

# Conference Abstract

## 2018 6th International Conference on Traffic and Logistic Engineering (ICTLE 2018)

With the workshop

2018 4th International Conference on Innovation and Industrial Logistics  
(ICIIL 2018)

August 3-5, 2018

Chateau de Bangkok, Thailand

Address: 29 Soi Ruamrudee 1, Ploenchit Road, Lumpini, Pathumwan, Bangkok, 10330, Thailand

Published by



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# Welcome Letter

Dear Participants,

Welcome to 2018 Bangkok conferences! The conferences aim to bring together international academicians, scientists and industrialists for knowledge sharing, ideas exchanging and outcomes collaborating and presenting in Traffic, Logistic Engineering, Innovation and Industrial Logistics.

We wish to take this opportunity to express our heartfelt appreciation to Conference Chair Prof. Roberto Montemanni from Dalle Molle Institute for Artificial Intelligence (IDSIA)&University of Applied Sciences of Southern Switzerland (SUPSI), Switerland. Our program chairs Prof. Kananpha Amaruchkul from National Institute of Development Administration (NIDA), Thailand; Prof. Khair S. Jadaan from University of Jordan, Jordan.

Also, we would like to thank the committee members for their hard work in making smooth running of the conferences. Many thanks to the reviewers for their excellent job to maintain the academic quality and scholarship.

Finally, we would like to thank you, our participants, for coming to Bangkok during your busy schedule to share your knowledge with the rest of us. We hope our conferences will prove to be intellectually stimulating to you as to us.

Hope you enjoy the conferences, the food, the hospitality, and the beautiful and charming environment of Bangkok!

**Conference Organizing Committees**

# Instructions for Presentation

## **Oral Presentations**

**Time:** a maximum of 15 minutes in total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.

You can use USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her / his session chair in the corresponding session room 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.

It is suggested that you email a copy of your presentation to your personal in box as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.

Please note that session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft Power Point and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fronts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.

**Movies:** If your Power Point files contain movies please make sure that they are well formatted and connected to the main files.

## **Poster Presentations**

Maximum poster size is 36 inches wide by 48 inches high (3ft.x4ft.)

Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.

Please note that during your poster session, the author should stay by your poster paper to explain and discuss your paper with visiting delegates.

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## 2018 Bangkok Conferences

### Program at a Glance

Friday, August 3, 2018		
13:00-17:00	<b>Conference Check in and Materials Collection</b>	Lobby on Ground Floor
Saturday, August 4, 2018		
Opening Ceremony		
9:00-9:10	Prof. Roberto Montemanni Dalle Molle Institute for Artificial Intelligence (IDSIA)&University of Applied Sciences of Southern Switzerland (SUPSI), Switerland	Larose room on 3 <sup>rd</sup> floor
9:10-9:55	<b>Speech I</b> Prof. Kananpha Amaruchkul National Institute of Development Administration (NIDA), Bangkok, Thailand <i>Speech Title: Optimal Air-Cargo Allotment Contract with Multiple Freight Forwarders</i>	Larose room on 3 <sup>rd</sup> floor
9:55-10:30	<b>Coffee Break &amp; Group Photo</b>	Larose I & Larose II on 3 <sup>rd</sup> floor
10:30-11:15	<b>Speech II</b> Prof. Roberto Montemanni Dalle Molle Institute for Artificial Intelligence (IDSIA)&University of Applied Sciences of Southern Switzerland (SUPSI), Switerland <i>Speech Title: SocialCar: Integrating Carpooling into Existing Mobility and Public Transportation Systems</i>	Larose room on 3 <sup>rd</sup> floor
11:15-12:00	<b>Speech III</b> Prof. Khair S. Jadaan University of Jordan, Jordan <i>Speech Title: Evaluation of Road Safety Management</i>	
12:00-14:00	<b>Lunch</b> 	Panorama Bar on 14 <sup>th</sup> floor

