香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

土木及環境工程學系
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

CICTP 2024
PRE-CONFERENCE WORKSHOP

Navigating the Future of Smart Mobility

Venue: Lecture Theatre J, HKUST
Time: July 21, 2024, 09: 00 – 17: 00

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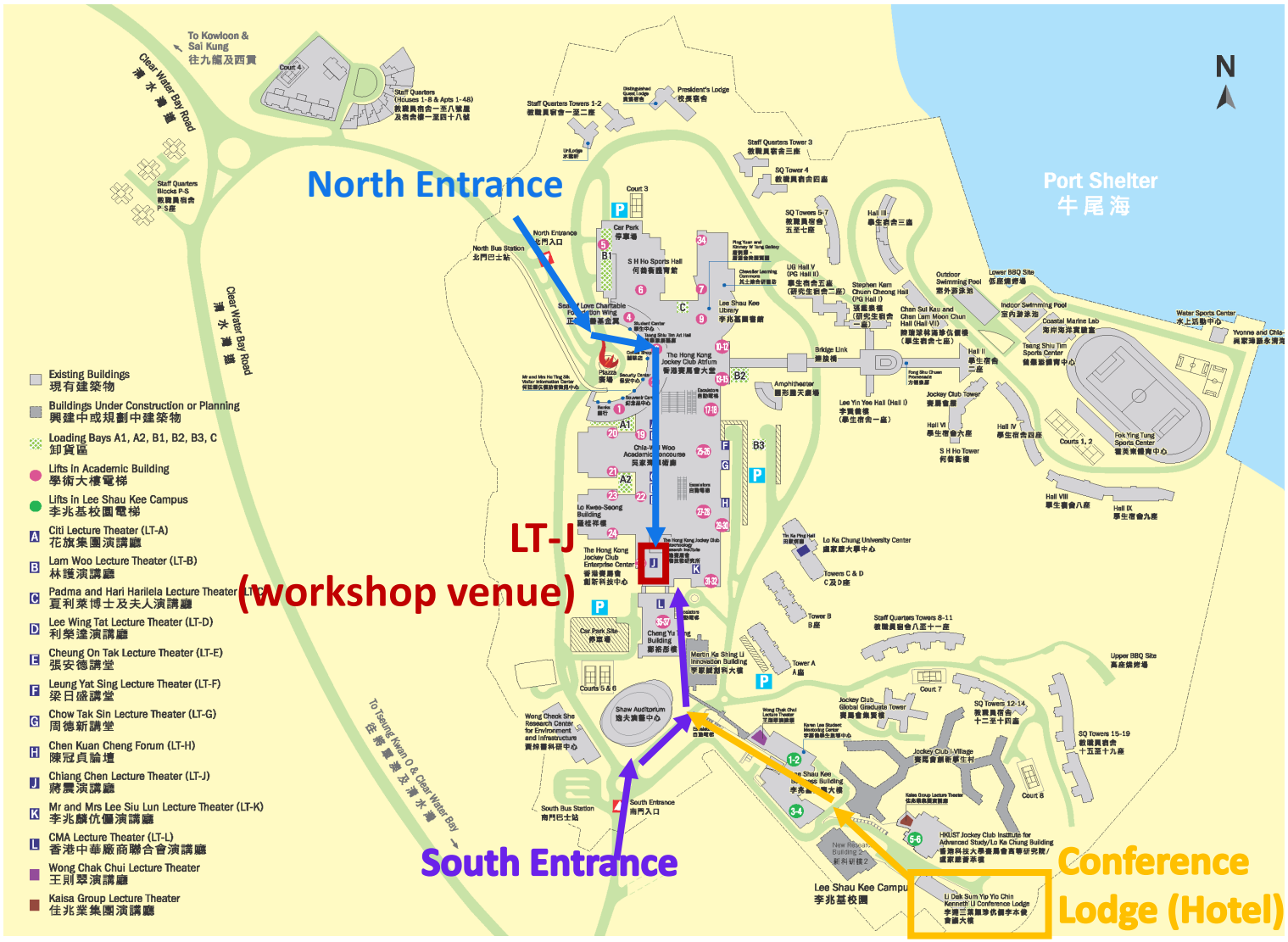
CICTP 2024 PRE-CONFERENCE WORKSHOP

Navigating the Future of Smart Mobility

Location Information and Public Transit Guidance

Location: Lecture Theatre J (LT-J), The Hong Kong University of Science and Technology



Public transit guidance:

- MTR + Minibus:

Take the MTR to **Hang Hau** station (Exit A or B), then transfer to minibus **11M** to HKUST North Entrance.

