

2019 7th International Conference on Traffic and Logistic Engineering (ICTLE 2019)

2019 5th International Conference on Innovation and Industrial Logistics (ICIIL2019)

August 21-23, 2019

Paris, France

Technical Sponsored by:



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Conference Venue:

IBIS Paris 17 Clichy-Batignolles

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Welcome Message

Dear Participants,

Welcome to Paris, France to attend 2019 7th International Conference on Traffic and Logistic Engineering (ICTLE 2019) and its workshop: 2019 5th International Conference on Innovation and Industrial Logistics (ICIIL 2019) during August 21-23, 2019! The conferences aim to bring together international academicians, scientists and industrialists for knowledge sharing, ideas exchanging and outcomes collaborating and presenting in Traffic and Logistic Engineering, and Innovation and Industrial Logistics.

2019 7th International Conference on Traffic and Logistic Engineering (ICTLE 2019) is initiated in 2012. It has been held in Chennai, India; Istanbul, Turkey; Antalya, Turkey; Orlando, USA; Dubai, UAE and Bangkok, Thailand. 2019 5th International Conference on Innovation and Industrial Logistics (ICIIL2019) is initiated in 2015, it has been held in Paris, France; Lucerne, Switzerland; Hong Kong and Bangkok, Thailand.

The Technical Program Committee has assembled an excellent program comprising of 4 excellent Keynote and Plenary Speeches from renowned scientists from the world, 2 parallel technical sessions comprising of more than 20 presentations after a long period of review process.

On behalf of the Organizing Committee, we wish to thank the keynote speakers, invited speakers and authors of selected papers for their outstanding contributions. we would also like to thank members of the organizing committee, anonymous reviewers and volunteers for their great efforts. Without their contribution, dedication and commitment, we would not have achieved so much.

We sincerely hope that you will find the ICTLE 2019 & ICIIL 2019 beneficial and fruitful for your professional development. We also hope that you will enjoy our hospitality and will have an enjoyable and memorable time in Paris, France.

Conference Organizing Committees

Conference Committees

Conference Chairs

Prof. Sherif Ishak, Louisiana State University, USA

Prof. Roberto Montemanni, University of Modena and Reggio Emilia, Italy

Program Chairs

Prof. Mark GOH, National University of Singapore, Singapore

Prof. Khair S. Jadaan, University of Jordan, Jordan

Assoc. Prof. Jagienka Rzeźny Cieplińska, WSB University in Gdansk, Poland

Assoc. Prof. Barbara Lyonnet, University of Nantes in LEMNA Laboratory, France

Technical Committees

Prof. Michael Bourlakis, Cranfield University, UK

Prof. Zongzhi Li, Illinois Institute of Technology, USA

Prof. Daniel(Jian) Sun, Shanghai Jiaotong University, China

Prof. Zhanping You, Michigan Technological University, USA

Prof. Chunhui Zhou, Wuhan University of Technology (WHUT), China

Prof. Yan-guo Wang, China Academy of Railway Sciences Corporation Ltd., China

Prof. Zaili Yang, Liverpool John Moores University (LJMU), UK

Prof. Gang-Len Chang, University of Maryland, USA

Prof. Pongchanun Luangpaiboon, Thammasat University, Thailand

Prof. Kannapha Amaruchkul, National Institute of Development Administration (NIDA), Bangkok, Thailand

Prof. ADI SUSILO, Brawijaya University, Indonesia

Assoc. Prof. P Vedagiri, Indian Institute of Technology Bombay (IITB), India

Assoc. Prof. Byungkyu Brian Park, University of Virginia, USA

Assoc. Prof. Justyna Kobylarczyk, Cracow University of Technology, Poland

Assoc. Prof. Jue Hou, China Waterborne Transport Research Institute, China

Assoc. Prof. Wai Yuen SZETO, The University of Hong Kong, Hong Kong

Asst. Prof. Magdalena Malinowska, University of Szczecin, Poland



Dr. Soon Jiann Tan, Universiti Teknologi Brunei, Brunei Darussalam

Dr. Ramasamy, Universiti Malaysia Pahang, Malaysia

Dr. Yongpeng Wen, Shanghai University of Engineering Science, China

Dr. Sara Moridpour, RMIT University, Australia

Dr. Jia Hu, Tongji University, China

Dr. El-Said Mamdouh Mahmoud Zahran, Universiti Teknologi Brunei, Brunei Darussalam

Dr. Andrzej Rzeczycki, University of Szczecin, Poland

Dr. Sin C. Ho, The Chinese University of Hong Kong, Hong Kong

Dr. Jiangang Fei, University of Tasmania, Australia

Instructions

Registration Guide:

Arrive at the Conference Venue→Inform the conference staff of your paper ID→Sign your name on the Participants List→Check your conference materials.

Checklist:

1 receipt, 1 name card, 1 printed conference program, 1 lunch coupon, 1 dinner coupon, 1 computer bag, 1 USB stick (paper collection).

Devices Provided by the Conference Organizers:

Laptops (with MS-Office & Adobe Reader)

Projectors & Screen

Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF files

Duration of Each Presentation:

Regular Oral Session: 15 Minutes of Presentation including 2-3 Minutes of Q&A

Notice:

*Certificate of Listener can be collected in the registration counter.

*Certificate of Presentation can be collected from the session chair after each session.

*The organizer will not provide accommodation, so we suggest you make an early reservation.

*One best presentation will be selected from each session. The best one will be announced when each session ends and will be awarded by the session chair after each session in the meeting room.