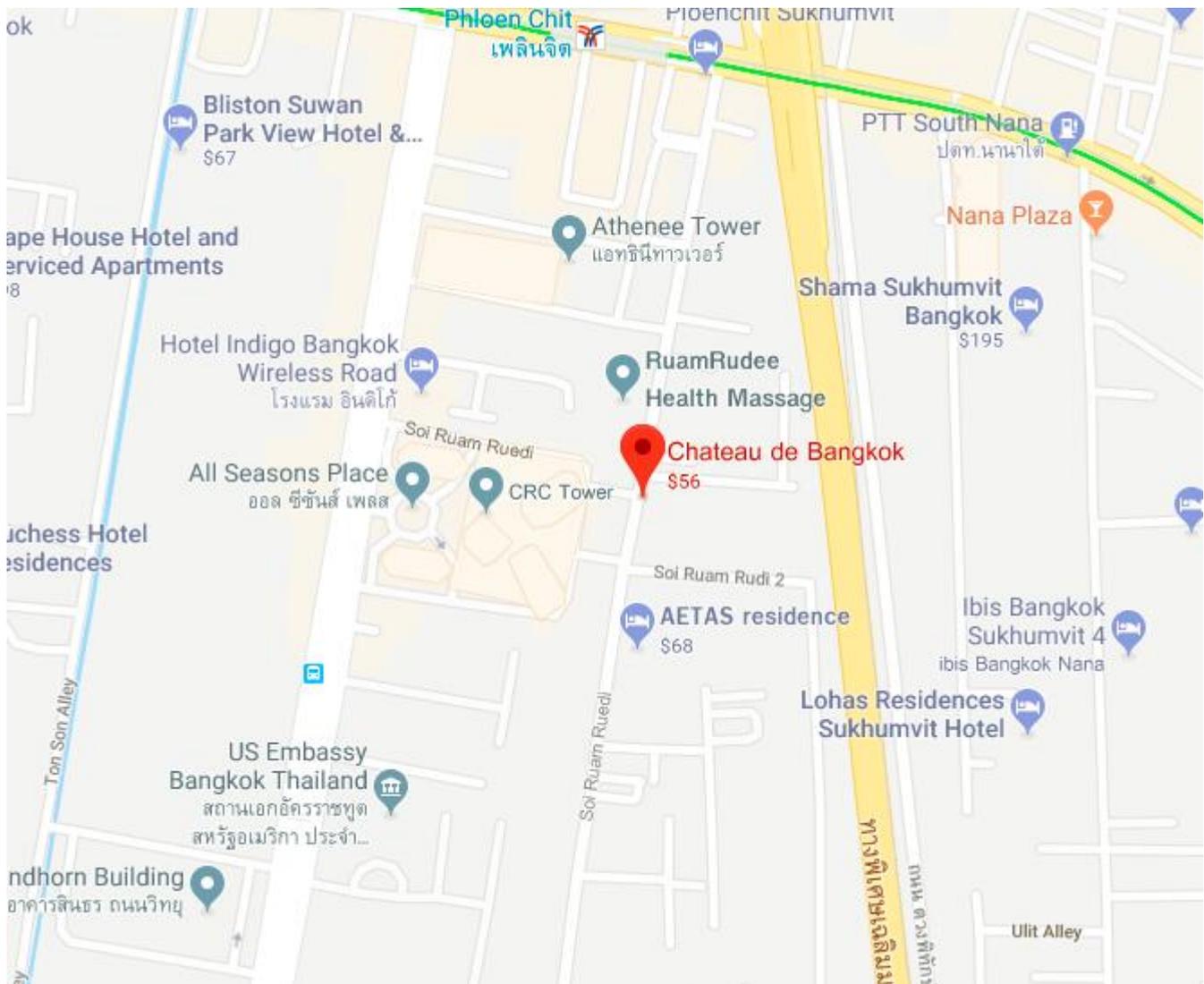
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Oral Presentation Session		
14:00-17:30	<b>Session Title: Intelligent transportation and industrial logistics</b> L003, L1004, L1008, L1009, IIL1001, IIL1002, IIL1003, IIL002, IIL004	Larose room on 3 <sup>rd</sup> floor
15:20-17:30	<b>Coffee Break and Free Discussion</b>	Larose I & Larose II on 3 <sup>rd</sup> floor
9:00-17:30	<b>Poster Session</b>	
18:30-20:00	<b>Dinner</b> 	Panorama Bar on 14 <sup>th</sup> floor
<b>Sunday, August 5, 2018</b>		
<b>One Day Tour in Bangkok</b>		

General information:

**Chateau de Bangkok (Thai : ชาโตว์ เดอ บางกอก)**

- Registration Desk: **Hotel Lobby on the ground floor**
- Coffee Break: **Larose I & Larose II on 3rd floor**
- lecture hall: **Larose room on 3rd floor**
- Lunch & Dinner: **Panorama Bar on 14th floor**