Alternatively, take the MTR **Choi Hung** station (Exit C2), then take minibus **11** to HKUST South Entrance.

- Bus:

Take buses **91**, **91M**, **91P**, **291P**, or **792M** directly to HKUST.

- Taxi:

Red taxi (Hong Kong International Airport -> HKUST Conference Lodge or LT-J)

Estimated travel time: 45 minutes

Estimated cost: HK$360

For more public transport services information, please refer to https://cso.ust.hk/tran/pt and https://studyabroad.hkust.edu.hk/inbound/arrival/getting-to-hkust.

Workshop Schedule on July 21, 2024

Time	Event
09:00 – 09:30	Registration
09:30 – 09:35	Welcome Address
09:35 – 09:40	Opening Address
09:40 – 10:05	**Prof. Yanfeng Ouyang** Planning and Dynamic Management of Demand-Responsive Mobility Services
10:05 – 10:30	**Prof. José Holguín-Veras** The Responsibilities of Freight Carriers and Other Agents in the Generation of Freight Externalities: Implications For the Fight Against Climate Change
10:30 – 10:50	Coffee Break (Morning)
10:50 – 11:15	**Prof. Yu Zhang** Incorporating Emerging Advanced Air Mobility in Transportation Planning
11:15 – 11:40	**Prof. Haizhong Wang** Human-centered Approach to Build Resilient Infrastructure and Communities under a Changing Climate
11:40 – 12:05	**Prof. Shanjiang Zhu** Behavioural Reactions to Express Toll Lanes in the U.S.: Theoretical Analysis and Empirical Evidence
12:05 – 14:00	Lunch
14:00 – 14:25	**Prof. Kay W. Axhausen** Integrating WFH into Our Models to Address the Dilemma of Transport Planning
14:25 – 14:50	**Prof. Xiaopeng (Shaw) Li** A Physics Enhanced Residual Learning (PERL) Framework and Its Application to Vehicle Trajectory Prediction
14:50 – 15:15	**Prof. Ping Yi** Adaptive Inter-Vehicle Spacing Control on CAV Fleet in Realistic Driving Conditions
15:15 – 15:40	**Prof. Ruwen Qin** Dashcam Video Analysis for Roadway Safety Enhancement
15:40 – 16:00	Coffee break (Afternoon)
16:00 – 16:25	**Prof. Cara Wang** Anticipating Changes in U.S. Shopping Behaviors and Delivery Methods
16:25 – 16:50	**Prof. Lijun Sun** Bayesian Inference of Time-Varying Origin-Destination Matrices from Boarding/Alighting Counts for Transit Services
16:50 – 17:15	**Prof. Hai Wang** Descriptive Data-Driven Methods and Applications
17:15 – 17:30	Closing Remark
17:30 – 21:00	Dinner

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Talk

Planning and Dynamic Management of Demand-Responsive Mobility Services

Invited Speaker

Prof. Yanfeng Ouyang

University of Illinois at Urbana-Champaign

Abstract

The talk presents some recent efforts on planning and managing demand-responsive mobility systems that provide door-to-door transportation service. At the operational level, we analyze the potential of dynamic sharing, relocation, and swap of service vehicles across customers by solving a system of closed-form nonlinear equations and differential equations. At the strategic or tactical level, we quantify the minimum resource requirements (e.g., the required operating fleet size) needed to achieve any level of service (e.g., expected passenger door-to-door travel time). In particular, we present new closed-form solutions to a class of random bipartite matching problem which estimates the expected optimal matching distance for arbitrary numbers of randomly distributed vehicles and customers in a metric space. These general results lay the foundation for strategic performance evaluation and resource planning in a variety of mobility systems.

Biography

Yanfeng Ouyang is George Krambles Professor, Paul Kent Faculty Scholar, and Donald Willett Faculty Scholar at the University of Illinois, Urbana-Champaign (UIUC). He is also Associate Director for Mobility of the Illinois Center for Transportation. His work mainly focuses on planning, operations, and control of complex transportation and logistics systems. He currently serves (or previously served) as a Department/Area/Associate/Board Editor of IISE Transactions, Networks and Spatial Economics, Transportation Science, Transportation Research Part B, Transportation Research Part C, and Transportmetrica B. He is also Chair of TRB's AEP40 Committee on Transportation Network Modeling. His work has been recognized by a Merit Award for Technical Study from the American Planning Association, a Walter L. Huber Research Prize from the American Society of Civil Engineers, a High Impact Project Award from the Illinois Department of Transportation, a Faculty Early Career Development (CAREER) Award from the U.S. National Science Foundation, among others.

