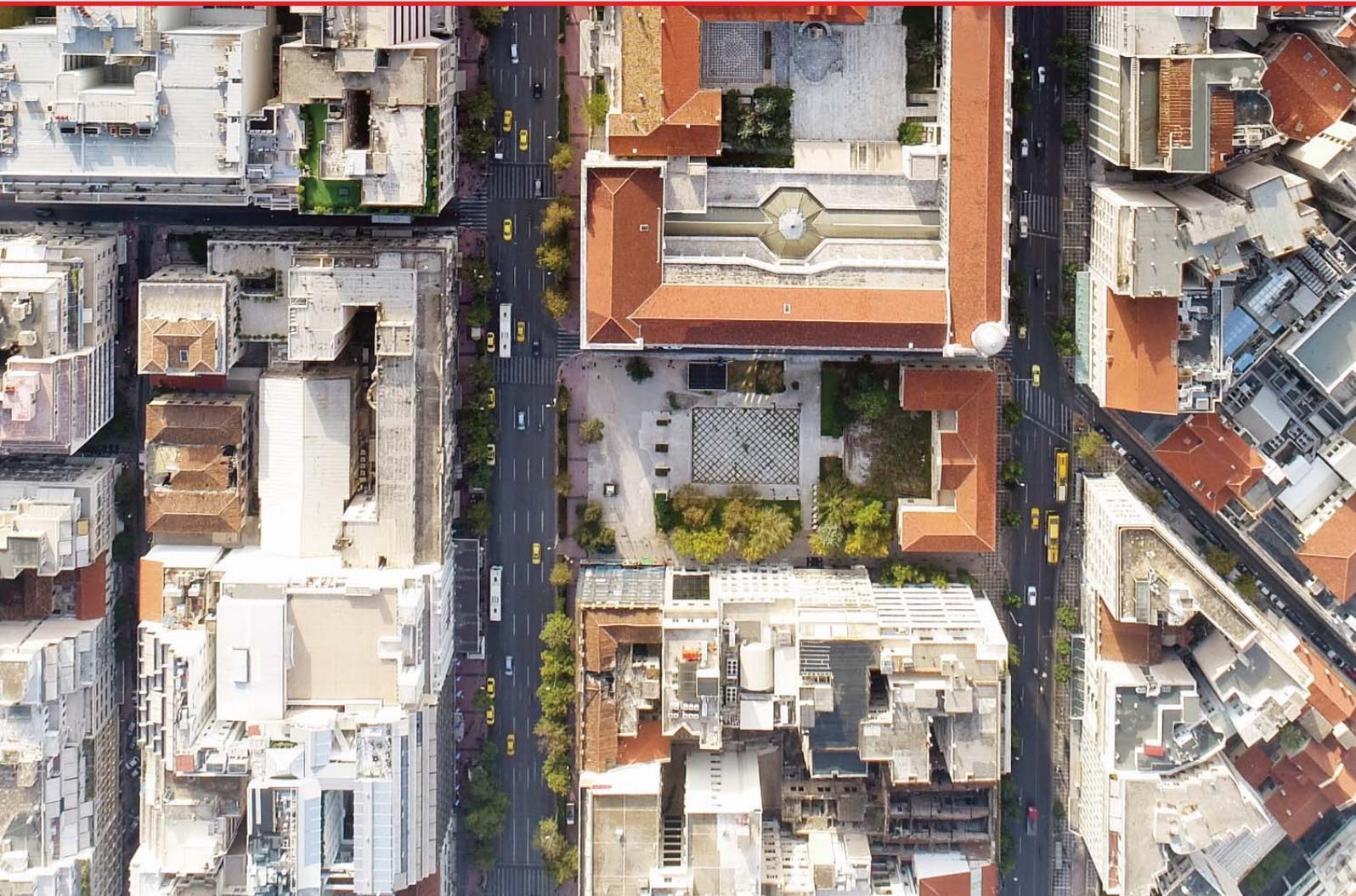
Sept 2nd		Sept 3rd		Sept 4th	
Description	**Time**	**Description**	**Time**	**Description**	**Time**
Registration	08:15 -> 08:45				
Welcome & Introduction	08:45 -> 09:00			MFTS Welcome & Introduction	08:45 -> 09:00
Keynote 1 By Prof. Alexandre Alahi	09:00 -> 09:50	**Session 1**	08:30 -> 10:10	**Keynote 7 By Prof. Markos Papageorgiou**	09:00 -> 09:50
Keynote 2 By Prof. Yafeng Yin	09:50 -> 10:40	Coffee Break	10:10 -> 10:30	**MFTS Keynote Talk By Dotan Emanuel**	09:50 -> 10:40
Coffee Break	10:40 -> 11:00	**Session 2**	10:30 -> 11:50	Coffee Break	10:40 -> 11:00
Keynote 3 By Prof. Dirk Helbing	11:00 -> 11:50	Lunch Break	11:50 -> 13:10	**Session 6**	11:00 -> 12:40
Keynote 4 By Prof. Chandra Bhat	11:50 -> 12:40			**Lunch with Poster Session**	12:40 -> 14:40
Lunch Break	12:40 -> 14:00	**Session 3**	13:10 -> 14:50	**Session 7**	14:40 -> 16:20
Keynote 5 By Prof. Ludovic Leclercq	14:00 -> 14:50	Coffee Break	14:50 -> 15:10	Coffee Break	16:20 -> 16:40
Keynote 6 By Prof. Elisabeta Cherchi	14:50 -> 15:40	**Session 4**	15:10 -> 16:50	**Session 8**	16:40 -> 18:00
Coffee Break	15:40 -> 16:10	Break	16:50 -> 16:55		
Keynote round table	16:10 -> 17:30	**Session 5**	16:55 -> 18:15		