Contact Us:

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Agenda Overview

Wednesday, August 21st, 2019

13:00-17:00 Participants check-in & Materials Collection—Lobby of IBIS Paris 17 Clichy-Batignolles

Thursday, August 22nd, 2019

Venue: MIRABEAU , level -2(negative 2)

- 08:55-09:00 **Opening Speech**
Prof. Roberto Montemanni, University of Modena and Reggio Emilia, Italy
- 09:00-09:40 **Speaker I**
Prof. Sherif Ishak, Louisiana State University, USA
Speech Title: Developing a Crash Risk Index and Detecting Driver's Engagement in Secondary Tasks from Driving Behavior Attributes and Socioeconomic Characteristics: A Naturalistic Driving Study
- 09:40-10:20 **Speaker II**
Prof. Roberto Montemanni, University of Modena and Reggio Emilia, Italy
Speech Title: Machine Learning, Algorithms and Logistics
- 10:20-10:40 **Coffee Break**
- 10:40-11:20 **Speaker III**
Prof. Khair S. Jadaan, University of Jordan, Jordan
Speech Title: Roadway Safety Network Screening
- 11:20-12:00 **Speaker IV**
Assoc. Prof. Jagienka Rześny Cieplińska, WSB University in Gdansk, Poland
Speech Title: Supply Chain Management and Lean Concepts: Benefits for the Logistics Activities
- 12:00-12:05 **Group Photo**
- 12:05-13:30 **Lunch (Ibis KUBE Restaurant, Ground floor)**

Parallel Presentation Sessions

Venue: MIRABEAU , level -2(= negative 2)

- 13:30-16:00 Oral Session 1: Innovation and Industrial Logistics**
Presentation: LE0010-A, LE5004, LE0001, LE5001-A, LE5006, LE0014, LE0002, LE0018, LE5007, LE1003
- 16:00-19:00 Oral Session 2: Traffic and Logistic Engineering**
Presentation: LE002, LE007, LE005, LE008, LE011, LE012, LE009, E018, LE023, LE029, LE1004, LE024
- 15:40-16:20 Poster Session**
Presentation: LE027, LE1008
- 15:40-16:20 Coffee Break**
- 19:15-20:30 Dinner (Ibis KUBE Restaurant, Ground floor)**

Friday, August 23rd, 2019

- 09:00-19:00 One-Day Tour in Paris**
Onsite registration cannot be accepted.
Gather at the lobby of the IBIS Paris 17 Clichy-Batignolles at 8:50 am.
- The proposed places are:**
Morning: Arc of Triumph (Exterior) , Champs Elysées, The Place de la Concorde, Eiffel Tower (Exterior) , Notre Dame Cathedral (Exterior) , Lachaise Cemetery
- Lunch:** Participants need to pay the meal by themselves
- Afternoon:** Louvre Museum

According to arrangement, place may change on the day.

Conference Venue

IBIS Paris 17 Clichy-Batignolles

Address: 10 rue Bernard Buffet, 75017 Paris, France



Introduction of Speakers



Speaker I

Prof. Sherif Ishak, Louisiana State University, USA

Speech Title: Developing a Crash Risk Index and Detecting Driver's Engagement in Secondary Tasks from Driving Behavior Attributes and Socioeconomic Characteristics: A Naturalistic Driving Study

Abstract: Distracted driving has long been acknowledged as one of the leading causes of death or injury in roadway crashes. The focus of past research has been mainly on the impact of different causes of distraction on driving behavior. However, only a few studies attempted to detect distracted driving from driving behavior attributes. This study takes advantage of the rich SHRP 2 Naturalistic Driving Study (NDS) database to develop a model for detecting the likelihood of a driver's involvement in secondary tasks from distinctive attributes of driving behavior. Five performance attributes, namely speed, longitudinal acceleration, lateral acceleration, yaw rate, and throttle position were used to describe the driving behavior. A model was developed for each of three selected secondary tasks: calling, texting, and passenger interaction. The models were developed using a supervised feed-forward Artificial Neural Network (ANN) architecture to account for the effect of inherent nonlinearity in the relationships between driving behavior and secondary tasks. The study also proposed a Crash Risk Index (CRI) to estimate the crash risk associated with the socioeconomic characteristics of drivers and their tendency to experience distracted driving. The proposed CRI was developed based on the crash risk associated with performing secondary tasks during driving and the effect of socioeconomic attributes on the likelihood of engagement in secondary tasks. Logistic Regression analysis was conducted to identify the significant secondary tasks with high crash risk and the socioeconomic characteristics with significant effect on drivers' engagement in secondary tasks. The developed CRI indicates the relative crash risk associated with the socioeconomic characteristics of drivers, given the likelihood of engagement in secondary tasks.

Biography: Dr. Ishak is a professor in the Civil and Environmental Engineering Dept at LSU. He received his B.S. degree in civil engineering from Cairo University, Egypt, and both M.S. and Ph.D. degrees in civil engineering from the University of Central Florida, prior to joining LSU in 2001. His research area includes traffic operation and control, traffic safety, and applications of intelligent transportation systems. Since joining LSU, he served as a PI or co-PI on research projects, funded by state agencies (Louisiana Transportation Research Center (LTRC)/Department of Transportation and Development and Louisiana Board of Regents) and federal agencies (National Science Foundation and USDOT). He is also the founder of the Intelligent Transportation Systems (ITS) lab at LTRC and the LSU driving simulator. Dr. Ishak is a member of two TRB Committees on Freeway Operations, and Artificial Intelligence and Advanced Computing. He serves as the ITE student chapter advisor at LSU, a board member of GRITS (Gulf Region Intelligent Transportation Society), a member of the Editorial Board of the International Journal of Traffic and Transportation Engineering, and an associate editor for the Canadian Journal of Civil Engineering.



