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Editorial

Sustainable and Resilient Transport Infrastructure

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Transport infrastructure is the lifeline of modern economy and significantly contributes to economic growth and our well-being. Transport infrastructure is not just about moving people and goods, but it is also an essential part of the continued economic growth and social development of countries. Our transport infrastructure is also increasingly complex and subject to a range of hazards or failures. A sustainable and resilient transport infrastructure provides access to jobs and other services with minimum environmental impacts and is able to withstand disruption and absorb disturbance by adapting to changing conditions, including climate change. This special issue aims at identifying and discussing a range of challenges that are faced in delivering safe, sustainable, and smart transport infrastructure as well as introducing innovative approaches to resolve these problems and challenges. We hope that this special issue would attract a major attention of the peers. 25 papers were submitted to this special issue, 8 of which were accepted for publication. As the guest editors of this special issue, we would like to summarize the 8 accepted papers as follows.

A paper authored by Y. Li and Y. Chen [1] focuses on evaluating the impact of road infrastructure on driving safety. This paper proposes two models to quantify the impact of road infrastructure on drivers. The models comprise four parameters including mass of vehicles, mass of infrastructure, warning level, and kinetic energy of road infrastructure. The models also consider the impact of drivers' subjective visual perception of road infrastructure.

A review paper by X. Shi et al. [2] focuses on examining the challenges and opportunities for empirical studies on the pedestrian's complex movements. This paper presents a systematic review on the empirical data collection for multidirectional crowd complex movements.

A paper authored by X. Ma et al. [3] explores the risk factors that influence road accidents involving hazardous materials. For this purpose, the paper presents a Bayesian network structure using Dempster–Shafer evidence theory. The Bayesian network model is capable of exploring the most probable factor or combination leading to accident, and it can predict the occurrence of the accident by setting the influence degree of a specific factor.

A paper authored by M. Rojo et al. [4] presents an economic analysis and evaluates the impact of budget reductions on increased accident rates. This paper focuses on the road safety indexes in Spain as a case study. The risk of accident, accident severity, and fatalities are considered in evaluating the road safety index. Linear regression technique is used in this paper to identify the relation between lower budget and higher road safety indices.

Authored by M. Contreras-Jara et al., [5] one paper proposes a procedure to estimate the traffic interruption probability caused by floods (still water regime) in roads. The procedure uses the first-order reliability method to estimate traffic interruption probabilities, based on the difference between the probability density functions of still water depth and vehicle wading height. The vehicle wading height based

on the geometric characteristics of light and heavy vehicles was developed.

S. Chang et al. [6] present a framework to minimise the faulty bike-sharing recycling. The framework minimizes the total recycling costs by taking the route optimization and loading capacity ratio as constraints. In this paper, an area in Beijing, China, has been used as a case study to validate the accuracy and performance of the proposed framework.

Z. Duan et al. [7] propose a multilevel matching method for traffic information services based on semantic technology. The similarity at the function level between services is computed by grouping the connections between the services into inheritance and noninheritance relationships. The paper also presents a three-layer framework with a semantic similarity measure that requires less time and space cost than the existing methods since the scale of candidate services is significantly smaller than the whole transportation network.

H. Wang et al. [8] present a bilevel optimization model to design the transport network with stochastic demands and emergency vehicle lanes. Two groups of users including passenger car users and emergency vehicle travellers have been considered in this paper. The bilevel optimization model has been formulated, where the upper level model aims to determine the optimal design of emergency vehicle lanes and the lower level model uses the user equilibrium principle to forecast the route choice of road users. A simulation-based genetic algorithm is proposed to solve the model.

Conflicts of Interest

The editors declare that there are no conflicts of interest regarding the publication of this editorial.

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References

[1] Y. Li and Y. Chen, "A new method based on field strength for road infrastructure risk assessment," *Journal of Advanced Transportation*, vol. 2018, Article ID 6379146, 13 pages, 2018.

[2] X. Shi, Z. Ye, N. Shiwakoti, and O. Grembek, "A state-of-the-art review on empirical data collection for external governed pedestrians complex movement," *Journal of Advanced Transportation*, vol. 2018, Article ID 1063043, 42 pages, 2018.

[3] X. Ma, Y. Xing, and J. Lu, "Causation analysis of hazardous material road transportation accidents by Bayesian network using genie," *Journal of Advanced Transportation*, vol. 2018, Article ID 6248105, 12 pages, 2018.

[4] M. Rojo, H. Gonzalo-Orden, A. Linares, and L. dell'Olio, "Impact of a lower conservation budget on road safety indices," *Journal of Advanced Transportation*, vol. 2018, Article ID 9570465, 9 pages, 2018.

[5] M. Contreras-Jara, T. Echaveguren, J. Vargas Baecheler, A. Chamorro Giné, and H. Solminihac Tampier, "Reliability-based estimation of traffic interruption probability due to road waterlogging," *Journal of Advanced Transportation*, vol. 2018, Article ID 2850546, 12 pages, 2018.

[6] S. Chang, R. Song, S. He, and G. Qiu, "Innovative bike-sharing in China: solving faulty bike-sharing recycling problem," *Journal of Advanced Transportation*, vol. 2018, Article ID 4941029, 10 pages, 2018.

[7] Z. Duan, L. Tang, Z. Kou, and Y. Zhu, "Hierarchical matching of traffic information services using semantic similarity," *Journal of Advanced Transportation*, vol. 2018, Article ID 2041503, 12 pages, 2018.

[8] H. Wang, L. Xiao, and Z. Chen, "Flexible emergency vehicle network design considering stochastic demands and inverse-direction lanes," *Journal of Advanced Transportation*, vol. 2018, Article ID 2524838, 14 pages, 2018.