Social Events & Conference Location

Conference Venue

Cultural Conference Center of Heraklion

Sunday Sept 1st
Welcome Gala Dinner
19:30 – 22:30
Manitu Sunset Bliss
About 15-min walk from the city center
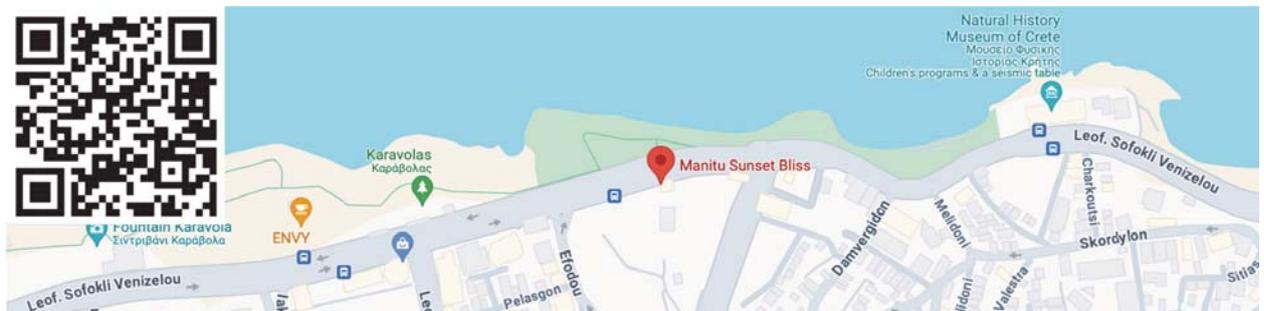
Tuesday Sept 3rd
Gala Dinner 2
19:30 – 22:30
Riviera Beach Bar & Restaurant
Shuttle buses will depart from the conference venue at 19:00
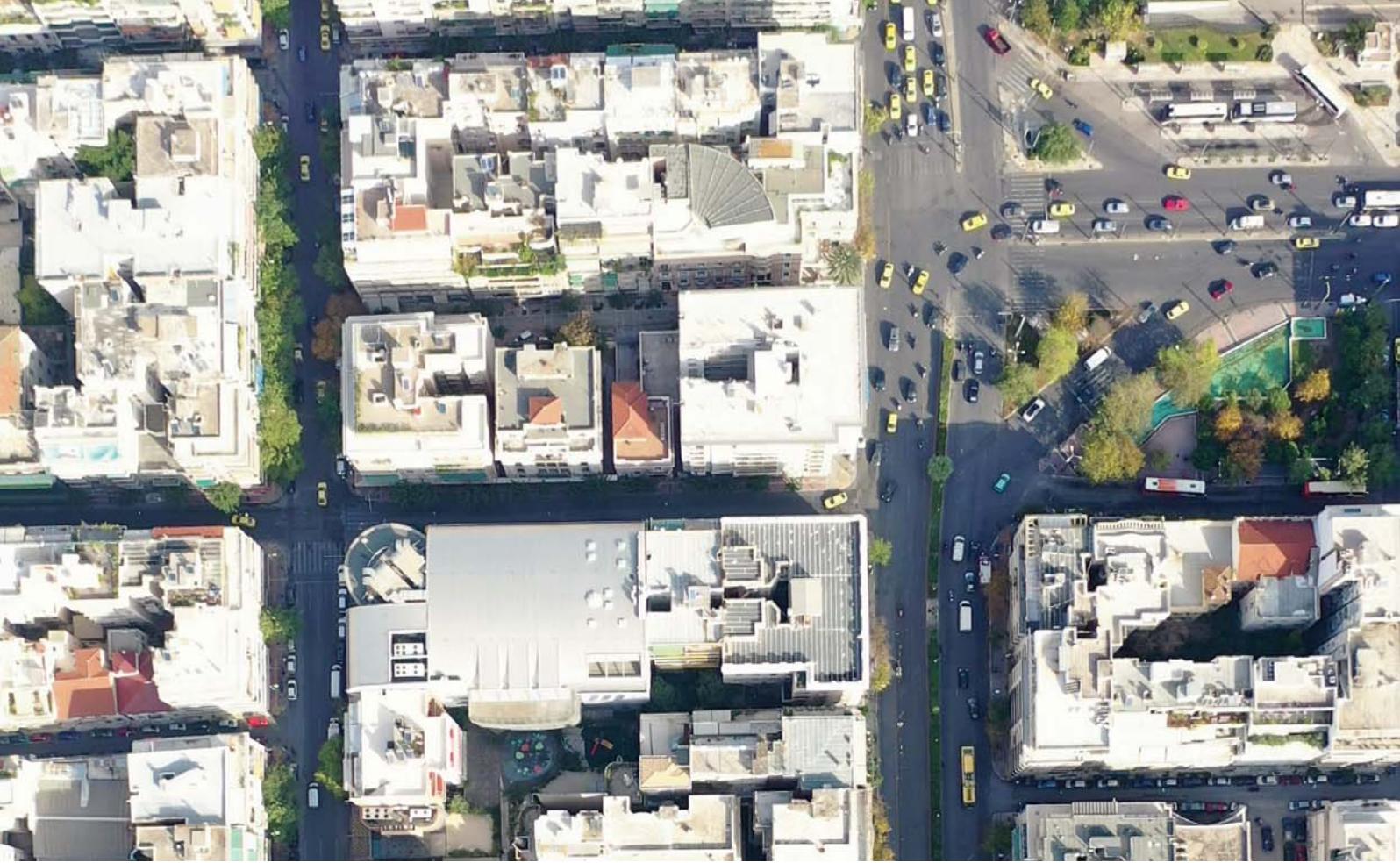
MONDAY
September 2nd 2024
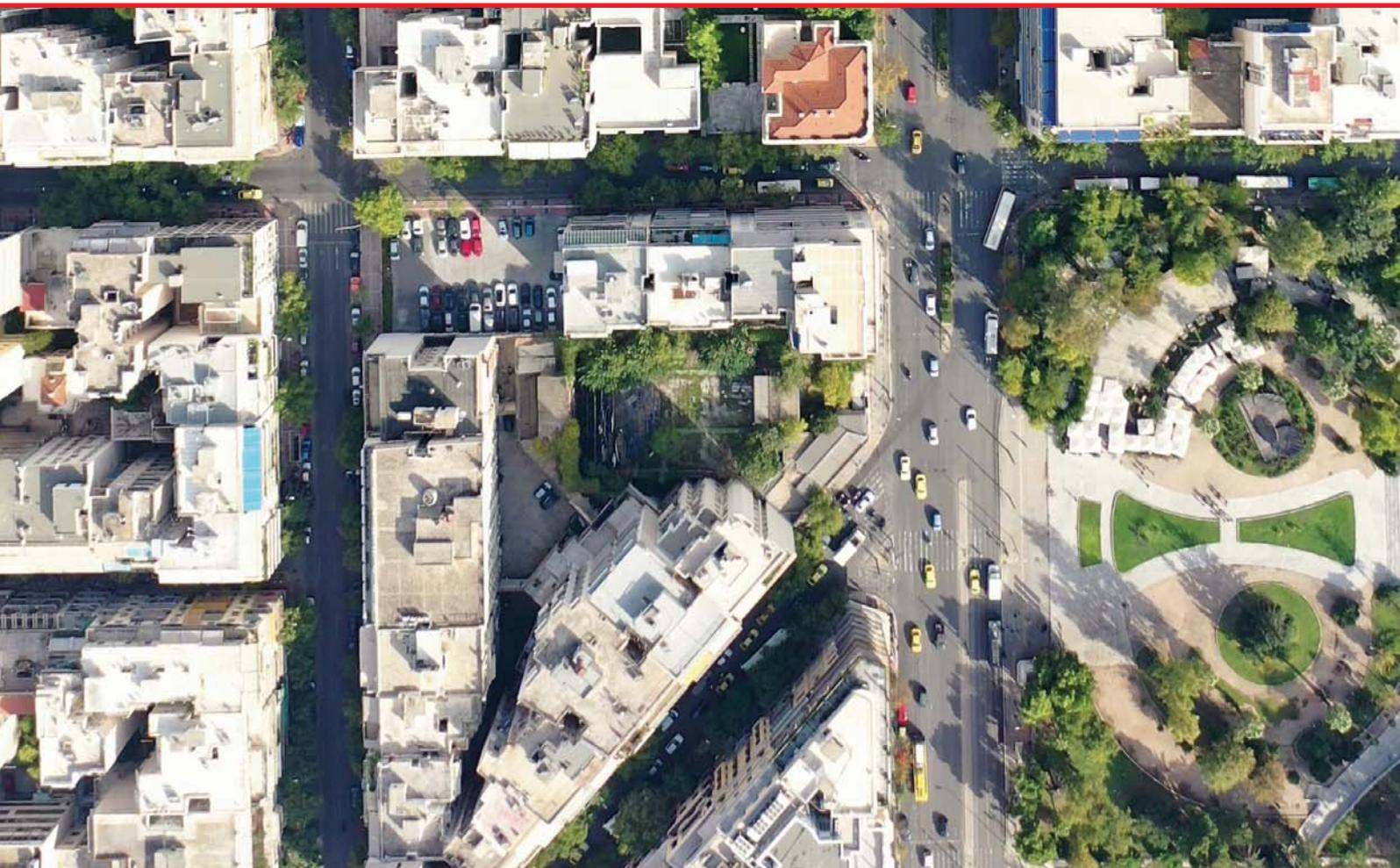
08:15 – 08:45
Registration (Outside Main auditorium)

08:45 – 09:00
Welcome & Introduction

09:00 – 09:50
Keynote 1
Prof. Alexandre Alahi
Interconnected Journeys: How Transportation Fuels AI and Vice Versa

09:50 – 10:40
Keynote 2
Prof. Yafeng Yin
Modeling Mobility: The Quest for Behavioral Realism in Travel Forecasting

10:40 – 11:00
Coffee Break

11:00 – 11:50
Keynote 3
Prof. Dirk Helbing
Design for Self-Organisation

11:50 – 12:40
Keynote 4
Prof. Chandra Bhat
An Investigation of Physical Participation Dissonance and Virtual Activity
Participation

12:40 – 14:00
Lunch Break

14:00 – 14:50
Keynote 5
Prof. Ludovic Leclercq
Trip-based approaches for mobility management in urban areas

14:50 – 15:40
Keynote 6
Prof. Elisabeta Cherchi
Is Immersive Virtual Reality the Future of Transport Behaviour? Opportunities
and Challenges