Speaker II

Prof. Roberto Montemanni, University of Modena and Reggio Emilia, Italy

Speech Title: Machine Learning, Algorithms and Logistics

Abstract: Machine Learning has recently emerged as a powerful Artificial Intelligence tool able to bring substantial practical contributions in the most disparate sectors. This success is mainly due to the advances in ad-hoc computer architectures of the last few years and to the huge amount of data nowadays available.

Logistics, transportation and industrial engineering are not exempt by such a revolution. In this talk we will highlight some new developments, presenting examples where classic optimization problems arising in the aforementioned fields benefit from Machine Learning techniques.

Machine Learning methods have the ability to automatically learn and improve tasks from experience, being often able to detect patterns/properties/strategies otherwise difficult to spot. On several tasks these methods have been shown to outperform human experts. We will present new algorithmic ideas, where classic solving methods, that follow strategies devised by humans, are hybridized with Machine Learning techniques. The resulting methods will be shown to have a great potential, especially for online optimization. Future perspectives will be finally discussed.

Biography: Roberto Montemanni is full professor of operations research at the University of Modena and Reggio Emilia, Italy. He also acts as an external research advisor at the Dalle Molle Institute for Artificial Intelligence, University of Lugano, Switzerland. He obtained a Laurea degree in Computer Science from the University of Bologna, Italy and a Ph.D. in Applied Mathematics from the University of Glamorgan, UK. He has been administrating grants for millions of Euros and leading basic and applied research projects both at national and international levels. His main research interests are in the fields of mathematical modeling, algorithms and machine learning, with applications mainly in transportations, logistics and bioinformatics.



Speaker III

Prof. Khair S. Jadaan, University of Jordan, Jordan

Speech Title: Roadway Safety Network Screening

Abstract: The risk of a driver being involved in a crash can be associated with a combination of several factors including traffic characteristics, driver reactions, roadway geometries, and weather conditions. Even though all roadways have some inherent level of risk, some roadway sites are considered more hazardous than others. There are many methods to identify which locations are a potential safety concern (network screening) including Continuous Risk Profile (CRP), Artificial Neural Network (ANN) and Safety Performance Function (SPF) with the latter being most commonly used. SPFs are crash prediction models. They are essentially mathematical equations that relate the number of crashes of different types to a group of explanatory variables. This speech explains the major steps in network screening, introduces and discusses the various issues related to the SPFs; definition, types and applications together with their development procedure. Some case studies of SPFs for roadway segments and intersections are presented. Finally, roadway safety network screening with incomplete traffic volume data is discussed.

Biography: Dr Khair Jadaan is a Professor of Transportation Engineering at the University of Jordan. He has over 48 years of academic and consultancy experience in various developed and developing countries including UK (where he earned two postgraduate degrees), USA, Germany, New Zealand, Kuwait, Iraq and Jordan. Khair taught several undergraduate and postgraduate transportation engineering courses and supervised many theses. His main research interests are road safety, environmental impacts of transport and road pricing (many with applications to developing countries). He has published over 160 scientific papers in international Journals and conferences and is a member of the Editorial Board of three international journals.

Prof Jadaan has over 30 years of teaching and research experience at Universities of Leeds (England), Bradford (England), California Berkeley and UOI at Urbana-Champaign (USA), Canterbury and Auckland (New Zealand), Baghdad (Iraq), Kuwait, Univ. of Jordan, and Al-Isra (Private University / Jordan) in addition to 12 years as a Senior Advisor with the Arab Fund for Economic and Social Development (AFESD)..



Speaker IV

Assoc. Prof. Jagienka Rześny Cieplińska, WSB University in Gdansk, Poland

Speech Title: Supply Chain Management and Lean Concepts: Benefits for the Logistics Activities

Abstract: Optimising the performance in logistics operations and the use of logistics resources is an ongoing challenge that the Lean concepts can support. The main aim of this lecture is to better understand the close relationships between Lean concepts and Supply Chain Management. In that respect a literature review will be performed to identify opportunities and pitfalls to contribute to future research in this field. One of the characteristics of logistic chains is the contribution of a multitude of public and private actors. We illustrate this with the example of the maritime sector and the involvement of port authorities, customs, ship owners, shipping agents and freight forwarders. In this context, the challenges of researchers is to develop methods that are adapted to different needs in a sector involving multiple complex supply chains actors. Several topics of research will be addressed, such as the sources of wastes in logistic flows as well as in information flows, the optimisation of the flexibility, the organisational adaptability of logistic flows and the environmental issues.

Biography: Jagienka Rześny-Cieplińska is a professor in WSB University in Gdansk, Faculty of Economy. Her research focus on the role of organizers of transport in economy, logistics aspect of transport processes and different aspects of enterprises functioning.

She is strongly experienced in teaching. Currently she teaches "Supply Logistics", "Supply Chain Management", "Logistics Services Outsourcing", but previously she also focused on "Accounting", "Enterprises Functioning", "Analytical research in companies", and "Freight Forwarding" and "Transportation".

She has published over several dozen papers in the fields of Transportation, Logistics, Entrepreneurship. She has participated in numerous scientific conferences, a board member and organizer of several scientific conferences..

Parallel Presentation Sessions

Thursday, August 22nd 2019

✧ Tips:

Please arrive at conference room 15 minutes earlier, in case some authors are not able to make the presentation on time. There will be a session group photo part at the end of each session. The best presentation will be chosen after each session and the certificate will be awarded by the chair. Good Luck!

