



International Symposia of Transport Simulation (ISTS) and the International Workshop on
Traffic Data Collection and its Standardization (IWTDCS)

Editorial: ‘Big data and simulation Analysis on Emerging Technologies for Future Cities’

PREFACE

Dear Readers

It is the great honor for us to edit this special issue of *Procedia-Social and Behavioral Sciences Journal* for the selected revised papers presented in the International Symposia of Transport Simulation (ISTS) and the international Workshop on Traffic Data Collection and its Standardisation (IWTDCS) held on July 7 – 8 2016, at Jeju National University, Jeju Special Self-Governing Province, Korea.

As the guest editors of this issue, we are glad to see variety of papers that focus on major topics in latest advanced research on modeling and applications of transport simulation, including simulation of vehicle movements, dynamic simulation of traffic flow on transport networks, pedestrian simulations in urban areas, and freight simulations. The main focus therefore is to identify, ‘Big Data and Simulation Analysis on Emerging Technologies for Future Cities’.

Furthermore, the journal is getting more international each year, which is an indicator that it is getting worldwide known and recognized. Scholars from all over the world contributed to this issue of the journal. Special thanks are to all the reviewers, the members of the international editorial board, the publisher, and those involved in technical processes. We would like to thank all who contributed to in every process to make this issue actualized. Total of 52 abstracts or full papers were submitted for this issue and each paper has been peer reviewed by the reviewers specialized in the related field. At the end of the review process, total of 25 high quality research papers were selected and accepted for publication. We hope that you will enjoy reading the papers.

In this issue, we include 25 papers focusing on the Data collection & Smart Processing, Transport Modelling, Simulation & Management, Multimodal Transportation Systems, ITS/C-ITS for Transportation System Efficiency & Assessments methodologies.

The paper by Toru Seo, Takahiko Kusakabe and Yasuo Asakura propose methods for calibrating a fundamental diagram (FD) from trajectories of sampled vehicles. FD could be calibrated by using GPS-equipped probe vehicles; since they can continuously collect data from wide spatiotemporal area, compared to traditional fixed sensors. The paper formulate a method that identifies values of a free-flow speed and critical density of a triangular FD, while it relies on exogenous assumptions on FD’s functional form and value of its jam density. Then, a heuristic algorithm for FD calibration in actual traffic environment is developed based on the proposed method.

The paper by Mohammed Al Eisaeia, Sara Moridpourob and Richard Tay present restriction strategies of heavy vehicle management. The main focus of this paper is to address the influence of heavy vehicle space restriction strategies for different classes of heavy vehicles on traffic congestion. To ensure accurate evaluation of the restriction strategies, VISSIM traffic simulation software is used. Afterwards, four different heavy vehicle restriction strategies are applied to the VISSIM model where certain classes of the heavy vehicles will be banned to use the road during the peak period. The effects of each restriction strategy on different traffic measurements will be evaluated at different heavy vehicle compositions.

Restricting all heavy vehicles was deemed the most efficient restriction strategy in terms of the traffic performance measures used in this paper.

The paper by Phathinan Thaitatkul, Toru Seo, Takahiko Kusakabe and Yasuo Asakura present simulation approach for investigating dynamics of passenger matching problem in smart ridesharing system (SRS). The paper and investigate day-to-day dynamics and characteristics of passenger matching problem and formulate a passenger matching problem by considering user preference in SRS. Through the simulations, the existence of multiple day-to-day equilibria is investigated under some conditions.

The paper by Yosuke Kawasaki Yusuke Hara and Masao Kuwahara propose real-time traffic state estimation using a state-space model that takes account of variability in the fundamental diagram (FD) and sensing data. When it was free flow situations, the FD regulating driving behavior may change among drivers that possess differing characters. Moreover, FD is affected by external factors like interaction between pedestrians and vehicles. Since FD is changeable, the paper apply Variational theory (VT) to state-space model. Its proposal showed better agreement between simulated and benchmark traffic states than deterministic VT.

The paper by Stanislav Lykov, Yasuo Asakura and Shinya Hanaoka present utilization of wireless sensor network application for examining the human sensing problem. The paper propose modified positioning algorithm and combined with noisy data preprocessing technique based on limitations and shortcomings of contemporary crowd monitoring approaches and the specificity of the problem. Physical principles of interaction between pedestrians and sensor network are analyzed. The experiment is conducted to demonstrate conception data collection system in order to obtain information of pedestrian movement.

The paper by Wentao Jing, Inhi Kim, Mohsen Ramezani and Zhiyuan Liu presents stochastic traffic assignment of mixed electric vehicle and gasoline vehicle flow with path distance constraints. This paper addresses a general Stochastic User Equilibrium (SUE) Traffic Assignment Problem (TAP) for transport networks with electric vehicles (EV), where EV paths are restricted by the EV driving range limits. Modified method of successive averages (MSA) with a predetermined step size sequence where both multinomial logit and multinomial probit based loading procedure are applied to solve the TAP is developed. The suggested methods incorporate K-shortest paths algorithm to generate the path set on a need basis. Two numerical examples are presented to verify the proposed model and solution algorithms.

The paper by Xinyuan Chen, Zhiyuan Liu, Dongsheng Hua and Inhi Kim presents Model for Rail-based Park-And-Ride with feeder bus services. This paper propose a robust model by combining the driver's mode choice and route choice, which are based on a combined cross nest logit (CNL) and user equilibrium (UE) model. There are two contributions of this paper which are (1) considering travel time uncertainty on roads which can affect both modal split and route choice. (2) taking multi-class demands into consideration because different people have different requirements for the travel time and level of service. Mean-excess travel time (METT) model are proposed in this paper to depict uncertainty environment.

The paper by Miho Iryo-Asano and Wael Alhajyaseen present Pedestrian Speed change model in the pedestrian-Vehicle safety assessment of signalized crosswalks. The aims of this paper formulate quantitatively model the pedestrians sudden speed change maneuver at signalized crosswalks under uncongested conditions. Pedestrian speed profiles are collected from empirical data and speed change events are extracted assuming that the speed profiles are stepwise functions. The occurrence of the speed change events is described by a discrete choice model as a function of the necessary walking speed to

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