15:40 – 16:10
Coffee Break

16:10 – 17:30
The future of Transportation Research: Challenges and Opportunities
Open Discussion with all Keynote Speakers

Free Evening
Dinner on your own
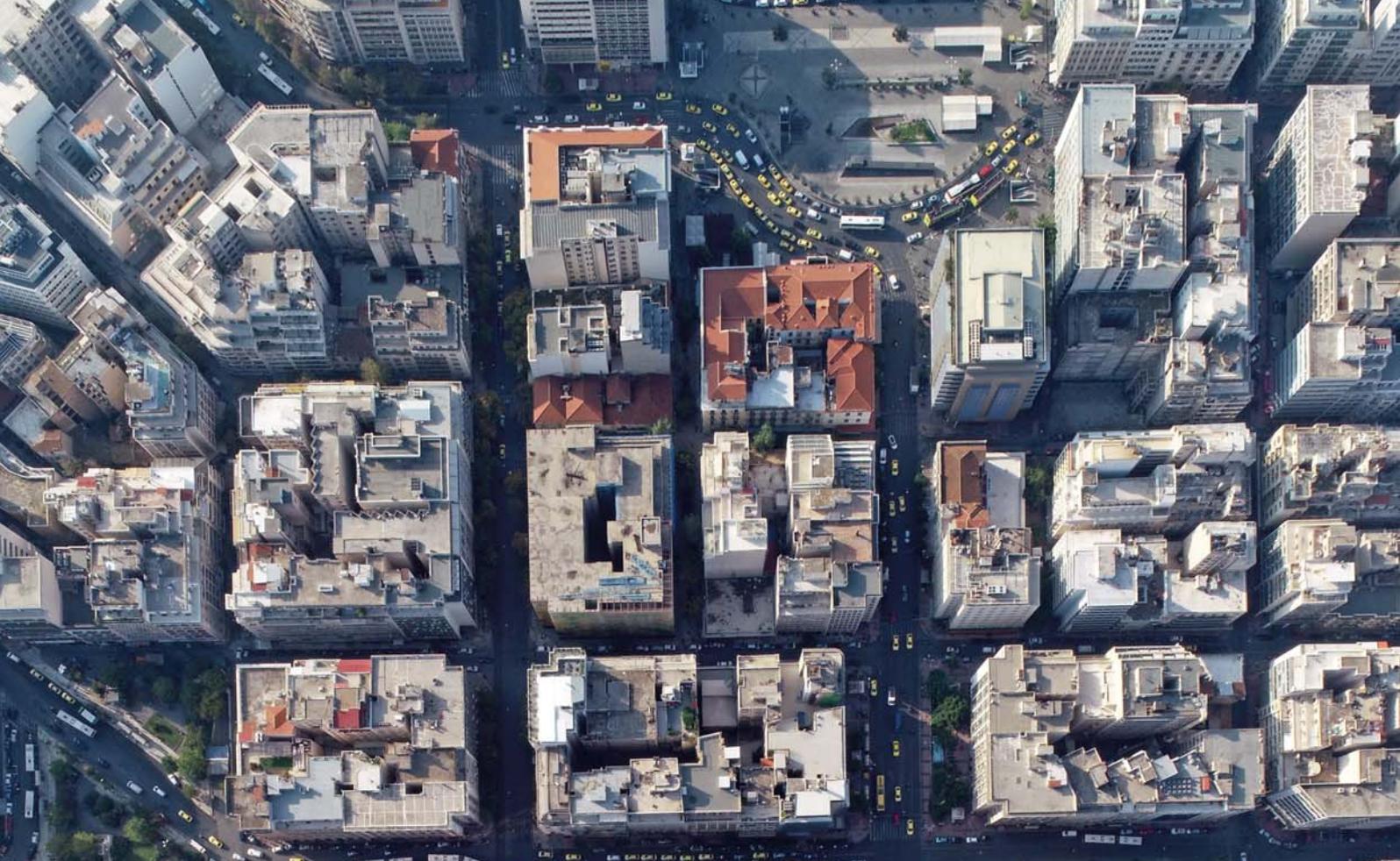
TUESDAY
September 3rd 2024
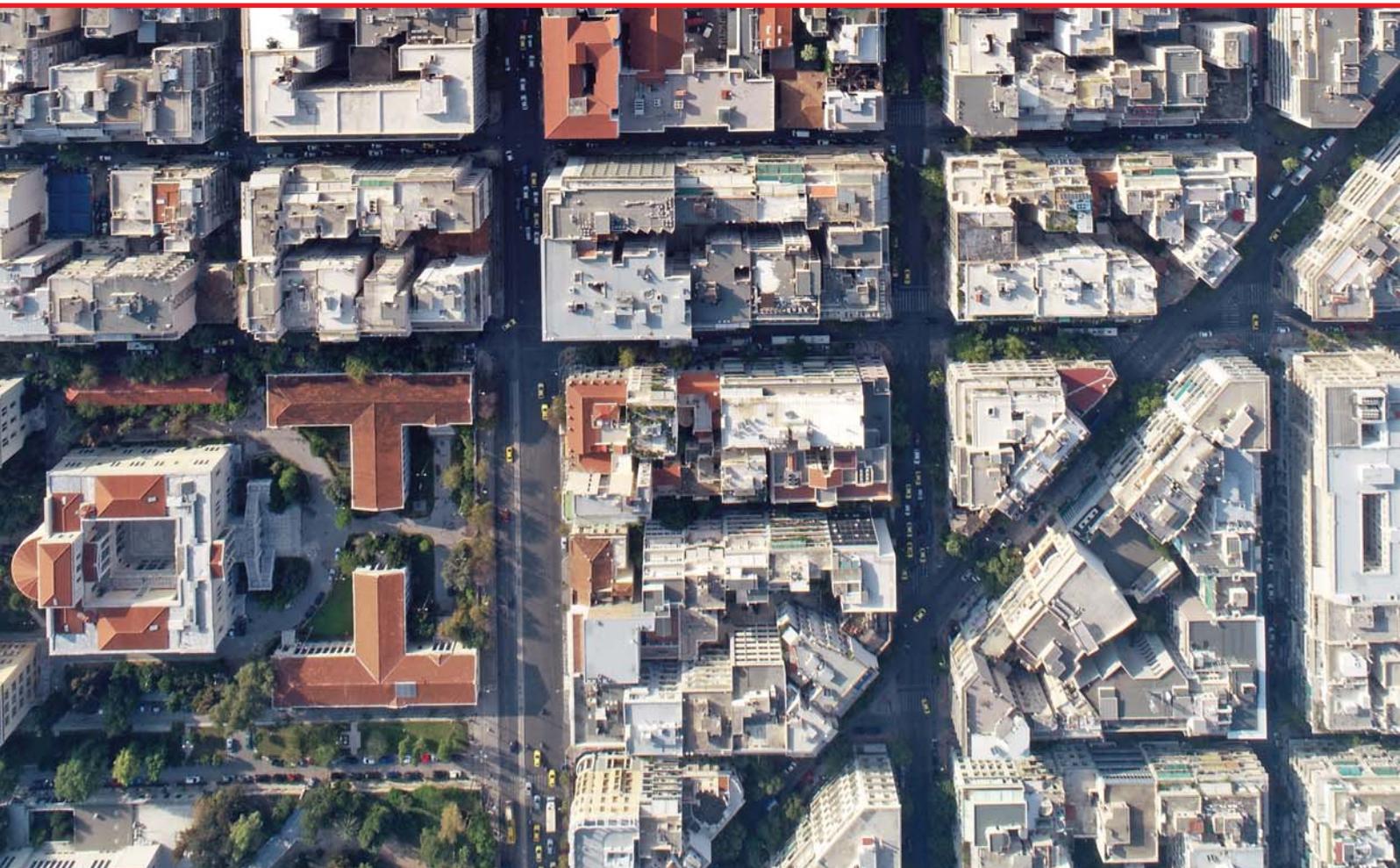
SESSION 1a: Low Altitude Space Economy Part 1
Session Chair: Prof. Hwasoo Yeo
Room B. Experimental Room (Peiramatiki Skini)
1/ Drone-Based Trajectory Data for an All-Traffic-State Inclusive Freeway with Ramps
— Ankit Anil Chaudhari, Martin Treiber and Ostap Okhrin
2/ A Centralized-Distributed Simulation Framework for Urban Low-Altitude Air Transport
— Canqiang Weng, Can Chen, Tianlu Pan and Renxin Zhong
3/ A UAV-Based Real-Time Traffic State Estimation System for Urban Road Networks
— Kyriacos Theocharides, Yiolanda Englezou, Charalambos Menelaou and Stelios Timotheou
4/ Intermodal Safety Net for Urban Air Mobility
— Michael Schultz, Ehsan Asadi and Veronika Istvan
5/ Optimization of Subsidized Air Transport Networks using Electric Aircraft
— Sebastian Birolini and Alan Kinene