Oral Session 1: Innovation and Industrial Logistics

Session Chair: Prof. Kaan Ozba, New York University, USA

Time: 13:30-16:00

Venue: MIRABEAU , level -2(negative 2)

LE0010-A
13:30-13:45

Applying Machine Learning Techniques on Spatial and Temporal Analysis to Explore Double Parking Behavior of Commercial Vehicles

Kaan Ozba, Jingqin Gao
New York University, USA

Abstract- Dense streets and inadequate curbside parking spaces have led to a common parking issue in many urban cities– “double parking” (DP). Commercial vehicle DP often exacerbate such traffic disruptions– and cause negative traffic impacts. This study investigated a total number of 633,050 DP tickets in New York City (NYC) in 2015. 45.2% of the DP tickets were contributed by commercial vehicles and 69.6% of them were issued during 9AM to 2PM. Global and local Moran’s I tests were applied to explore the spatial dependence in the ticket data. A positive global Moran’s I statistics of 0.326 confirmed a strong spatial autocorrelation. Local Moran’s I test further identifies several commercial DP hotspots. Moreover, a geocoding application as well as a data-driven model using machine learning techniques were developed to estimate DP frequency. DP tickets, 311 service requests, traffic information and street characteristics are utilized in the model. These tools allow us to create spatial and temporal profiles for each street block in Manhattan, NYC. The profiles were used to evaluate the effectiveness of different parking-management strategies. Findings suggest that there is both a spatial and temporal gap between the commercial parking demand and current loading zones and delivery windows in certain areas such as East Village and Columbus avenue west of Central Park. This quantitative approach that projected the spatial and temporal distribution of double parking and insufficient parking supply can be great supplemental information that will aid in future parking enforcement and management considerations. In addition, it can also be used to encourage receivers/carriers to switch to Off-Hour Deliveries.

<p>LE5004 13:45-14:00</p>	<p>An approach to develop the sustainable warehousing assessment model Magdalena Malinowska University of Szczecin, Poland</p> <p>Abstract- The aim of the article is to present an approach to define the set of criteria applied to create the sustainable warehousing assessment model. The criteria were identified on the basis of expert analysis and the literature review including the scientific approach as well as standards applied for the purpose of assessing the level of sustainable buildings. It allowed to include in the proposed model the broad spectrum of factors, which affect the warehousing sustainability in economic, social and environmental aspect. As a solution utilized for the purpose of sustainable warehousing assessment model creation the COMET method (characteristic object method) was applied. This constitutes the basis for applying the fuzzy set theory to propose the characteristic of each criteria used for the assessment.</p>
<p>LE0001 14:00-14:15</p>	<p>Quality Engineering with Taguchi Loss Function Method and Improvement of Work Method in Anode Changing Ikhsan Siregar, Khalida Syahputri, Rahmi M Sari, Indah Rizkya Universitas Sumatera Utara, Indonesia</p> <p>Abstract- One of the companies engaged in aluminum smelting production has problems, namely the occurrence of high variations in the removal of new anodes to the old anodes which are influenced by the operator's working method because of unnecessary movements and movements beyond the Anode Changing mechanism set by the company has become a habit of the operator itself, so the time needed to replace the anode is getting longer. This problem causes the company to suffer losses due to the production process that runs not in accordance with established procedures. So, the company needs to calculate the losses incurred due to variations in anode replacement and see how the operator's working method when changing the anode that causes these variations and also has an influence on the anode replacement cycle time. The method used for this problem is Taguchi Loss Function which is used to calculate the losses suffered by the company and improve work methods using the Modular Arrangement of Predetermined Time Standards (MODAPTS) method to calculate the processing time. The results obtained using this method are losses experienced by the company in Block 1 amounting to Rp 19,733,263, while the total losses in Block 2 amount to Rp 35,919,435. While for the operator's working method, the operator's work movements are analyzed which are not in accordance with the economic principles of the movement. Comparison of the standard time of actual and proposed work methods is 774.847 seconds and 648.2 seconds with a time difference of 126,647 seconds faster and there are no movements</p>

that should not be done so that the operator can use the time to adjust the anode height as well as possible according to the standards determined by the company.

Spare Part Inventory Strategy Transformation in PT Badak NGL

Vernida Mufidah

PT Badak Natural Gas Liquefaction, Bontang, Indonesia

Abstract- PT Badak Natural Gas Liquefaction (NGL) is a center of excellence for energy company located in Bontang, East Kalimantan, Indonesia. The company is capable to produce liquefied natural gas (LNG) and liquefied petroleum gas (LPG) with the design production capacity of 22.5 MTPA and 1 MTPA, respectively. After more than 4 (four) decades in LNG business and operation, PT Badak NGL, has become one of the pioneer of LNG Plant in the world that leads in safety, efficiency, and reliability.

Due to operational change and urban transition, PT Badak NGL have to change strategy for managing spare part to optimize their operational cost & inventory value. Initially, back in 1974, PT Badak NGL plant was built in remote area in East Kalimantan. This condition has forced PT Badak NGL to stock many spare parts and other inventories to maintain plant reliability. As time goes by, the area has transformed from remote area to urban area. The declining of feed gas supply has also contribute to operational change, currently PT Badak NGL only maintaining 5 of 8 trains, therefore inventory value shall be optimized based on this current condition.

Since 2014, PT Badak NGL have completed strategy to write off inventory value by reviewing potential dead stock material. It has successfully reduced inventory value from 58.22 to 42.33 million USD in early 2017. Unfortunately to maintain spare part availability and plant reliability, write off strategy is not sufficient due to some spare parts are still used but they are uncertain. Therefore, PT Badak NGL is composing new strategy to manage inventory by transforming old strategy from fulfilling all spare part and material strategy into CIIRRO strategy which fulfilling stock based on their categories. There are six material categories that has been applied in PT Badak NGL: Consumable, Insurance, Impairable, Replacement, Repairable and Obsolete (CIIRRO). Each category is treated differently to reach optimal inventory value without neglecting plant reliability. By implementing new strategy, inventory value has been optimized up to 33.204 million USD at the end of 2018.