Talk

The Responsibilities of Freight Carriers and Other Agents in the Generation of Freight Externalities: Implications For the Fight Against Climate Change

Invited Speaker

Prof. José Holguín-Veras

Rensselaer Polytechnic Institute

Abstract

This research sheds light into an important and overlooked aspect of urban freight management and planning: the impacts of the decisions made by shippers, receivers, transportation and land use agencies, the real-estate sector, and other agents—referred to as non-carrier agents, or NCAs—on the generation of freight externalities. The paper is based on the insight that, since freight carriers must meet the constraints set by these agents, NCAs' decisions could force the carriers to create externalities above and beyond those that the carriers would generate if they had complete control over their operations. As part of the research, the paper: identifies key NCAs' decisions that could negatively affect the operational performance and the externalities produced by freight carriers; analyzes the interactions between carriers and NCAs to formally characterize their interactions; uses standard game theory to define a new game—the Supply Chain Game—that describes the interactions among the agents involved in supply chains; identifies the equilibrium solutions for the various interactions associated with key decisions that affect freight carrier operations; computes Shapley Values to allocate the responsibilities for the freight externalities using test cases based on real-life supply chains; and builds on the research findings to identify actions to urgently mitigate freight emissions in the era of climate change. The research makes three important contributions spanning three different dimensions: (1) the formulation of the Supply Chain Game (methodology), (2) the empirical quantification of the responsibilities, and (3) the definition of the priority actions to reduce freight emissions (policy). Taken together, these contributions establish the imperative necessity to use holistic approaches to mitigate freight externalities, particularly emissions in the era of climate change.

Biography

Dr. José Holguín-Veras is the William H. Hart Professor and Director of the Center for Infrastructure, Transportation, and the Environment; and the Volvo Research and Educational Foundations (VREF) Center of Excellence on Sustainable Urban Freight Systems at the Rensselaer Polytechnic Institute. Dr. Holguín-Veras received his B.Sc. in Civil Engineering from the Universidad Autónoma de Santo Domingo, Dominican Republic, his M.Sc. from the Universidad Central de Venezuela, and his Ph.D. from The University of Texas at Austin. With a distinguished academic career spanning several institutions, including California Polytechnic State University and City College of New York, Dr. Holguín-Veras' research has garnered numerous accolades, including the 2013 White House Champion of Change Award. His work focuses on integrating knowledge from various disciplines to address complex challenges in freight transportation and humanitarian logistics. Dr. Holguín-Veras' contributions extend beyond academia, as he serves on prestigious boards and committees, influencing policy and practice in transportation and disaster response. His research has led to significant advancements in freight demand modeling, sustainable freight policy, and humanitarian logistics. Dr. Holguín-Veras' impactful work has been recognized globally, and he continues to lead groundbreaking research initiatives that shape the future of transportation and logistics.

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Talk

Incorporating Emerging Advanced Air Mobility in Transportation Planning

Invited Speaker

Prof. Yu Zhang

University of South Florida

Abstract

Incorporating advanced air mobility (AAM) into regional transportation planning is a challenging task due to its emerging status and many uncertainties. Many U.S. states utilize state-wide demand modeling, following a four-step modeling structure, for short- and long-range transportation planning. This study enhances existing multimodal transportation systems by integrating the passenger AAM mode. Specifically, we apply a previously developed method to determine the initial optimal locations of vertiports and verify the passenger AAM network using an iterative algorithm by leveraging the enhanced state-wide demand modeling framework. The outcomes of this study can assist public agencies in regional transportation planning and provide references for vertiport approval.

Biography

Dr. Yu Zhang is the Program Director of Advance Air Mobility at CUTR. She is a Professor with the Department of Civil and Environmental Engineering and serves as the Director of National Institute for Congestion Reduction, a USDOT National University Transportation Center. In aviation research, Dr. Zhang has led about twenty projects sponsored by USDOT, FAA, FDOT, and TRB, focusing on air traffic management, performance evaluation of NextGen initiatives, and integrated airspace with new entrants (electric vertical take-off and landing vehicles, unmanned aerial systems). She has led a series of pioneering studies on Advanced Air Mobility (AAM), including integrated network design and demand estimation, automated pre-departure flight planning, environmental impact analysis of AAM, simulation platform development for performance analysis of AAM system, etc.