SESSION 1b: Learning-Based Methods
Session Chair: Prof. Stelios Timotheou
Room C. Concert Hall
1/ A Deep Learning-Based Approach to Recognize Passengers' Transport Mode and Trip Phases
— Seyedhassan Hosseini, Guido Gentile, Lory Michelle Bresciani Miristice and Francesco Viti
2/ A Machine Learning Meta-Model for Efficient Quantification of Intersection Performance in Large-Scale Urban Road Networks
— Kevin Yu, Tao Guo, Constantinos Antoniou and Panagiotis Angeloudis
3/ Learning-based Incentive Design for Eco-Driving Guidance
— Jung-Hoon Cho, Muhammad Umar B. Niazi, Siqi Du, Tianyue Zhou, Roy Dong and Cathy Wu
4/ Dynamic Service Operation for Collaborative Passenger-Parcel Transport: A Deep Reinforcement Learning Based Approach
— Yitong Yu and David Z W Wang
5/ A Multi-Phase Deep Learning Methodology for Short Term Traffic Flow Prediction
— Panagiotis Karetsos, Evangelos Mintsis and Evangelos Mitsakis

SESSION 1c: Network Modeling
Session Chair: Prof. Soyoung Ahn
Room E. Small Theater
1/ Alpha-Fair Tradable Credit Schemes
— Sumaya Nsair, Lina Kattan and William Lam
2/ Multi-level Traffic Simulation with Dynamic Simulation Level Assignment for Urban Network
— Yeeun Kim, Seongjin Choi, Sujae Jeon and Hwasoo Yeo
3/ Estimating On-Board Crowding in Complex Public Transport Networks from Incomplete Automatic Passenger Counts
— Charalampos Sipetas, Claudio Roncoli, Ektoras Chandakas and Ioannis Kaparias
4/ MobilityCoins — Tradable Credits and Heterogeneous User Groups: Effects of Allocation and Charging Schemes in Large-Scale Networks
— Philipp Servatius, Bo Wang, Klaus Bogenberger and Mehdi Keyvan-Ekbatani
5/ Congestion-Aware Optimization of School Start Times: A Macroscopic Approach
— Antonios Georgantas, Stelios Timotheou and Christos Panayiotou

Coffee Break
10:10 – 10:30

TUESDAY

SESSION 2a: MaaS Part 1
Session Chair: Prof. Francesco Viti
Room B. Experimental Room (Peiramatiki Skini)
1/ Learning Augmented Vehicle Dispatching with Slack Times for High-Capacity Ride-Pooling
— Youngseo Kim, Vindula Jayawardana and Samitha Samaranayake
2/ Piggyback on Idle Ride-Hailing Drivers for Integrated On-Demand and Flexible Parcel Delivery Services
— Yang Liu and Sen Li
3/ The Day-to-Day Mode Choice Analysis Under Mobility-as-a-Service Bundle Subscription
— Manlian Pan, Haoyu Mo and Xiaotong Sun
4/ Semi-on-Demand Transit Feeders with Shared Autonomous Vehicles — Service Design, Simulation, and Analysis
— Max T.M. Ng, Roman Engelhardt, Florian Dandl, Vasileios Volakakis, Hani S. Mahmassani and Klaus Bogenberger

SESSION 2b: Rail Operations and Infrastructure
Session Chair: Prof. Ioannis Papamichail
Room C. Concert Hall
1/ Urban Rail Transit and Green Urbanisation
— Anupriya Anupriya and Daniel Graham
2/ Optimizing Timetable Schedules Considering Non-traffic Hour Maintenance Window on Urban Rail Transit Systems
— Yaochen Ma, Hai Wang and Hai Yang
3/ Improving Rail Infrastructure Resilience in Station Areas Through Strategic Infrastructural Changes
— Md Tabish Haque, Jan Eisold and Nikola Bešinovi
4/ Joint Planning of Passenger and Freight Trains in High-Speed Railway Express System
— Ji Hangyu, Yin Jiateng, Yang Lixing and D'Ariano Andrea

SESSION 2c: Traffic Signal Control Part 1
Session Chair: Prof. Meng Wang
Room E. Small Theater
1/ Hierarchical Traffic Signal Coordination with Priority-based Optimization via Deep Reinforcement Learning
— Hyun-soo Kim, Hye-young Tak, Hwapyeong Yu and Hwasoo Yeo
2/ ENB-RL: Multi-Agent Reinforcement Learning with Explicit Neighbourhood Backtracking for Cooperative Traffic Signal Control
— Yilong Ren, Yizhuo Chang, Zhiyong Cui, Xiao Chang, Han Jiang, Haiyang Yu and Yinhai Wang
3/ Unjamming Urban Traffic: Data-Driven Control and Actuator Selection Strategies
— Alessio Rimoldi, Carlo Cenedese, Alberto Padoan, John Lygeros and Florian Dörfler
4/ Multimodal Traffic Signal Control via Constrained Deep Reinforcement Learning
— Runhao Zhou, Tobias Nousch, Lei Wei and Meng Wang

Lunch Break
11:50 – 13:10

SESSION 3a: Multimodal Transportation
Session Chair: Prof. Elise Miller-Hooks
Room B. Experimental Room (Peiramatiki Skini)
1/ Joint Modelling and Robustness Analysis of Multimodal Transportation and Electricity Networks
— Nicolas Da Silva Fradique, Angelo Furno, Emmanuel Vinot, Nicolas Retiere and Rémy Rigo-Mariani
2/ Augmented ε-Constraint-Based Optimization for Multi-Objective Multi-Modal Transport Networks Management
— Dingshan Sun, Marco Rinaldi, Simeon Calvert and Victor Knoop
3/ Predicting the Environmental Impacts of Changing Global Maritime Freight Flows with Thawing Arctic Sea Ice
— Elise Miller-Hooks, Alireza Azadnia, Wenjie Li and Martin Henke
4/ Recyclables' Collection Planning Uusing Sensor-based Information for Bin Fill Levels: Methodology and Application
— Tânia Ramos, Diana Jorge, Ana Barbosa-Póvoa and António Antunes
5/ Investigating Utility-Based Walking Accessibility: Equity Across Age Groups and Regions in Hong Kong
— Zheng Liang and Hong Lo

SESSION 3b: Pricing
Session Chair: Prof. Marco Rinaldi
Room C. Concert Hall
1/ Optimal Curbside Pricing and Space Allocation for Managing Multi-modal Travelers in Dynamic Networks
— Jiachao Liu and Sean Qian
2/ Dynamic System Optimal Pricing for Shared Autonomous Vehicles in Congestible Networks: Theoretical Properties
— Toru Seo, Ryota Maruyama, Kentaro Wada and Yikai Zhou
3/ Congestion Pricing in Multimodal Networks: An Application of Deep Reinforcement Learning
— Nasser Parishad and Mehmet Yildirimoglu
4/ Privacy-Preserving Personalized Pricing and Matching of Ride-Hailing Platforms
— Bing Song and Sisi Jian
5/ Game-Theoretical Model of Pricing in Multi-Modal Transportation Systems with Public and Private Players
— Gaurav Malik and Chris Tampère