LE5001-A
14:15-14:30

<p>LE5006 14:30-14:45</p>	<p>Game theory in creating logistics supply chain strategy - the possibility of applying a systemic approach Andrzej Rzeczycki University of Szczecin, Poland</p> <p>Abstract- The game theory, due to its potential in creating behavioral models, can become a tool used in the area of formulating or redesigning logistic strategies of supply chains (networks). The existing research in this field focuses on the analysis of individual decisions in one specific area. The article discusses the holistic approach to this problem by identifying existing limitations and presenting a framework concept for the application of game theory in the design of supply chain logistics strategies. The conclusions were drawn on the basis of theoretical literature studies, supply chain surveys (on different level chain participants) and laboratory experiment. In results found that the idea of a common interpretation of the strategy and the holistic application of game theory in the search for optimal solutions to decision-making problems requires changing the approach to designing / redesigning the supply chain logistics strategy.</p>
<p>LE0014 14:45-15:00</p>	<p>Optimization of DND Multi-Depot Split-Load Pickup-Delivery Problem Abdeslem Boukhtouta, Sujoy Ray, Andrei Soeanu, Raman Pall, Jean Berger Canadian Department of National Defence, Canada</p> <p>Abstract- This paper presents a solution approach to optimize vehicle routes for a multi-depot, multi-vehicle, pickup and delivery problem over a large ground transportation network. More precisely, we address ground transportation of orders for the Canadian Department of National Defence using heterogeneous vehicle fleets. The fleets consist of limited number of organizational vehicles hosted at pre-established depots and commercial order delivery services. The proposed approach involves leveraging an insertion cost gradient-descent heuristic followed by a greedy randomized adaptive search procedure. Experimental results generated using the historical orders of the organization indicate that the developed approach is effective in handling a wide range of scenarios and may generate near-optimal vehicle routes with an annual transportation cost reduction between 7.7% and 16.7%.</p>
<p>LE0002 15:00-15:15</p>	<p>Effect of Inventory turnover on the level of profitability Abdillah Arif Nasution, and Erlina Universitas Sumatera Utara, Indonesia</p> <p>Abstract- This study aims to determine the effect of inventory turnover on profitability in</p>

	<p>automotive companies listed on Indonesia stock Exchange from 2015-2017. Profitability is measured by Return On Assets (ROA). The data used are the financial statements of each sample company, which are obtained through ICMD (Indonesia Capital Market Directory) The analytical method used in this study is a quantitative method, by testing classical assumptions, as well as statistical analysis, namely simple linear regression analysis. The sampling method used is purposive sampling. The variables of this study are inventory turnover as variable X, and Return On Assets as Y variables with a total sample per year of 18 companies. The results of this study are inventory turnover does not have a positive effect on Return On Assets.</p>
<p>LE0018 15:15-15:30</p>	<p>Setting the Configuration Parameters of the Algorithm for the Periodic Vehicle Routing Problem by HPC Power Ekaterina Grakova, Jan Martinovič, Kateřina Slaninová, Kateřina Janurová, Vojtěch Cima, Martin Golasowski, Roberto Montemanni, Matteo Salani IT4Innovations, VŠB – Technical University in Ostrava, Czech Republic</p> <p>Abstract- The quality of an optimal solution of the Vehicle Routing Problem is strongly depended on the setting of the configuration parameters of the algorithm. The paper is focused on the introduction of a hyperparameter search for solving the vehicle routing problem using HyperLoom platform for defining and executing scientific pipelines in a distributed environment. To give a concrete example, we focused on Periodic VRP (PVRP) for the Waste Collection. HyperLoom platform was used to define and execute the PVRP hyperparameters sweep pipeline. The heuristic algorithm was tested on a real benchmark of the waste collection in Ostrava, Czech Republic. The aim of our case was to effectively combine the minimization of the total travelled distance and the optimization of the fairness of the routes in terms of the standard deviation of a tour length. The waste collection problem was very extensive and computationally demanding, so it was necessary to use high performance computing (HPC) architecture for testing a large number of different settings of configuration parameters. The experiments were run on the supercomputer Salomon operated by IT4Innovations.</p>
<p>LE5007 15:30-16:00</p>	<p>Total cost of ownership in pallet pools management Mariusz Sowa University of Szczecin, Poland</p> <p>Abstract- Every loading pallet, regardless of the type, in order to be considered safe during the operation phase, must meet certain formal requirements already at the implementation stage. The loading pallet marketed has a certain life span. The life of the</p>

pallet depends on many factors. First of all, they are related to the physical and economic aging of the product. Physical aging consists in the fact that the materials from which the products have been made lose their properties, and the economic ones are the result of the emergence of new, better products on the market, better meeting the specific needs of recipients. The operational life of the cargo pallet also depends on the organization of the transport process, branch and means of transport as well as the date of its completion. The concept of calculating the total cost of ownership of a reusable loading pallet in logistic processes, proposed in the article, allows to determine the total costs of its operation. It is based on the idea of Total Cost of Ownership (TCO), which includes total acquisition costs, installation costs, maintenance costs and costs of its disposal over particular time.