## Keynote Speakers Introduction



### **Prof. Kananpha Amaruchkul**

#### **National Institute of Development Administration (NIDA), Bangkok, Thailand**

##### ***Title: Optimal Air-Cargo Allotment Contract with Multiple Freight Forwarders***

**Abstract:** Consider the air-cargo service chain which comprises a carrier and multiple forwarders. The carrier and each of the forwarders may establish an allotment contract at the start of the season. We formulate the contract design problem as a Stackelberg game, in which the carrier is the leader and offers a contract to a forwarder. The contract parameters may include the discount contract price and the penalty cost for the unused allotment as well as the minimum allotment utilization. The carrier's contract is accepted, if the forwarder earns at least its reservation profit. Given the carrier's offer, the forwarder decides how much to book as an allotment, in order to maximize its own expected profit. We show that the two-parameter contract suffices to coordinate the service chain, and the carrier earns the maximum chain's expected profit less the total reservation profits of all forwarders. If the penalty cost is not imposed, then the minimum allotment utilization is needed to construct an efficient contract. On the other hand, if the penalty cost is strictly positive, then there is no need to impose the minimum allotment requirement.

**Biography:** Kananpha Amaruchkul is an Associate Professor of Graduate School of Applied Statistics, National Institute of Development Administration, Bangkok, Thailand. She graduated with PhD degree in Industrial Engineering, Minor Statistics from University of Minnesota, USA. She received M.S. degree in Industrial Engineering and Operations Research from University of California, USA and A.B. degree in Mathematics (Honors) from Princeton University, Princeton, USA in 2001. She joined Department of Mechanical Engineering, University of Minnesota, Twin Cities, USA as a Teaching Assistant in 2007. She served as a consultant for a couple of companies in Thailand, such as Bangkok Airways Public Company Limited, M-Focus, Ltd, etc. She is a referee for European Journal of Operational Research, Computers & Industrial Engineering and IEEE Transactions on Systems, etc. And an editor for Thai Operations Research journal.



**Prof. Roberto Montemanni**

**Dalle Molle Institute for Artificial Intelligence (IDSIA) & University of Applied Sciences  
of Southern Switzerland (SUPSI), Switzerland**

***Title: SocialCar: Integrating Carpooling into Existing Mobility and Public Transportation Systems***

**Abstract:** SocialCar is a European research and innovation project that seeks to incorporate carpooling (people commuting together on a same vehicle) into existing mobility and public transportation systems, by means of powerful planning algorithms and big data integration from public transportation, carpooling systems, and crowd sourcing. The project unites transportation engineers, social and economic scientists, information technology experts, carpoolers and public authorities from Italy, Greece, United Kingdom, Luxembourg, Poland, Switzerland, the Former Yugoslav Republic of Macedonia, Croatia, Slovenia, the Netherlands, Hungary, Spain and Belgium. Their mission is to design, develop, test and roll out a service that simplifies the travel experience of citizens in urban and peri-urban areas. SocialCar will define data processing flows and design algorithms to match travel requests with the integrated public-private transport supply, complemented by a reputation-based mechanism based on social media. After a general overview of the project, a detailed description of the route planning and ride matching engines at the basis of the system will be provided. These component are used to provide the users with meaningful alternatives for their trips.

**Biography:** Roberto Montemanni is professor of advanced algorithms at the University of Applied Sciences of Southern Switzerland. He is also active as senior researcher at the Dalle Molle Institute for Artificial Intelligence and as research advisor for PhD students at the University of Lugano, Switzerland. He obtained a Laurea degree in Computer Science from the University of Bologna, Italy in 1999 and a Ph.D. in Applied Mathematics from the University of Glamorgan, UK in 2002. He is leading basic and applied research projects both at national and international levels. His main research interests are in the fields of mathematical modeling and algorithms, with applications in transportations and logistics.



**Prof. Khair S. Jadaan**

**University of Jordan, Jordan**

***Title: Evaluation of Road Safety Management***

**Abstract:** Road Safety continues to be a challenge globally requiring sustained implementation of intervention measures by different sectors. An urgent social task and a challenge to road safety stakeholders is to develop effective measures for improving road safety – especially when resources are scarce and economic means are limited. This calls for the need to evaluate these interventions in order to assist decision makers to identify “best Practice” road safety investments which is essential for the formulation of accident reduction and prevention strategies.