SESSION 3c: Perimeter Control
Session Chair: Prof. Ludovic Leclercq
Room E. Small Theater
1/ Multi-Scale Model-Free Perimeter Control and Local Signal Control in Urban Networks
— Dongqin Zhou and Vikash Gayah
2/ Adaptive Perimeter Control of Traffic Networks with Closed-Loop Data
— Wenfei Ma, Guodong Yang, Yunping Huang, Can Chen and Renxin Zhong
3/ Multi-Region Perimeter Control in Complex Urban Networks: A Reinforcement Learning Approach
— Emmanouil Kampitakis and Eleni Vlahogianni
4/ Combinatorial Reconfiguration Problem Based on MFD for Evacuation Management Under Disasters
— Satoki Masuda and Eiji Hato
5/ Area-Based Mean Speed Estimation Focusing on Loop and Sparse Trajectory Data
— Fei Ge, Mahdi Zargayouna, Allister Loder and Ludovic Leclercq

Coffee Break
14:50 – 15:10

SESSION 4a: Choice Model
Session Chair: Prof. Konstantinos Goulias
Room C. Concert Hall
1/ A Link-based Recursive Logit Model Integrating Path-Based Attributes in Multimodal Networks
— Sedong Moon, Sunghoon Jang and Dong-Kyu Kim
2/ Ensemble-Based Fractional Split Multinomial Logit Model: An Application to Work Commute Mode Shares for Localized Transportation Planning
— Srinath Ravulaparthy and Konstadinos Goulias
3/ Learning Personalized Utility Functions for Drivers in Ride-hailing Systems Using Ensemble Hypernetworks
— Jie Gao, Weiming Mai and Oded Cats
4/ A Perturbed Utility Model with Semi-Nonparametric Perturbation Function
— Rui Yao, Xuhang Liu, Mogens Fosgerau and Kenan Zhang
5/ Activity Chain Generation with Dynamic object-oriented Bayesian Networks
— Junji Urata, Yosuke Mochizuki and Eiji Hato

SESSION 4b: Traffic Signal Control Part 2
Session Chair: Prof. Eleni Christofa
Room B. Experimental Room (Peiramatiki Skini)
1/ Priority Pass: Fair and Efficient Signalized Intersection Control
— Kevin Riehl, Anastasios Kouvelas and Michail Makridis
2/ Distributed Adaptive Signal Control based on Shockwave Theory
— Ning Xie and Hao Wang
3/ Mitigating Partial Observability in Adaptive Traffic Signal Control with Transformers
— Xiaoyu Wang, Ayal Taitler, Scott Sanner and Baher Abdulhai
4/ Emission based signal control optimization on arterials
— Efthymia Kostopoulou, Eleni Christofa and Ioannis Papamichail
5/ Integrated Control of Internal Boundaries and Signal Timing at An Isolated Intersection for Lane-free Traffic of CAVs
— Peng Yang, Yibing Wang and Markos Papageorgiou

SESSION 4c: Optimization of Urban Systems
Session Chair: Prof. Cecilia Pasquale
Room E. Small Theater
1/ Optimising Ghost Kitchen Location for On-Demand Delivery by a Markov Model for Circulating Couriers
— Dat Le, Michael Bell, Abdullah Andaryan, Jyoti Bhattacharjya and Glenn Geers
2/ An Optimization Framework for One-way Carsharing Systems with User Acceptance Probabilities
— Seyma Bekli, Burak Boyacı and Konstantinos Zografos
3/ Simulation-Based Network Capacity Allocation Optimization for Traffic Resilience via Enhanced Mixed Stochastic Approximation
— Qing-Long Lu, Yunping Huang, Wenzhe Sun, Jan-Dirk Schmöcker and Constantinos Antoniou
4/ Optimal Cooperation Schemes for Last-Mile Deliveries in Cities
— Andrea Montini, Cecilia Pasquale, Silvia Siri and Simona Sacone
5/ Real-time Ride-matching and Vehicle Dispatching in a Flexible Mobility-on-demand Bus System
— Mian Wu, Kun An and Wanjing Ma

Short Break (No Coffee)

SESSION 5a: Parking
Session Chair: Prof. Manon Seppecher
Room B. Experimental Room (Peiramatiki Skini)
1/ Theoretical Insights Into Parking Search to Guide Parking-Related Policies and Smart-Parking Solutions
— Alexandre Nicolas
2/ How Useful Can Parking Availability Information Be?
— Cameron Hickert, Sirui Li and Cathy Wu
3/ Matching and Reallocation Problem of Reserved Parking Considering Unpunctuality: A Two-Phase Approach
— Xiaoyun Wang and Meng Xu
4/ Macroscopic Modeling and Optimization of Two-Region Mixed Autonomy Network with Park-and-Ride
— Ziyuan Gu, Yifan Li, Nan Zheng, Wei Ma and Zhiyuan Liu

SESSION 5b: Autonomous Driving
Session Chair: Prof. Vincenzo Punzo
Room C. Concert Hall
1/ Modelling Riders' Intervention Behavior During High-Level Autonomous Driving Under Extreme Conditions: Insights from a VR-Enabled Simulation Study
— Zheng Xu, Nan Zheng, Yihai Fang and Hai L. Vu
2/ Towards Human-like Trajectory Prediction for Autonomous Driving: A Cognitive-Inspired Lightweight Model
— Haicheng Liao, Yongkang Li, Yanchen Guan, Zhenning Li, Chengyue Wang, Zilin Bian, Ziyuan Pu, Jia Hu and Zhiyong Cui
3/ Controlling Automated Vehicles on Lane-free Roundabouts via a Nonlinear Controller
— Mehdi Naderi, Athanasios Tsotsos and Markos Papageorgiou
4/ Impact of Drivers' Take-Over Manoeuvres on Automated Vehicles' Traffic Flow Dynamics
— Saeed Mohammadian, Zuduo Zheng, Dongyao Jia, Mehmet Yildirimoglu, Andry Rakotonirainy and Shimul Md. Mazharul Haque

SESSION 5c: MaaS Part 2
Session Chair: Prof. Kenan Zhang
Room E. Small Theater
1/ A Top-to-Bottom Reposition Method for Ride-hailing Platforms
— Taijie Chen, Jingyun Liu, Siyuan Feng and Jintao Ke
2/ Mitigating Traffic Congestion via Ride-Sharing: An Optimal Ride-Matching Scheme
— Hossein R. Farahani and Kenan Zhang
3/ Scaling Urban Mobility Transformation: Ride-Sharing Meets Mass Transit
— Danushka Edirimanna, Hins Hu and Samitha Samaranayake
4/ A Hierarchical Control Approach for Repositioning Ride-Hailing Vehicles
— Caio Vitor Beojone, Pengbo Zhu, Isik Ilber Sirmatel, Nikolas Geroliminis