Assessment and Characterizing Mechanical Damage in Packaged Bananas in the Post-harvest Supply Chain

Indika Fernando

University of Tasmania, Australia

Abstract- Quality deterioration in packaged bananas caused by mechanical damage along the post-harvest supply chains (SC) remains obscure until the packages are unpacked for sale at the retail stores and therefore, the mechanism of damage occurrence remains unclear. This study assessed the mechanical damage levels of bananas packed in 300 cartons from pack house to retail stores in Australia. The damage across the SC were shown to be progressively increase across the SC. Bruising and neck damage levels in bananas significantly increased from the distribution centre (DC) to the retail stores. Mechanical damage in unripe bananas were influenced by the package location in the stacked-pallet and the transport\handling of packages within the last-mile of the SC (DC to retail) further exacerbated the damage. This study further characterized the damage development by subjecting packaged bananas to simulated vibration, top-load compression and drop impact. It was revealed that the exposure to vibration resulted in rubbing; top-load package compression contributed to bruising and, the drop impact caused severe neck injuries in bananas. The knowledge of the damage incidence across the SC and causes of damage occurrence may contribute for the development of interventions targeted at improving the quality of bananas in the post-harvest SC in Australia.

LE1003

15:45-16:00

✧ Tips:

Please arrive at conference room 15 minutes earlier, in case some authors are not able to make the presentation on time. There will be a session group photo part at the end of each session. The best presentation will be chosen after each session and the certificate will be awarded by the chair. Good Luck!

Oral Session 2: Traffic and Logistic Engineering

Session Chair: TBA

Time: 16:00-19:00

Venue: MIRABEAU , level -2(negative 2)

LE002 16:00-16:15	<p>Analysis of Key Issues on Man-Control to System-Control Leap in Autonomous Driving Zongwei Liu, Hong Tan, Han Hao and Fuquan Zhao Tsinghua University, China</p> <p>Abstract- Autonomous driving is recognized as a global development direction and a major opportunity. The function and use of the vehicle has changed profoundly. The vehicle is gradually transformed from a simple transportation tool to a smart mobile space. The ultimate goal of autonomous driving is to achieve driverless driving. In the course of its development, man-control will gradually turn into to system-control. In other words, the transition from level 3 (L3) to level 4 (L4) is a fundamental leap. At present, the specific path to achieve this leap is not yet clear. Different companies have different and even opposite thinking and choices. In this study, the grading standard for autonomous driving was clearly explained, and the technical route selection of the company was analysed. Based on the analysis, the requirements of sensing, decision making, execution between the L3 and L4 were compared. Moreover, the key technical difficulties of L3 to L4 were clarified. In the end, suggestions on the commercialization of autonomous driving were given.</p>
LE007 16:15-16:30	<p>Analysis of Black Spot of Traffic Accident in Wuhan Port Feng Xia and Ya-dong Yang Wuhan University of Technology, China</p> <p>Abstract- The proposal to build the “Yangtze River Golden Waterway” strategy has enabled the shipbuilding volume of the Yangtze River trunk to grow rapidly. With the increase of ship traffic flow, the Yangtze River water traffic safety is facing severe challenges. This paper draws on the road traffic black spots and existing research methods of water traffic accidents and the definition of water traffic black spots. The DBSCAN algorithm and the accident-level weighted average method are used to establish the blackpoint identification model for waterborne traffic. The model is applied</p>

	<p>to the Yangtze River mid-stream Wuhan Port 2013-2017 water traffic safety accident as an example. Ten black spots and corresponding boundaries are identified. The black point analysis method used in this paper can effectively quantitatively analyze the spatial distribution and characteristics of water traffic black spots, which can provide a new theoretical basis for ensuring the safety of water traffic.</p>
<p>LE005 16:30-16:45</p>	<p>Performance Analysis of the Sliding Mode Control for Automated Vehicle Path Tracking at Low Adhesion Surfaces Ivan Ulchenko State Research Centre NAMI, Moscow, Russian Federation, Russia</p> <p>Abstract- The article analyses prospects of using a type of robust controllers called relay regulators for automation of vehicle lateral motion. The operation of these regulators in so-called sliding modes is considered along with the “chattering” problem caused by deviations from the “ideal” sliding mode inevitable in actual implementations. For the analysis of vehicle motion, a mathematical model was elaborated, which calculates vehicle dynamics taking into account non-linear tire-road adhesion characteristics. In the conducted study, emphasis was put on low adhesion surfaces, which can be considered as the most difficult case for automatic lateral control of a vehicle. In order to implement automated path tracking within the model, two relay regulators were elaborated differing from one another in the order of dynamics. A comparative study of these regulators was conducted by means of simulations. The regulator that had shown best performance was then tested for robustness by means of modeling, in which maneuvers on snow, ice and a mixed surface were simulated.</p>
<p>LE008 16:45-16:00</p>	<p>Prediction of Ship Traffic Volume in Jiujiang Port Based on Genetic Wavelet Neural Network Shouwei Xie and Yadong Yang Wuhan University of Technology, China</p> <p>Abstract- In recent years, the traffic volume of the Yangtze River has increased dramatically. In order to provide more favorable assistance to port planning and traffic management, the accuracy of port ship traffic volume prediction is very important. In this paper, genetic algorithm and wavelet analysis and neural network are used to construct the genetic wavelet neural network model prediction model, and BP neural network prediction model is established. The ship volume of Jiujiang Port is used as experimental data to simulate and analyze. The results show that the prediction accuracy of the genetic wavelet neural network prediction model is significantly higher than that of the BP neural</p>