Talk

Human-centered Approach to Build Resilient Infrastructure and Communities under a Changing Climate

Invited Speaker

Prof. Haizhong Wang

Oregon State University

Abstract

According to NOAA National Centers for Environmental Information's report (2023), the United States experiences a billion-dollar weather and climate disaster every three weeks on average in the past decade comparing to every four months in the 1980s. The Earth's climate is changing at an unprecedented rate, with far-reaching consequences for human settlements and infrastructure systems. Adapting to these changes requires a fundamental shift in how we assess systemic climate risks to plan, design, and build our communities and infrastructure. Traditional top-down, technocratic approaches are found insufficient. Instead, human-centered approaches that place people at the core of risks identification and resilience building efforts are urgently needed. This seminar focuses on the principles, approaches, and practices of human-centered resilience, emphasizing the importance of co-creation, community engagement, and human-focused solutions. Leveraging the PI's decade-long research experience in integrating social, natural and engineered systems to enable integrated and interdisciplinary solutions, the PI will delve into interdisciplinary system modeling, and real-world case studies that demonstrate the necessity and benefits of working for human, with human, and by human in creating resilient infrastructure and communities. Through understanding and identifying the risks and vulnerabilities from a human-centered perspective, integrating human needs, knowledges, and experiences, we can develop risk mitigation and resilience strategies that are inclusive, equitable, and effective in response to future extreme events. The talk will equip audience with innovative ideas, practical tools, and inspiration to champion human-centered resilience in their respective areas involving community and infrastructure resilience and a pathway for communities to foster a paradigm shift that prioritizes human well-being, empowerment, and collaboration in our collective efforts to build a more resilient future.

Biography

Dr. Wang teaches classes at the undergraduate and graduate level on topics including; transportation engineering, transportation system planning and analysis, traffic flow theory and control, and traffic simulation. Dr. Haizhong Wang conducts research in the areas of traffic flow modeling and simulation from both deterministic and stochastic perspectives, transportation system planning and travel behavior analysis, traffic system control and optimization, intelligent transportation system in particular the impacts of connected and autonomous vehicle on traffic operation and infrastructure management, emergency evacuation and disaster response in particular the evacuee decision-making behavior under emergent scenarios through agent-based modeling and simulation, and post-disaster transportation network resiliency and recovery problems.

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Talk

Behavioural Reactions to Express Toll Lanes in the U.S.: Theoretical Analysis and Empirical Evidence

Invited Speaker

Prof. Shanjiang Zhu

George Mason University

Abstract

This study investigates the operation strategies of Express Toll Lanes in the U.S. and their impact on travel behavior. A theoretical analysis was conducted based on a modeling framework built upon the classic Vickrey's model. Choice between general purposes lanes and ETLs and departure time choice are simultaneously considered. Heterogeneity in travelers' value of time and penalty for early or late arrivals is considered and its impact is discussed. The results of the theoretical analysis was compared with empirical evidence and potential research direction is discussed.

Biography

Dr. Shanjiang Zhu is an Associate Professor of Transportation Planning and Engineering at George Mason University (GMU). He graduated from Tsinghua University with a B.S degree in 2003 and a M.S in 2005. During 2001-2003, he studied at the Ecole Centrale de Nantes, in France, as a dual-degree student. He obtained his Ph.D. degree at the University of Minnesota, Twin Cities, in 2010 and worked two years as a Research Scientist at the University of Maryland before joining GMU. Dr. Zhu is experienced in travel demand modeling, travel behavior analysis, GPS-based travel survey method, integrated transportation planning and simulation models, traffic incident management, and transportation economics. His research work has also been funded by NSF, FHWA, VDOT and Virginia OPT3 office. He is Virginia Governor's appointee on the Technical Advisory Board of Northern Virginia Transportation Authority and is a fellow of GMU P3 policy center. Dr. Zhu is the recipient of 2014 Young Research of the Year Award, International Transport Forum, the Organization for Economic Co-operation and Development (OECD).