Gala Dinner 2
19:30 – 22:30
Riviera Beach Bar & Restaurant
Shuttle buses will depart from the conference venue at 19:00
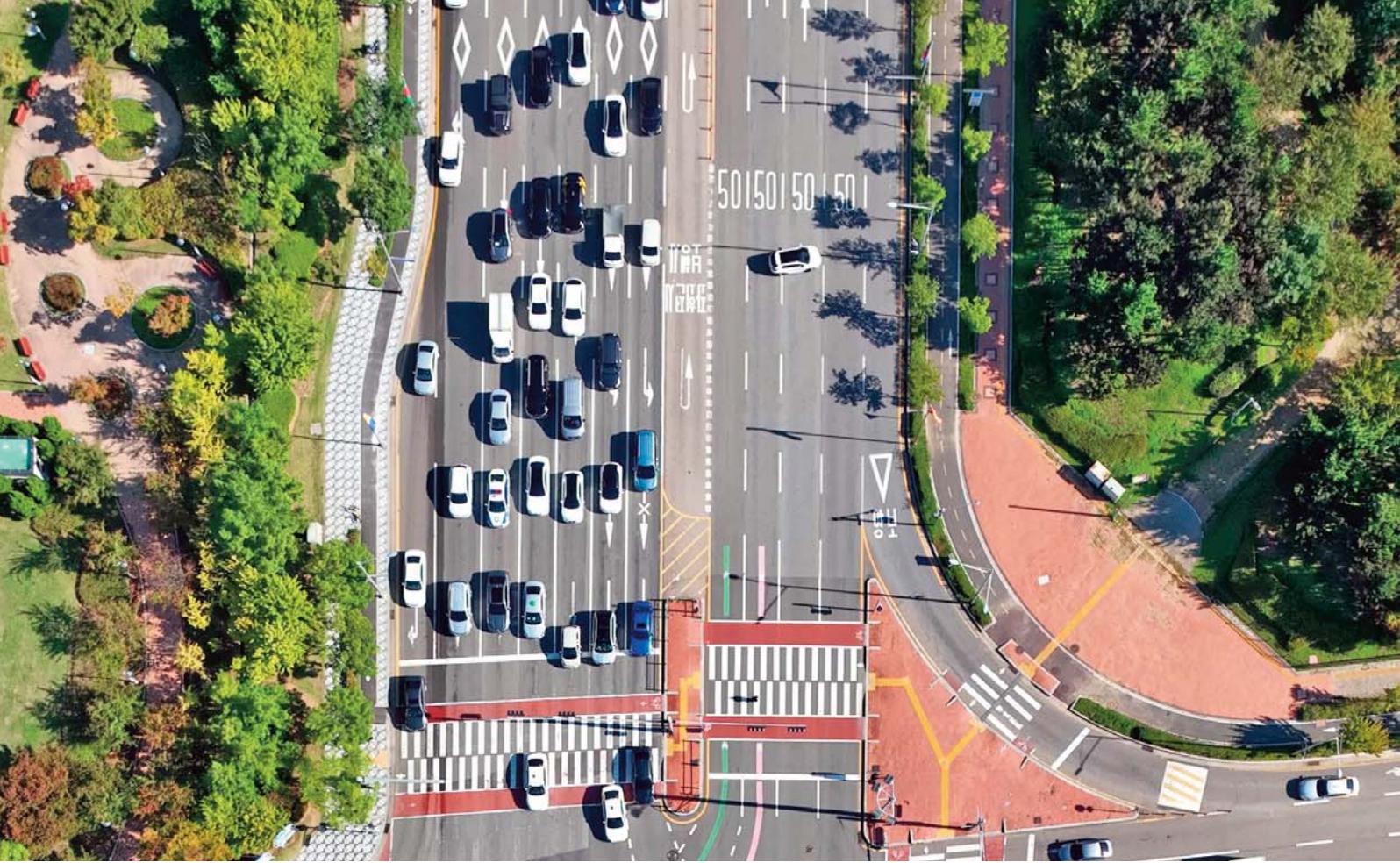
WEDNESDAY
September 4th 2024
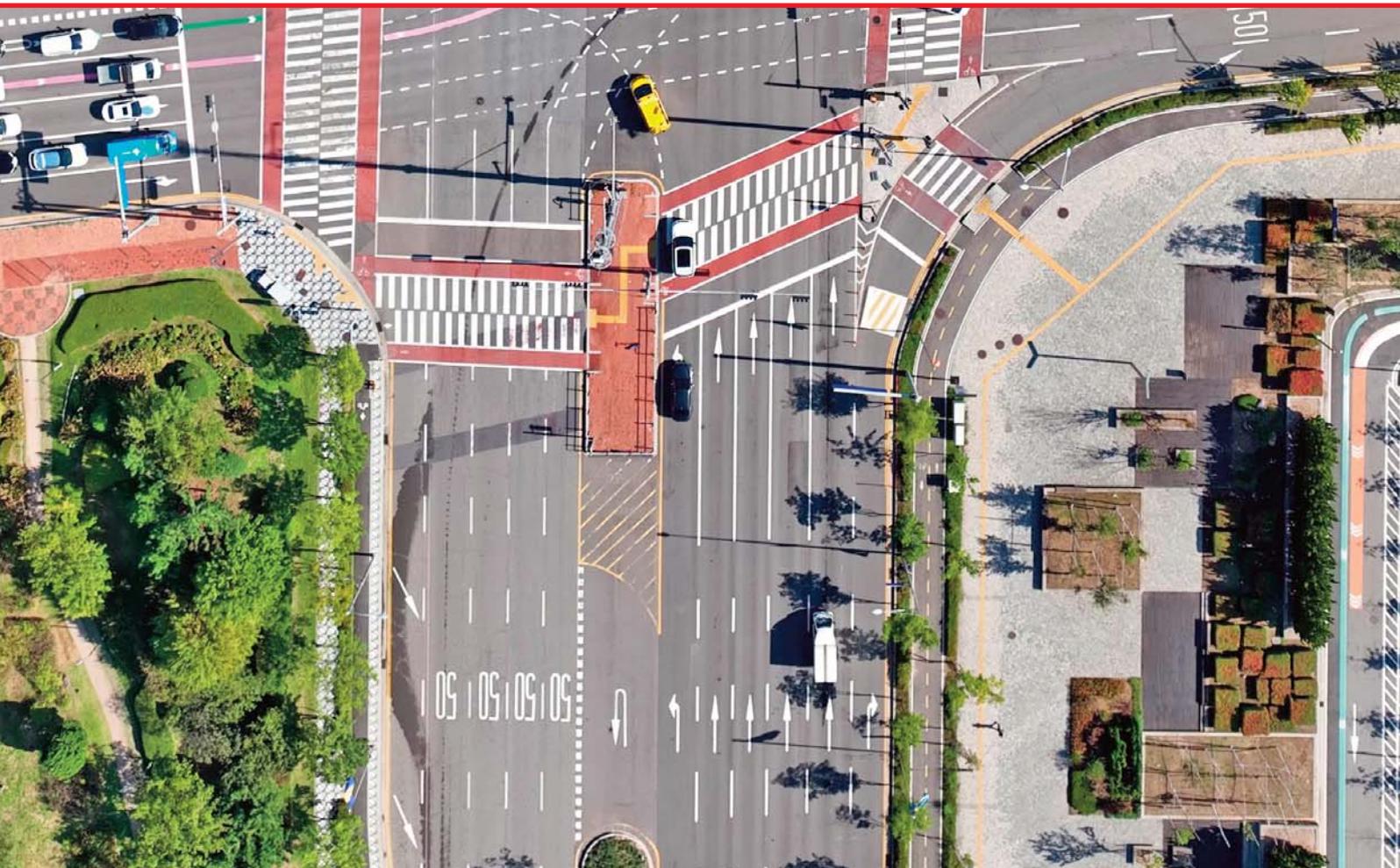
Room A. Main auditorium (Kalokerinou)
08:45 – 09:00   Welcome & Introduction MFTS
09:00 – 09:50   Keynote 7: Highlights of Lane-Free Automated Vehicle Traffic with Nudging
                Speaker: Prof. Markos Papageorgiou
09:50 – 10:40   MFTS Keynote Talk: Mitigating Climate Change in Cities by Traffic Signals
                Speaker: Dotan Emanuel, TLM Green Light, Google Research
10:40 – 11:00   Coffee Break
11:00 – 12:40   SESSION 6

SESSION 6a: Data-driven Methods   Room B. Experimental Room (Peiramatiki Skini)
Session Chair: Prof. Kaidi Yang
1/ Generalizable Implicit Neural Representation As a Universal Spatiotemporal Traffic Data Learner
— Tong Nie, Guoyang Qin, Wei Ma and Jian Sun
2/ Data-Driven Robust Optimization for Traffic Signal Timing Based on Connected Vehicles: Modeling Variability and Errors
— Chaopeng Tan, Yue Ding, Kaidi Yang, Hong Zhu and Keshuang Tang
3/ Traffic Accident Prediction via Three-Dimensional Convolution Autoencoder and Victim-Party Demographic Data
— Walden Ip, Adriana-Simona Mihaita and Artur Grigorev
4/ Activity Scheduling with Deep Generative Models
— Fred Shone and Tim Hillel
5/ NeuralMOVES: Extracting and Learning Surrogates for Diverse Vehicle Emission Models
— Edgar R. Sanchez, C. Tang, Y. Xu, N. Renganathan, V. Jayawardana and C. Wu