**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).

## Oral Presentation Session

**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!

**Session Title: Intelligent transportation and industrial logistics (9 presentations)**

**Time: 14:00-17:30      Venue: Larose room on 3rd floor**

**Chair: TBA**

**Part A**

<p><b>L003</b> <b>14:00-14:20</b></p>	<p><b>Utilizing Bicycle Compatibility Index and Bicycle Level of Service for Cycleway Networks</b> <b>Qiang Liu, Riken Homma and Kazuhisa Iki</b> Kumamoto University, Japan</p> <p>Abstract-Bicycle is widely used in Japan by people of all age groups in daily usage, which may significantly ease traffic congestion. Responding to the cyclists increasing, the method to assess the quality of bicycle travel become necessary. Previous studies reported several approaches to obtain evaluation methods. However, cycleway evaluation in Japan is still far behind the evaluation methods developed in Europe or America. This paper concentrated on familiarizing readers with two methods for evaluating the quality of bicycle facilities and then presenting some proposals of cycleway evaluation in Japan referencing to these two methods. The first method, Bicycle Compatibility Index (BCI), is used to evaluate the road environment for cycling according to the road characteristics by statistical analysis. The second method, Bicycle Level of Service (BLOS), also represents an evaluation of safety for bicyclists. Both of the above methods offered equations of comfort and safety perceptions of bicyclists according to cycling environments. By introducing these methods in combination, this paper enables the readers to maximize the comparative advantages of both BCI and BLOS. The comparison includes sensitivity of variables and the development of both methods. Then we applied BCI and BLOS to evaluate the target roadways in Kumamoto, Japan.</p>
<p><b>L1004</b> <b>14:20-14:40</b></p>	<p><b>The Possibility of CO<sub>2</sub> Pipeline Transport for Enhanced Oil Recovery Project in Poland</b> Paweł Wojnarowski, <b>Robert Czarnota</b>, Tomasz Włodek, Damian Janiga, Jerzy Stopa and Piotr Kosowski AGH University of Science and Technology, Poland</p> <p>Abstract-Enhanced oil recovery schemes involve the transportation of large volumes of carbon dioxide from the capture source to the utilisation site. This research presents the possibilities of carbon dioxide transport using pipeline from the selected emission point to the oil reservoir located in Poland where greenhouse gas can be used as injecting fluid to improve oil production. In the first step, the different CO<sub>2</sub> thermodynamic states are analyzed. For the design purpose,</p>

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	<p>length, operating pressures and flow rates are determined, then pipeline diameter is calculated. Furthermore, the pipeline transmission schemes for CO<sub>2</sub> transport are proposed. The study revealed, that the large amount of CO<sub>2</sub> produced at source power plant can be transported to the oilfield site more efficiently when CO<sub>2</sub> is converted into the liquid state. As a result, the smaller pipeline diameter can be applied for the transmission. Moreover, temperature decrease is observed when CO<sub>2</sub> is transported in gaseous state and temperature increase is present when CO<sub>2</sub> is in the liquefied state.</p>
<p style="text-align: center;"><b>L1008</b> <b>14:40-15:00</b></p>	<p><b>Integration of Genetic Algorithm and Support Vector Machine to Predict Rail Track Degradation</b> <b>Amir Falamarzi</b>, Sara Moridpour, Majidreza Nazem and Reyhaneh Hesami RMIT University, Australia</p> <p>Abstract-Gradual deviation in track gauge of tram systems resulted from tram traffic is unavoidable. Tram gauge deviation is considered as an important parameter in poor ride quality and the risk of train derailment. In order to decrease the potential problems associated with excessive gauge deviation, implementation of preventive maintenance activities is inevitable. Preventive maintenance operation is a key factor in development of sustainable rail transport infrastructure. Track degradation prediction modelling is the basic prerequisite for developing efficient preventive maintenance strategies of a tram system. In this study, the data sets of Melbourne tram network is used and straight rail tracks sections are examined. Two model types including plain Support Vector Machine (SVM) and SVM optimised by Genetic Algorithm (GA-SVM) have been applied to the case study data. Two assessment indexes including Mean Squared Error (MSE) and the coefficient of determination (<math>R^2</math>) are employed to evaluate the performance of the proposed models. Based on the results, GA-SVM model produces more accurate outcomes than plain SVM model.</p>
<p style="text-align: center;"><b>L1009</b> <b>15:00-15:20</b></p>	<p><b>Empirical Study on Maximum Traffic Throughputs at Intersections</b> <b>Patikhom Cheevarunothai and Ruangsak Kaewpikul</b> Thammasat University, Thailand</p> <p>Abstract-Traffic congestion in big cities of Thailand has been a major problem seriously deterring economy growth. An average travel speed has become lower than 15 km/hour during peak-hour periods. One of the current major questions is how to find the most optimum green time that minimizes vehicle delay at an intersection. Since the identification of this optimum green time significantly depends on the knowledge of how fast vehicles can pass through an intersection, the information of the maximum traffic throughputs at intersections at different locations is indispensable. In this study, therefore, traffic counts were extracted manually from the videos recorded at 4 major intersections in Saensuk city. After the data were analyzed, the maximum traffic throughputs for different lane numbers and configurations were calculated and summarized. A better understanding of this maximum traffic throughput at intersections will lead to more accurate estimation of optimal green time.</p>