Talk

Integrating WFH into Our Models to Address the Dilemma of Transport Planning

Invited Speaker

Prof. Kay W. Axhausen

Eidgenössische Technische Hochschule Zürich

Abstract

Working from home (anywhere) has firmly established itself with the COVID19 pandemic. The talk will present a survey undertakenIn Zürich to understand the behavioural dynamics and choices, in particular with regards to mobility tool ownership.It will discuss in its second part it the induced changes are enough to address the dilemma of transport planning, that Improving theAccessibilities increases demand and GHG emissions. It will suggest that for urban areas a more substantial redesign will be required.It will present one of the possible redesigns.

Biography

Dr. Kay W. Axhausen has been a Full Professor of Traffic and Transport Planning since 1999 and Course Director of the MSc programme in Spatial Development and Infrastructure Systems of the Department of Engineering, Environment and Geomatics since 2005.

Dr. Axhausen's focus is on teaching, research and consulting in the field of traffic planning and its relationship to spatial planning, the environment, society and the economy. One main point is the measurement and modeling of traffic behaviour and the development of simulation models of traffic. Another is the analysis of traffic decisions by individuals and institutions and the availability of tools for the support of these decisions.

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Talk

A Physics Enhanced Residual Learning (PERL) Framework and Its Application to Vehicle Trajectory Prediction

Invited Speaker

Prof. Xiaopeng (Shaw) Li

University of Wisconsin-Madison (UW-Madison)

Abstract

Physics models and data-driven neural network (NN) models are two predominant methodologies for a general prediction problem. However, each approach presents its own set of challenges: physics models fall short in predictability, while NN models lack interpretability. Addressing these identified shortcomings, this paper proposes a novel framework, the Physics-Enhanced Residual Learning (PERL) framework. PERL integrates the strengths of physics and the NN model for predictions. This framework melds the foundation of a physics model with a residual learning model, producing predictions by summing the outputs of the physics model with a corrective predicted residual. In this way, it preserves the interpretability inherent to physics models and has reduced data requirements compared to NN models. We demonstrate the PERL model in vehicle trajectory prediction using a real-world trajectory dataset. The physics model in this case is the Intelligent Driver Model (IDM) and the residual learning model is a Long Short-Term Memory (LSTM) model. We compare this PERL model with the pure physics model, NN model, and other physics-informed neural network (PINN) models. The result reveals that PERL achieves better prediction with a small dataset, compared to the physics model, NN model, and PINN model. Besides, the PERL model showed faster convergence during training, offering comparable performance with fewer training samples than the NN model and PINN model. Sensitivity analysis proves the comparable performance of PERL using different methods of building the residual learning model and the physics car-following model.
Link: https://arxiv.org/abs/2309.15284#

Biography

Dr. Xiaopeng (Shaw) Li is currently a Professor in the Department of Civil and Environmental Engineering and an affiliate in the Department of Electrical and Computer Engineering at the University of Wisconsin-Madison (UW-Madison). He served as the director of National Institute for Congestion Reduction (NICR) before. He is a recipient of a National Science Foundation (NSF) CAREER award. He has published over 120 peer-reviewed journal papers. He has served as the PI or a co-PI for a number of federal, state, and industry grants, with a total budget of around $30 million. His major research interests include automation, connectivity, and sensing in transportation and related systems. He is a fellow of ASCE and a senior member of IEEE. He received a B.S. degree (2006) in civil engineering with a minor in computer engineering from Tsinghua University, China, an M.S. degree (2007), and a Ph.D. (2011) degree in civil engineering along with an M.S. degree (2010) in applied mathematics from the University of Illinois at Urban-Champaign, USA.

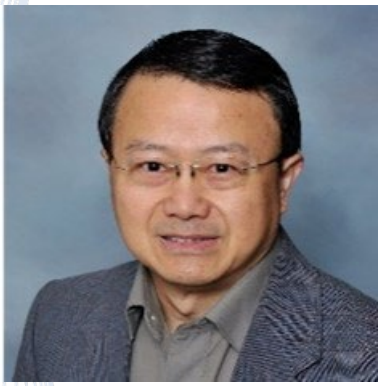
Talk

Adaptive Inter-Vehicle Spacing Control on CAV Fleet in Realistic Driving Conditions

Invited Speaker

Prof. Ping Yi

The University of Akron



Abstract

With the emergence of automated transportation technologies, many studies have been undertaken in recent years that hypothesize various advantages of connected and automated vehicles in mobility improvement and safety enhancement. In support of such studies, this research presents a fundamental CAV fleet control method that adaptively adjust the inter-vehicle spacing in the fleet based on prevailing roadway conditions and vehicle characteristics. The modelling process incorporates considerations of vehicle weight and dimensions, tire condition and inflation, and roadway friction. In different traffic scenarios involving changes in the above factors, this model is tested through parameter analysis and numerical simulation to demonstrate its ability to reflect and address the introduced disturbances, including sudden braking, while maintaining the needed operation stability of the fleet.