SESSION 6b: Behavior   Room C. Concert Hall
Session Chair: Prof. Bilal Farooq
1/ Hybrid Simulator for Projecting Synthetic Households in Unforeseen Events
— Marija Kukic and Michel Bierlaire
2/ An Outer-Inner Approximation Method for the Generic Choice-based Optimization Problem
— Haoye Chen, Jan Kronqvist and Zhenliang Ma
3/ Dynamic Motivation: Integrating Psychological Theories of Motivation in Pedestrian Modeling for Bottleneck Scenarios
— Ezel Üsten, Mohcine Chraibi, Anna Sieben and Armin Seyfried
4/ Does Behavioral Adaptation of Human Drivers Affect Traffic Efficiency of Mixed Traffic on Priority T-Intersections?
— Nagarjun Reddy, Narayana Raju, Haneen Farah and Serge Hoogendoorn
5/ Where do Vulnerable Road Users Go at Automated Unsignalized Intersections? An Analysis of Interactions
— Ziye Qin, Xue Yao, Guoyuan Wu, Zhanbo Sun and Matthew Barth

SESSION 6c: Human Interaction and Simulation   Room E. Small Theater
Session Chair: Prof. Elisabetta Cherchi
1/ Spatial Differences in Pedestrian-AV Interactions in Future Urban Environments: A Large-Scale VR Study
— M. Nazemi, B.a Rababah, D. Ramos, T. Zhao, B. Farooq, H. Yin, M. Ansar and E. Cherchi
2/ Exploring Eye Movement Patterns and Driver Cognitive State in Partially Autonomous Driving Simulation
— Y. Wang, S. Wang, Z. Dong, C. Liao, X. Chen and Der-Horng Lee
3/ Towards Personalized Learning for Traffic Agents in the Driving Environment: Methodological Perspective
— Wissam Kontar, Yongju Kim, Xinzhi Zhong and Soyoung Ahn
4/ Psychological Factors in Travel Behaviour Interpretation with Social Media Data
— Yanyan Xu, Neil Yorke-Smith and Serge Hoogendoorn
5/ Causal Impact Inference for Traffic Networks with Graph-Integrated Transfer Entropy
— Junji Ye, Can Li and Fangni Zhang

SESSION 6d: Traffic Flow   Room A. Main auditorium (Kalokerinou)
Session Chair: Prof. Claudio Roncoli
1/ Understanding Physics and AI Synergy in Car-following Models
— X. Zhong, W. Kontar, Z. Sheng, Y. Kim, S. Chen, X. Li and S. Ahn
2/ Empirical Verification that Traffic Flow is on the KPZ Universality Class: Implications for Traffic Congestion
— Garyoung Lee, Jorge Laval, Aryaman Jha and Kurt Wiesenfeld
3/ On Numerical Investigation of Epidemics Transport Dynamics Using a Coupled PDE Crowd Flow - Epidemics Spreading Dynamics Model
— Anargiros Delis and Nikolaos Bekiaris-Liberis
4/ Nonlinear String Stability Analysis of Car-Following Models: Metastability Thresholds and Rear-End Collisions
— Marcello Montanino, Gaetano Zaccaria and Vincenzo Punzo
5/ Bi-level Model Predictive Control of Network-Wide Signal Timing Using Link Transmission Model with Queue Transmission
— Lei Wei and Meng Wang

Lunch with Poster Session   12:40 – 14:40

SESSION 7a: Low Altitude Space Economy Part 2
Session Chair: Prof. Lishuai Li
Room B. Experimental Room (Peiramatiki Skini)
1/ A Study of UTM ConOps for Drone Delivery: Route Network Design & 4D Trajectory Planning
— Xinyu He, Zewen Wang, Bangyan Zhang, Guoquan Huang, Yinian Mao and Lishuai Li
2/ Evaluating UAM Route Feasibility in Terminal Airspace via Probabilistic Aircraft Trajectory Prediction
— Jungwoo Cho and Seongjin Choi
3/ Sensing Testbed: Decentralized Drone Coordination with Swarm Intelligence and Collision Avoidance
— Chuhao Qin, C. Lillywhite-Roake, A. Robins, A. Pearce, H. Mehta, S. James, T. H. Wong and E. Pournaras
4/ Bayesian optimal UAV trajectory planning for minimising the uncertainty of traffic density estimations
— Yiolanda Englezou, Stelios Timotheou and Christos Panayiotou
5/ Path Pool Based Transformer Model in Reinforcement Framework for Dynamic Urban Drone Delivery Problem
— Chuankai Xiang, Zhibin Wu and Lishuai Li

SESSION 7b: Demand
Session Chair: Prof. Sergio Batista
Room: C. Concert Hall
1/ KFI: A Novel Keyframe Interpolation Methodology for Improving the Efficiency of Dynamic OD Estimation on Large Urban Networks.
— Raghav Malhotra, Chintan Advani, Paul Corry and Ashish Bhaskar
2/ Modeling Crowd-Sourced Spatio-Temporal Flexibility Insights in Origin-Destination Matrices Estimation
— Marisdea Castiglione, Guido Cantelmo, Ernesto Cipriani and Marialisa Nigro
3/ Bayesian Inference of Time-varying Origin-Destination Matrices from Boarding/Alighting Counts for Transit Services
— Xiaoxu Chen, Zhanhong Cheng and Lijun Sun
4/ Group Effect Enhanced Generative Adversarial Imitation Learning for Urban Mobility Dynamics
— Yuanyuan Wu, Zhenliang Ma and Haipeng Chen
5/ ImputeFormer: Low Rankness-Induced Transformers for Spatiotemporal Traffic Data Imputation
— Tong Nie, Guoyang Qin, Wei Ma, Yuewen Mei and Jian Sun

SESSION 7c: MaaS Part 3
Session Chair: Prof. Klaus Bogenberger
Room: E. Small Theater
1/ Dynamic Capacity Planning for Demand-Responsive Multimodal Transit
— Bernardo Martin-Iradi, Francesco Corman and Nikolas Geroliminis
2/ Generating Practical Last-mile Delivery Routes using a Data-informed Insertion Heuristic
— Hesam Rashidi, Mehdi Nourinejad and Matthew Roorda
3/ A Practical Approach to Transshipment in Collaborative and Crowdsourced Delivery Services
— Peyman Hashemi Baragoori and Bekir Bartin
4/ Multimodal Traffic Assignment Considering Heterogeneous Demand and Modular Operation of Shared Autonomous Vehicles
— Ting Wang, Sisi Jian, Bin Jia and Jiancheng Long
5/ A Tradable Equity Credit (TEC) Scheme for Public Transit Services: Computational Graph-Based Framework for Equitable Mobility Management and Dynamic Pricing
— Xin Wu, Kailun Liu, Qingbin Cui and Chenfeng Xiong

SESSION 7d: Electric Vehicles
Session Chair: Prof. Mehdi Keyvan-Ekbatani
Room: A. Main auditorium (Kalokerinou)
1/ Simultaneous Scheduling of Electric Vehicle Charging and Daily Activities
— Senlei Wang, Janody Pougala and Tim Hillel
2/ Online Prediction-Assisted Safe Reinforcement Learning for Electric Vehicle Charging Station Recommendation in Dynamically Coupled Transportation-Power Systems
— Qionghua Liao, Guilong Li, Jiajie Yu, Ziyuan Gu and Wei Ma
3/ Real-Time Multi-Depot Dial-a-Ride Problem Considering Traffic Dynamics and EV Fleet
— Cameron Davis, Cong Quoc Tran, Shang Jiang and Mehdi Keyvan-Ekbatani
4/ A Continuum Approximation Approach for Electric Vehicle Public Charging Infrastructure Planning
— Yichan An, Soomin Woo and Jinwoo Lee
5/ EVs and Renewable Energy: Paving the Way for Greener Electromobility Networks
— Carlos Canudas de Wit and Guillaume Gasnier

Coffee Break   16:20 – 16:40

SESSION 8a: Language Model
Session Chair: Prof. Mohammed Quddus
Room B. Experimental Room (Peiramatiki Skini)
1/ The Effectiveness of Large Language Models for Textual Analysis in Air Transportation
— Gabriel Jarry, Ramon Dalmau and Philippe Very
2/ ChatATC: Large Language Model-Driven Agents for Strategic and Tactical Air Traffic Management and Control
— Sinan Abdulhak, Rajiv Govindjee, Nick Tran, Wayne Hubbard, Karthik Gopalakrishnan and Max Li
3/ Vision-language Fusion for Road Marking Detection in Autonomous Driving
— Shaofan Sheng, Nicolette Formosa and Mohammed Quddus
4/ Leveraging Video-LLMs for Crash Detection and Narrative Generation: Performance Analysis and Challenges
— Ibne Farabi Shihab, Benjir Islam Alvee and Anuj Sharma