	<p>network prediction model. It is proved that the genetic wavelet neural network has broad application prospects for ship traffic flow prediction in the Yangtze River port. This method has practical application significance.</p>
<p>LE011 17:00-17:15</p>	<p>Unconventional Intersection Design of a Highly Congested Signalized Intersection in Jordan Asem AlNahas, Mohammad Alsweis and Hana Naghawi The University of Jordan, Jordan</p> <p>Abstract- This paper investigates the effect of reducing number of phases for an existing signalized intersection by implementing an Unconventional Arterial Intersection Design (UAIDs). The selected signalized intersection for analysis was Marj Al-Hamam located in Amman, Jordan. The operational efficiency of selected conventional signalized intersection and urban arterial road was compared to that of the proposed solutions. The analysis was performed in two stages using SYNCHRO STUDIO 10.0 Microscopic Simulation Software. The Measures of Effectiveness (MOE) for these intersections was the level of service (LOS) in terms of control delay. Simulation results showed that reducing number of phases produced much better performance of the intersection. The improvement in Marj Al-Hamam Signalized Intersection, which consists of two separate single quadrants, produced some great results; control delay at this intersection decreased by about 97.8 percent, as it was reduced from 541.4 seconds per vehicle, to 12.1 seconds per vehicle. Finally, in order to check the efficiency of this unconventional improvement, simple annual growth rate was used to estimate future traffic volumes that might use the main intersection. It was found that the intersection can serve for 13 years before falling to a LOS F.</p>
<p>LE012 17:15-17:30</p>	<p>Comparing Road User Charging Acceptability in the City of Tunis and Damascus Mohamad Shatanawi, Souhir Boudhrioua and Ferenc Mészáros Budapest University of Technology and Economics, Hungary</p> <p>Abstract- Worldwide, multiple studies have been trying to reduce traffic issues without physically changing the road network, this is when the congestion fees strategy has been considered as a favorable solution for the urban traffic issues. A fundamental condition that needs to be checked before the implementation of the road-pricing scheme is the acceptability of both the political and the public parties. The acceptability is so variable and depends on many features and differs from one individual to another, thus, a survey with a set of variant questions might help to understand the expectations and the worries of the citizens and aim to improve them for better effectiveness of the road-pricing</p>

	<p>project. This report aims, through analyzing the responses of a distributed survey, to evaluate the acceptability of the citizens of Tunis, Tunisia and Damascus, Syria in order to draw a comparison between the two cities. Moreover, it assesses the degree of acceptability and the variable expectations of the implementation of the congestion fees of the two societies.</p>
<p>LE009 17:30-17:45</p>	<p>Research on Maintenance Support System Based on Complex Network Ke Yang Wuhan University of Technology, China</p> <p>Abstract- The design and collaboration analysis of maintenance support system network is a critical challenge. So the network model of ship maintenance support system was proposed, it involved all levels of distributed maintenance support participating nodes and formed a net chain structure. The network characteristic was analysed using complex network theory. The impact of topology characteristic and dynamic evolution on the cooperation effectiveness of maintenance support system was discussed. And an optimal evolution algorithm of support network was put up to so that the optimal support network would be designed.</p>
<p>LE018 17:45-18:00</p>	<p>Outline of the Concept of Conventional or Mixed Fleet Replacement with Electric Buses: A Planning Process Krzysztof Krawiec Silesian University of Technology, Poland</p> <p>Abstract- The issue of replacing conventional buses with vehicles that meet modern standards is particularly up-to-date topic in Europe and beyond. The author assumed that – sooner or later – only battery electric buses will be in operation in public transport. In this paper a basic structure for an algorithm supporting the decision process related with bus fleet exchange (conventional or mixed) with electric buses only is presented. There are three paths derived in the algorithm which are to result in the following outcomes: necessary parameters of buses, detailed schedule for bus conversion process and economic impact of the investment in electric buses. The part of the model of a vital importance is a decision support for electric bus deployment that is using energy consumption model to calculate a total cost of ownership (TCO).</p>

<p>LE023 18:00-18:15</p>	<p>Study on the Vibration Suppression Method of Urban Railway Vehicles Based on a Composite Dynamic Vibration Absorber Qian Sun, Yongpeng Wen and Yu Zou Shanghai University of Engineering Science, China</p> <p>Abstract- To reduce the bounce and the pitch vibration of carbody, a vertical dynamic model for urban rail vehicles is established to analyze the vibration response of the carbody in the low frequency range. In this paper, different methods of single-degree-of-freedom dynamic vibration absorber to suppress the vibration for carbody are investigated. The limits of single-degree-of-freedom dynamic vibration absorber to the vibration reduction effect of carbody are pointed out. After that, the design of a composite dynamic vibration absorber including a double oscillator structure is introduced. A vibration discreteness index is used to evaluate dynamic vibration absorbers with various designs for the vibration damping performance. Finally, the vibration reduction performance of the composite dynamic vibration absorber is verified by Sperling's riding index. The results demonstrate that the performance of the single degree of freedom dynamic vibration absorber attached to a carbody may increase the vibration within a partial scope, when the peak frequency of vibration is far away from the design frequency. The installation of the composite dynamic vibration absorber vibration provides gentler running experience for passengers.</p>
<p>LE029 18:15-18:30</p>	<p>Factors Affecting Crash Frequencies: A Negative Binomial Regression Based Analysis of Indus Highway, Pakistan Rafi Ullah Khan, Jingbo Yin and Faluk Shair Mustafa Shanghai Jiao Tong University, China</p> <p>Abstract- The increase in vehicular traffic have also increased the highway crash frequency with the passage of time. Improvements in highway safety is of vital importance as it could save vast life and monetary losses. The highway crash frequency analysis of major Pakistani highways is a subject less discovered and many important strategic and trade routes are not studied in this regard. This study is aimed to analyze the crash frequency and the prominent factors that cause these crashes on a 302 km section of Indus highway; one of the most important trade routes of the country. Eight years' data from 2011 till 2018 was arranged into 19 variables where the crash frequency is set as dependent variable, while the eighteen prominent causation factors as independent variables. The tool used for analysis was negative binomial regression being run in the SPSS software. The results indicate that the driver's behavior, understanding &</p>