Biography

Dr. Ping Yi is a professor in the Dept. of Civil Engineering of The Univ. of Akron. His educational background includes a PhD degree from University of Minnesota, a M.S. from Washington State University, and a B.S. from Wuhan University. His research mainly focuses on traffic control and safety, information technologies, system reliability and statistical data modeling. Dr. Yi was a research scientist and principal engineer in the Minnesota DOT, where he managed various federally funded ITS operational test projects After joining the academia, Dr. Yi has published widely in refereed journals and completed many federally and state funded projects. He has served many professional organizations and societies such as ASCE, ITE, TRB, AASHTO, NRC-IDEA, etc.

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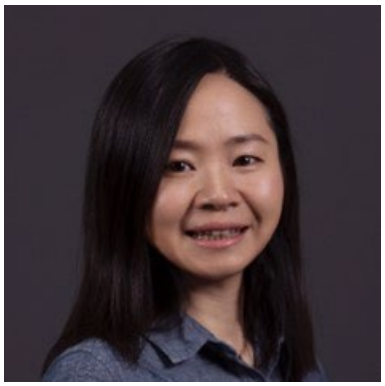
Talk

Dashcam Video Analysis for Roadway Safety Enhancement

Invited Speaker

Prof. Ruwen Qin

Stony Brook University



Abstract

Crashes remain still a life-threatening issue, causing an annual fatality count of 35,000 and 1.8 million injuries in the United States, with an estimated economic loss exceeding $340 billion. To address this, advanced accident-avoidance systems are needed. These systems help identify and avoid collisions and reduce crash severity. Key functions of such a system include predicting imminent crashes, identifying traffic agents that may cause or be involved in crashes, and forecasting risky traffic agents' trajectories. This presentation discusses our proposed approaches to creating these functions, including a dynamic spatial-temporal attention network (DSTA), an attention-guided multistream feature fusion network (AM-Net), and a fusion GRU. Outputs from this study will significantly enhance traffic safety, as demonstrated by its superior performance on public dashcam video datasets.

Biography

Dr. Qin's research falls in the areas of data analytics, machine learning, and systems engineering. Using data captured by various sensors and other methods, she creates analytics tools and artificial intelligence (AI) models for analyzing, understanding, characterizing, and modeling people, systems, and processes. She seamlessly integrates the developed analytics tools and AI components into existing engineered systems to effectively turn them into cyber-physical systems, intelligent automation systems, and smart connected systems. Applications of her research include (i) human analytics for worker safety and efficiency enhancement, (i) computer-vision for intelligent transportation and civil infrastructure systems, and (iii) data visualization and data mining.

Talk

Anticipating Changes in U.S. Shopping Behaviors and Delivery Methods

Invited Speaker

Prof. Cara Wang

Rensselaer Polytechnic Institute

Abstract

The COVID-19 pandemic served as a significant stress test for the transportation and logistics sectors. This presentation will discuss the anticipated shifts in shopping habits and delivery demand in both the short and long term, based on observed shopping behaviors during the pandemic, and explore the implications for the transportation system. In the short term, it is expected that people will largely revert to “normal” shopping habits, favoring in-store purchases and thereby reducing the immediate surge in delivery demand that was observed during the pandemic. However, in the long term, individuals who were slower to change their behavior will likely adopt online shopping habits more similar to early adopters. These shifts in behavior are predicted to significantly reshape the future of delivery practices. As a result, the transportation system will need to adapt by enhancing delivery networks, integrating sustainable delivery methods such as electric vehicles, and leveraging advanced technologies like AI and IoT to optimize logistics operations. These changes underscore the necessity for strategic investments in transportation infrastructure to support the evolving delivery demands and ensure the system's resilience and efficiency.

