Editorial

Metin Mutlu Aydın BSc, MSc, PhD, CEng

Associate Professor, Ondokuz Mayıs University, Samsun, Turkey

Welcome to the sixth issue of 2021 of *Proceedings of the Institution of Civil Engineers – Transport*. This is my first editorial for the journal and I would like to say that I am honoured to get chance to promote this issue. On behalf of the editorial panel, I hope that the published papers become useful for readers within the transport community including researchers, engineers, planners, policymakers, students and the public.

Studies in the field of transportation can include many sub-themes and areas. In particular, developing technology and changes in transportation needs or the desire to find solutions to problems encountered make significant contributions to the conducting of innovative studies. This issue includes different articles that aim to develop innovative approaches and solutions to problems in the field. As such, the sixth issue of the journal has a particular importance as it contains many sub-themes in the field of transportation engineering. In the issue, it will be possible to access innovative studies in the fields of traffic engineering, transport planning and pavement engineering at the same time. A brief overview of all papers can be found below.

The first paper, ‘Estimation of stress at interface of asphalt surface and rigid base of composite pavement’ by Rith *et al.* (2021), aims to estimate numerically vertical tensile and shear stress at the interface between the asphalt surface and the rigid base caused by the thermal differences in a rigid base and by horizontal loading, respectively. For this purpose, the authors applied various material properties and thicknesses of an asphalt surface to determine their effect on stress values. They found that stress resulting from traffic loading is more effective than the temperature differential effect on asphalt pavements.

The second paper, ‘An optimisation method for a co-operative driving system at road junctions’ by Zhao *et al.* (2021), examines the co-operation between moving vehicles and control systems for road junctions to improve operation and management of traffic flow. In the study, the authors use an improved membrane-computing-based multi-vehicle optimisation

method to ensure moving vehicles more safely and efficiently cross traffic intersections by optimising the system. The experimental results show that the method used can reduce delays at intersections, increase intersection throughput and shorten overall travel times.

In the third paper, ‘Evaluation of virtual controller interface device and software-in-the-loop simulation’ by Wang *et al.* (2021), a different simulation analysis is conducted for signal control to find an answer to the question of how to do the performance evaluation for the simulation systems. To this end, the authors proposed a virtual controller interface device (VCID) to connect the actual signal controllers to simulation software. The performance of the VCID and software-in-the-loop simulation (SILS) are compared and the Econolite cobalt controller and Vissim software package are employed. The results obtained show that the proposed device has the ability to provide accurate and reliable traffic simulation results. Controlled experimental results demonstrate that the function of the VCID is very similar to SILS, the relative difference between the two systems is less than 2% and VCID needs less effort and costs less than SILS.

Improving the performance of bus transport systems around the world is among the most important goals of transport authorities and planners. One way of achieving this is to define special lanes or give lane utilisation priority for bus transport. The fourth paper of this issue, ‘Sharing bus lanes: a new lanes multiplexing-based method using a dynamic time slice policy’ by Dong *et al.* (2021), aims to provide a theoretical method for the development of a ‘logical bus lane’: a novel bus lane that, under normal circumstances, is a general lane, and when a bus arrives, is quickly converted to a dedicated bus lane (DBL). As can be seen all over the world, urban road resources are increasingly scarce; in the study, Dong *et al.* (2021) aim to reduce the construction costs and difficulty in promoting DBLs to the public. To this end, they suggested a dynamic time slice policy for the time division multiplexing (TDM) method to share dedicated bus lanes and they designed a spatio-temporal control strategy for TDM to increase the

operability of the method in engineering applications. They applied the dynamic time slice policy to a DBL using simulations, and practical traffic experiments proved the feasibility of the dynamic time slice policy.

The final paper is by Yugendar and Ravishankar (2021), titled 'Multi-regime modelling of large congregations'. In this paper, the authors attempt to develop a model describing the relationships among crowd stream flow parameters for single-regime and multi-regime models. The study focused on the estimation of different crowd characteristics such as speed, density and flow, and the relationships among stream flow parameters. Results of the study show that three-regime models give better predictions than single-regime and two-regime models. The findings of the study clearly reveal that the multi-regime stream flow modelling concept can be applied to crowd modelling and can represent real-life scenarios, which will be helpful in crowd management and facility planning for transport planners and authorities.

In summary, the papers of this issue have a great importance for research in the fields of traffic engineering, transport planning and pavement engineering. Additionally, findings of the papers have also important contributions for the studies of transport authorities and planners.

On behalf of the editorial panel, I hope that you enjoy reading this issue of the *Proceedings of the Institution of Civil Engineers – Transport*. I also would like to thank the authors for sharing their study findings with transportation researchers, and the journal's reviewers for their contributions to ensure quality peer-reviewed publications in this issue.

REFERENCES

- Dong H, Zhao C and Fu F (2021) Sharing bus lanes: a new lanes multiplexing-based method using a dynamic time slice policy. *Proceedings of the Institution of Civil Engineers – Transport* **174(6)**: 378–393, <https://doi.org/10.1680/jtran.18.00075>.
- Rith M, Kim YK and Lee SW (2021) Estimation of stress at interface of asphalt surface and rigid base of composite pavement. *Proceedings of the Institution of Civil Engineers – Transport* **174(6)**: 345–353, <https://doi.org/10.1680/jtran.17.00106>.
- Wang D, Tian Z, Gholami A and Yang G (2021) Evaluation of virtual controller interface device and software-in-the-loop simulation. *Proceedings of the Institution of Civil Engineers – Transport* **174(6)**: 367–377, <https://doi.org/10.1680/jtran.17.00149>.
- Yugendar P and Ravishankar KVR (2021) Multi-regime modelling of large congregations. *Proceedings of the Institution of Civil Engineers – Transport* **174(6)**: 394–403, <https://doi.org/10.1680/jtran.18.00077>.
- Zhao H, Yue H, Gu T and Li W (2021) An optimisation method for a co-operative driving system at road junctions. *Proceedings of the Institution of Civil Engineers – Transport* **174(6)**: 354–366, <https://doi.org/10.1680/jtran.17.00107>.