	<p>risk recognition, negligence and law adherence have a significant effect on the crash frequency. Furthermore, highway crash frequency significantly increases with increase in highway segment lengths, number of lanes and lane widths. Similarly, the highway crash frequency significantly enhances when the light, pavement surface and climate condition gets deteriorated. The results of this study are of vital importance to government, transportation companies and general public in order to recognize the most important accident causing factors and devise the transport policies, rules and behaviors accordingly.</p>
<p>LE1004 18:30-18:45</p>	<p>The Development of Safety Performance Functions for Roundabouts in Amman, Jordan Khair Jadaan and Diana AL- Nabulsi University of Jordan, Jordan</p> <p>Abstract- It is now well established that crash occurrences at roadway segments or intersections are associated with a large variety offactors. Safety Performance Functions (SPF) are statistical models developed to predict crash frequencies for various design variables.</p> <p>In Jordan, almost half of all road crashes occur at intersections, mostly in urban areas. There is a significant number of roundabouts throughout Amman which is increasing without evaluating their safety performance. To assess safety benefits of this kind of intersections, transportation professionals need the powerful statistical tool; the SPF. This study aims to develop SPFs for roundabouts in Amman. The models consider the crash frequency, traffic volume and geometric features of all the studied 20 roundabouts. The developed SPFs were statistically significant ($R^2 = 0.91$). The findings of the study revealed that crash frequency has a strong relation with the AADT, roundabout entry angle-degrees, entry path radius, splitter radius, pedestrian crossing structure, inscribed diameter, central diameter, circulating width, entry width, number of circle legs. The developed SPFs are evaluated through a comparison with others from developed countries.</p>
<p>LE024 18:45-19:00</p>	<p>Study on the Urban Rail Transit Sleeper Spacing Considering Vehicle System Yu Zou, Yongpeng Wen and Qian Sun Shanghai University of Engineering Science, China</p> <p>Abstract- To design the optimal sleeper spacing of the track and reduce the vertical vibration of the rail, the influence of the sleeper spacing on the rail vibration is analyzed in the vehicle-track vertical coupling model. By comparing the effects of vehicle speed</p>

and load on the vibration response of rails under different sleeper spacings, the importance of vehicle system is pointed out. According to the power spectrum density of the vertical rail displacement, the optimal sleeper spacing under the specific line is proposed, and verified via the vibration decay rate. The results show that the sleeper spacing directly affects the first-order Pinned-pinned vibration of the rail, and the effects of the speed and the load on the vibration response are different. In the low-speed section, the impact of the sleeper spacing on the vibration response is smaller, and the larger spacing can be appropriately selected to reduce the number of sleeper to save costs. However, in the high-speed section, the impact is larger, and the speed and the load should be comprehensively considered to select the optimal sleeper spacing.



15:40-16:20 Coffee Break

Poster Session

Thursday, August 22nd, 2019

Time: 15:40-16:20

LE027

Research on Two-stage Order Picking Sequencing for Intensive Shelf

Xue Tian¹, Li Zhou² and Jianglong Yang³

¹Associate professor of Beijing Wuzi University, China ; Visting scholar in CSUSB, calafonia state university, san bernadino, USA

²Professor of Beijing Wuzi University, China

³Student of Capital University of Economics and Business, China

Abstract- The increasingly usage of Intensive shelves, greatly increase the utilization of storage space, but also is more demanding on order picking time . Based on the storage layout of intensive mobile shelves, this paper combines the time cost of shelf movement with the moving distance under the guidance of seeking global optimum. Transform the single order picking process into TSP problem, while considering the picking process. The waiting cost of the order, and the minimum of the picking cost and the waiting cost of the whole batch of orders requiring shelf movement, to establish a two-stage mathematical model of the order picking order. Then, the algorithm for solving the model is designed, and the simulation is carried out by numerical examples to illustrate the law and characteristics of the problem more vividly, in order to provide reference and reference for the order picking activities of intensive mobile shelves.

LE1008

How Connected Autonomous Vehicles Would Affect Our World? —— A Literature Review on the Impacts of CAV on Road Capacity, Environment and Public Attitude

Shuya Zong

The Hong Kong Polytechnic University, Hong Kong

Abstract- With the rapid development of technology, connected autonomous vehicle(CAV) is getting close to the reality. The application of CAV causes changes to road capacity, gas emission, public attitude and other realms. Lots of efforts have been spent in quantifying the potential changes and this paper is an attempt to review the relevant researches. There will be three sections, presenting review of the impacts on road capacity, environment and public attitude respectively. There is a large amount of papers making models to predict future road capacity with various penetration rate of

CAV and they obtain quite different interesting results. To predict the future condition more properly, more stochastic models should be proposed. In terms of influence on environment, it may be hard to conclude whether CAV will exacerbate or relieve global warming by looking at current researches. It would be valuable to conduct a quantitative analysis on this issue. For the public attitude, this paper mainly focus on whether people are willing to use CAV and future efforts that may help with the promotion of CAV.

Listeners

1	Katerina Slaninova
2	Olatunbosun Michael Agboola
3	Rida Bibi

One Day Tour

Onsite registration cannot be accepted.

Gather at the lobby of the IBIS Paris 17 Clichy-Batignolles at 8:50 am.

The proposed places are:

Morning: Arc of Triumph (Exterior) , Champs Elysées, The Place de la Concorde, Eiffel Tower (Exterior) , Notre Dame Cathedral (Exterior) , Lachaise Cemetery

Lunch: Participants need to pay the meal by themselves

Afternoon: Louvre Museum

According to arrangement, place may change on the day.





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