SESSION 8b: Traffic Data
Session Chair: Prof. Yibing Wang
Room C. Concert Hall
1/ Structured Tensor RPCA: Anomaly Detection in Traffic Data
— Xudong Wang, Luis Miranda-Moreno and Lijun Sun
2/ Enabling Stop-and-Go Wave Analysis for Massive Trajectory Data
— Junyi Ji, Derek Gloudemans, Yanbing Wang, Gergely Zach.r, William Barbour, Jonathan Sprinkle, Benedetto Piccoli and Daniel Work
3/ Map Matching of Location Data Trajectories: A Heterogeneous and Bayesian-Optimized Hidden Markov Approach
— Ruohan Li, Chenfeng Xiong, Arash Tavakoli and C. Nataraj
4/ Infrastructure-Enabled Defense Methods Against Data Poisoning Attacks on Traffic State Estimation and Prediction
— Feilong Wang, Xin Wang and Xuegang Ban

SESSION 8c: Prediction
Session Chair: Prof. Mohsen Ramezani
Room E. Small Theater
1/ Short-Term Bike-Sharing Demand Forecasting Incorporating Multiple Sources of Uncertainties
— Jingyi Cheng, Gonçalo Correia, Oded Cats and Shadi Sharif Azadeh
2/ Multi-Channel Spatio-Temporal Graph Neural Network for bike demand prediction: considering public transport and weather
— Linda Belkessa, Mostafa Ameli, Mohsen Ramezani and Mahdi Zargayouna
3/ Uncertainty-Aware Framework for Real-Time Traffic Incident Prediction
— Thanh Tran, Dan He, Jiwon Kim and Mark Hickman
4/ Emerging from the Dark Cabin Age: Sensor-Based Prediction of Passenger Boarding Times
— Michael Schultz, Oliver Michler, Katsuhiro Nishinari and Eri Itoh

SESSION 8d: Train Operation
Session Chair: Prof. Tim Hillel
Room A. Main auditorium (Kalokerinou)
1/ Assessing the Conditional Value-at-Risk of a Train Schedule Under Fuzzy Activity Duration
— Carlo Meloni, Marco Pranzo and Marcella Samà
2/ Train Delay Evolution Model Using Continuous Time Markov Processes
— Ismail Şahin and Mehmet Ş. Artan
3/ Exact Numerical Solution Method for a Train Eco-Driving Problem
— Zhuang Xiao, Hongbo Ye and Edward Chung
4/ A Simulation-based Local Search Algorithm for Real-time Mitigation of Power Peaks in Railway Networks
— Jacob Trepat Borecka, Francesco Corman and Nikola Besinovic

A list of poster presentations

1 Mean Field Game in Autonomous Lane-Free Traffic — Kinda Chakas and Lina Kattan

2 Maximizing Safety in Cycling Networks through Optimal and Gradual Upgrading — Manuel Campero Jurado, Carlos Canudas de Wit and Giovanni De Nunzio

3 Formulation of the Parallel Scheduling Vehicle Routing Problem — Marcella Kaplan and Kevin Heaslip

4 Predicting bus passenger OD matrices using trip chaining techniques and machine learning — Andres Rodriguez, Maira Delgado-Lindeman, Juan Benavente, Jose Luis Moura and Borja Alonso

5 Developing a Personalised End-to-End Optimisation Algorithm for Smart Parking Systems — Jingshuo Qiu, Yuxiang Feng, Simon Dale, Mohammed Quddus and Washington Ochieng

6 Inland Waterway Freight Demand Forecasting with Spatio-temporal Dynamic Graph Attention-based Multi Attention Model — Lingyu Zhang, Oliver Schacht and Qing Liu

7 A Load-Dependent Heterogeneous Vehicle Routing Approach for Hybrid Electric Cargo Bicycles Considering Rider Fatigue — Zahra Nourmohammadi, Bohan Hu, David Rey and Meead Saberi

8 A generalised signal timing scheme at isolated intersections considering multi-modal pedestrian crossings — Guang Wang, Lijuan Wan, Chunhui Yu and Wanjing Ma

9 Feature importance estimation using clustering and classification for risky driving behaviour — Tuo Mao, Adriana-Simona Mihaita, Yuming Ou and Fang Chen

10 A stacked ensemble model for traffic conflict prediction in different road environments with multi-modal sensor data — Bowen Cai, Leah Camarcat, Nicolette Formosa and Mohammed Quddus

11 Path-based Network Signal Coordination Control Optimization: Multi-agent System Modeling — Jiarong Yao, Chaopeng Tan, Fuliang Li and Keshuang Tang

12 Modeling lane changes using parallel learning — Yu Han

13 Signal-Free Intersections and Automated Vehicles | A Case Study in Heraklion, Crete, Greece — Filippos Tzortzoglou and Andreas Malikopoulos

14 An end-to-end predict-then-optimize method for on-demand vehicle relocation in mobile sensing — Xinyu Wang and Wei Ma

15 Shared Passenger-Freight Transport in Automated Bus Systems: Optimization Model and Solution — Mohammad Sadrani, Ramandeep Singh and Constantinos Antoniou

16 Optimal design of on-demand feeder services with modular autonomous vehicles — Xiaoling Luo, Wenbo Fan and Meng Xu

17 Ridesourcing markets with a bundled service option — Zhengfei Zheng, Hai Yang and Jintao Ke

18 A Spatially Transferable Pedestrian Demand and Network Modeling (STePNet) Framework — Fatemeh Nourmohammadi, Tanapon Lilasathapornkit, Taha H. Rashidi and Meead Saberi

19 Ramp metering in lane-free vehicular traffic via variable speed limits — Milad Malekzadeh, Ioannis Papamichail and Markos Papageorgiou

20 Graph attention reinforcement learning for 3D multi-modal automated on-demand delivery system — Farzan Moosavi and Bilal Farooq

21 Evaluating user preferences and receptivity to shared autonomous vehicles in urban commuting scenarios — Zhiwu Dong, Ouyang Jinying, Chenlei Liao, Xiqun Chen and Der-Horng Lee

22 Using Machine Learning to Estimate Annual Average Daily Traffic by Vehicle Type on Local Roads with High-dimensional Geospatial Data — Liang Ma, Daniel Graham and Marc Stettler

23 Deep-reinforcement-learning-based Control of Saturated Traffic at Lane-drop Freeway Bottlenecks via Longitudinal and Lateral Trajectory Planning for Limited Connected Vehicles — Xuanmian He, Yuhang Zhang, Kaiyi Feng, Chunhui Yu and Wanjing Ma

24 Dynamic confirmation, compensation and routing for combined transportation of passengers and parcels — Yilun Wang and Min Xu

25 Can we trust Microscopic Traffic Simulation Tools for Automated Vehicles Evaluation? A Scenario-Based Survey to Assess Confidence Levels of Simulation Tools Output. — Hugues Blache, Pierre-Antoine Laharotte and El Faouzi Nour-Eddin

26 A Novel Passenger Travel-time and Destination Distribution Model for Day-ahead Forecasting — Yiren Liu, Lishuai Li, Yining Dong, Yang Zhao and S Joe Qin

27 Definition of strategies to optimize the platooning of connected automated vehicles on freeways — Francesc Soriguera, Margarita MartÃnez-DÃaz, Bryce Chao, Seshadri Naik Moode and Marcel Sala

28 Flow-Dependent Facility Location Optimization in Continuous Space for Bike-share Network Design — Ghazaleh Mohseni Hosseinabadi, Mehdi Nourinejad and Peter Park

29 Detected or undetected, which trips are seen in mobile phone OD data? A case study of the Lyon region (France). — Eliane Casassa, Latifa Oukhellou and Etienne Côme