Coffee Break 15:20~15:50

Part B

<p><b>IIL1001</b> <b>15:50-16:10</b></p>	<p><b>A Hybrid Meta Heuristic Algorithm for the Balanced Line Production under Uncertainty</b> <b>Pasura Aungkulanon</b>, Pongchanun Luangpaiboon and Roberto Montemanni Phranakhon Rajabhat University, Thailand</p> <p>Abstract-This study proposes a hybrid Golden Ball Algorithm for solving a balanced line production for a garment firm in Thailand. At present, production lines are those in which the timing of the job movement between stations is coordinated in such a way that all of the jobs are indexed simultaneously via some heuristic sequencing or dispatching rules. This research studies the balanced line production problem with some stochastic patterns, and develops a Golden Ball Algorithm or GBA and its variants to solve the problem. To assess the effectiveness of the proposed hybrid algorithm, a computational study is conducted for both deterministic and stochastic patterns of the problem. The comparisons are made for two different levels of processing times and due date. It can be concluded that the variant HGBA2 of the algorithm by adjusting answers of the successor function on both custom training and successor phases, is slightly more effective than the other hybrid approaches in terms of quality of solutions under uncertainty.</p>
<p><b>IIL1002</b> <b>16:10-16:30</b></p>	<p><b>Smart Logistics Framework: A Case Study of Phuket RO Water System</b> Warodom Werapun, <b>Wisit Srimala</b>, Kullawat Chaowanawatee and Thanakorn Karode Prince of Songkla University, Phuket Campus, Thailand</p> <p>Abstract-The product transportation is an important procedure in businesses, which consumes costs and times. Effective transportation management can reduce expenses significantly. New technologies such as Global Position System (GPS), maps, notification and network connection can be integrated all together in one small smart phone that provides accessing from anytime and anywhere. In this paper, we propose a smart logistics framework that combines different technologies in order to solve management and tracking issues in a real transportation environment.</p>
<p><b>IIL1003</b> <b>16:30-16:50</b></p>	<p><b>Ergonomic Evaluation and Redesign Manual Brick Work Station in the Village of Sail</b> <b>Merry Siska</b>, Eki Saputra and Reski Mai Candra State Islamic University of Sultan Syarif Kasim Riau, Indonesia</p> <p>Abstract-Working posture or work attitude is the working position is naturally formed by the body of workers due to the facilities used to interact with or work habits. Unsuitable working attitude can cause physical complaints such as pain in the muscles (Musculoskeletal Complain). Brick-making factories were encountered in the Village of Sail. This research is a field where once obtained the data needed and then do the processing of the data from the mapping process</p>

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	<p>operations, risk evaluation work experienced by workers by using OCRA Checklist, calculate the value OCRA index, focus group discussions problems faced by workers, design repair work method proposed, calculates the data anthropometry workers, prototyping proposed work station molding bricks and evaluate the results of the optimization work station molding bricks. After all factors rated the results of activities scored bricks have totaled a score of 23.19 for the body of the left and amounted to 25.13 to the right part of the body. This value is high because the number of ATA and RTA are very much different. If the number of recommended actions (RTA) is smaller than the number of actual action (ATA) then there is the high risk assessment of musculoskeletal disorders. In the case of mold activity bricks are the factors that most affect posture and also the power by which the operator</p>
<p><b>IIL002</b> <b>16:50-17:10</b></p>	<p><b>Inventory Lot Sizing and Supplier Selection for Multiple Products, Multiple Suppliers, Multiple Periods with Storage Space Using Lingo Program</b> <b>Muoyleang Sambatt</b>, Thanakorn Naenna and Chirawat Woarawichai Mahidol University, Thailand</p> <p>Abstract-This study focuses on inventory lot sizing for supplier selection of multiple products; suppliers and periods with storage space constraint. The objective is to develop mathematical model. Lingo software program is used as solution tool. The proposed problem is found as mix integer linear programming (MILP) which beneficial for decision making of choosing optimal supplier and product in right period of time with minimum overall inventory cost.</p>
<p><b>IIL004</b> <b>17:10-17:30</b></p>	<p><b>The Effect of Logistics Service on Firm Financial Performance in Textile Industry: Evidence From Da Nang City, Vietnam</b> <b>Hoang Van Hai and Nguyen Truong Son</b> The University of Economics - University Of Da Nang, Vietnam</p> <p>Abstract-The purpose of this study is to understand an effect of the logistics service on firm financial performance in textile industry of Da Nang city, Viet Nam. A questionnaire was developed to survey several critical factors in the logistics services. Factor analysis method was applied to find some major configurations for each influential factor, and multi-regression method was employed to analyze the influence of critical factor on the firm financial performance. The results showed that internal logistics, inbound logistics, outbound logistics, support activities, and cost of logistics have significantly positive relationship with the firm financial performance. Interestingly, the cost of logistics becomes the main factor affecting the firm financial performance in the textile industry</p>