Biography

Dr. Cara Wang received her Bachelor's and Master's degrees in civil engineering from Tsinghua University and her Ph.D. in civil engineering from the University of Texas at Austin. Her research focuses primarily on data analytics in transportation system, travel and shopping behavior investigation, as well as the spatial interdependence between land use, passenger and freight transport, energy, and the environment systems. She was awarded the Benjamin H. Stevens Graduate Fellowship in Regional Science, Pikarsky Prize for the Outstanding Ph.D. Dissertation, and the Franz Edelman Award by INFORMS. Dr. Wang was previously the president of the Chinese Overseas Transportation Association (COTA) and a member of the TRB Committees ABJ70 (Artificial Intelligence and Advanced Computing Applications) and AT015 (Freight Transportation Planning and Logistics). Dr. Wang has served as the Principal Investigator (PI) or Co-Principal Investigator (Co-PI) of research projects funded by the National Science Foundation (NSF), the National Cooperative Highway Research Program (NCHRP), the National Cooperative Freight Research Program (NCFRP), among others.

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Talk

Bayesian Inference of Time-Varying Origin-Destination Matrices from Boarding/Alighting Counts for Transit Services

Invited Speaker

Prof. Lijun Sun

McGill University

Abstract

Origin-destination (OD) demand matrices are crucial for transit agencies to design and operate transit systems. In this talk, I will present a novel temporal Bayesian model designed to estimate transit OD matrices at the individual bus-journey level from boarding/alighting counts at bus stops. Our approach begins by modeling the number of alighting passengers at subsequent bus stops, given a boarding stop, through a multinomial distribution parameterized by alighting probabilities. Given the large scale of the problem, we generate alighting probabilities with a latent variable matrix and factorize it into a mapping matrix and a temporal matrix, thereby substantially reducing the number of parameters. To further encode a temporally-smooth structure in the parameters, we impose a Gaussian process prior on the columns of the temporal factor matrix. For model inference, we develop a two-stage algorithm with the Markov chain Monte Carlo (MCMC) method. In the first stage, latent OD matrices are sampled conditional on model parameters using a Metropolis-Hastings sampling algorithm with a Markov model-based proposal distribution. In the second stage, we sample model parameters conditional on latent OD matrices using slice and elliptical slice sampling algorithms. We assess the proposed model using real-world data collected from three bus routes with varying numbers of stops, and the results demonstrate that our model achieves accurate posterior mean estimation and outperforms the widely used iterative proportional fitting (IPF) method. Additionally, our model can provide uncertainty quantification for the OD demand matrices, thus benefiting many downstream planning/operational tasks that require robust decisions.

Biography

Professor Sun's research centers on the area of urban computing and smart transportation, developing innovative methodologies and applications to address efficiency, resilience, and sustainability issues in urban transportation systems. In particular, he is interested in integrating advances in mobile sensing and machine learning into human mobility modeling, agent-based simulation, and intelligent transportation systems to explore how big data, artificial intelligence, and cyber-physical systems could benefit urban life and help build smart cities. His work has been featured in popular media outlets, including Wired, Citylab, Scientific American, and MIT Technology Review.

Talk

Descriptive Data-Driven Methods and Applications

Invited Speaker

Prof. Hai Wang

Singapore Management University

Abstract

The rapid development and widespread adoption of mobile devices, sensors, and IoT have led to the generation of vast volumes of multi-source, high-dimensional data within the broader framework of smart cities, including transportation, logistics, e-commerce, healthcare, etc. Consequently, numerous data-driven methods have been developed and implemented to address research challenges related to the design and operations of these systems. In this talk, we briefly discuss two research cases on the applications of descriptive data-driven methods, include: (1) mobile transaction digits distribution and (2) crowd-sourcing food delivery.

Biography

Dr. WANG Hai is an Associate Professor in the School of Computing and Information Systems at Singapore Management University, visiting faculty at Carnegie Mellon University, and Chief Data Officer for the M3S AI program of Singapore-MIT Alliance for Research and Technology. He received B.S. from Tsinghua and Ph.D. from MIT. He focuses on analytics and optimization, data-driven decision-making, machine learning, and their applications in smart cities. He publishes in journals such as Transportation Science, American Economic Review P&P, M&SOM, Transportation Research Part B/C/E, and collaborates with companies such as Meituan, Tencent, DiDi, Grab, Upwork, and Changi Airport. He serves as Associate Editor for Transportation Science and Service Science, and Special Issue Editor for Transportation Research Part B/C. During his Ph.D. at MIT, he served as president of the MIT Chinese Scholars and Students Association and chair of the MIT-China Innovation and Entrepreneurship Forum.