### Coffee Break and Free Discussion

15:20-17:30

Poster Session

Time: 9:00-17:30 Venue: Larose room on 3rd floor

<p>L002</p>	<p><b>Research on Anomie Behavior of Drivers on Non-physical Isolated Urban Road Based on Game Theory</b>                  Mei-ye Li, Meiyang Li, Xiao-xia Hu and Ge Li                  Chang'an University, China</p> <p>Abstract-In order to overtake motor vehicles ahead, some motor vehicles tend to enter non-motorized lane illegally on non-physical isolated urban road, which cause a negative influence on non-motor vehicles. In this paper, this anomie behavior is studied by headway distribution function, fluid dynamics model and game theory. Utilize headway distribution function to calculate the probability of critical gap required for motor vehicles entering non-motorized lanes, and fluid mechanics model to analysis delay. After that, considering critical gap, delay, management expense and fine for anomie behavior, the time value functions of drivers and cyclists are established and regarded as the payment functions in mixed strategy Nash equilibrium. Finally, according to the result of Nash equilibrium, two optimal probability models are put forward. Under different circumstances of non-motor vehicle flow, motor vehicle speed, management expense and fine for anomie behavior, the first model quantified the optimal probability that drivers commit anomie behavior and the second model quantified the optimal probability that traffic department implements management. Furthermore, models can provide references for the management of anomie behavior on non-physical isolated urban road.</p>
<p>L1001</p>	<p><b>Flight Delay Prediction Based on Characteristics of Aviation Network</b>                  ZHOU Tan, GAO Qiang, CHEN XIN and XUN Zongwei                  Nanjing University of Aeronautics and Astronautics, China</p> <p>Abstract-In recent years, the increasingly serious flight delay affects the development of the civil aviation. It is meaningful to establish an effective model for predicating delay to help airlines take responsive measures. In this study, we collect three years' operation data of a domestic airline company. To analyse the temporal pattern of the Aviation Network (AN), we obtain a time series of topological statistics through sliding the temporal AN with an hourly time window. In addition, we use K-means clustering algorithm to analyse the busy level of airports, which makes the airport property value more precise. Finally, we add delay property and use CHAID decision tree algorithm to train the data of an airline for nearly 3 years and use the training model to predicate recent half a year delay. The experimental results show that the accuracy of the model is close to 80%.</p>
<p>L1006</p>	<p><b>Measuring Public Transport Accessibility for Elderly</b>                  Kaniz Fatima, Sara Moridpour                  RMIT University, Australia</p>

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Abstract-The growth acceleration in the older population has been observed in many countries which creates a significant challenge to transportation. Public transport is an essential component of most people's lives. This specific group of population growth will require special attention to accessibility and mobility issues in combination with the transport system which undoubtedly can play a key role to support ageing. Good health, quality of life and independence are fundamental values for the life as well as mobility. For people such as senior citizens, public transport needs to be accessible and affordable in order to provide them with the opportunity to fulfil their medical, shopping and recreational needs. Providing access to transport for people with age 65 & over is not a marginal problem and it is expected to grow in the future. The most important concern in accessibility is the relatively short distance and high frequency movements from a permanent home. This study will identify the travel pattern & mode for elderly commuters in greater Melbourne, Australia. The study will also suggest strategies to improve the use of public transport system to promote ageing in place.

The logo for 'Dinner' features the word 'Dinner' in a bold, black, sans-serif font. The letter 'i' is replaced by a red fork, with the tines pointing upwards and the handle pointing downwards.

18:30-20:00



