
Preface

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Biographical notes: Ali Riza Yildiz is a Professor in the Department of Automotive Engineering, Bursa Uludağ University, Bursa, Turkey. His research interests are metaheuristic optimisation techniques, optimum design, structural optimisation, additive manufacturing, lightweight design, composite materials, vehicle design, vehicle crashworthiness, shape and topology optimisation of vehicle components. He has been serving as an Associate Editor for the *Journal of Expert Systems*, Wiley. He is a R&D Manager at TUSAŞ-TAI R&D Center at Bursa Uludağ University.

Sujin Bureerat received his BEng degree in Mechanical Engineering from Khon Kaen University, Khon Kaen, Thailand, and PhD in Engineering from Manchester University, Manchester, UK. Currently, he is a Professor with the Department of Mechanical Engineering, Khon Kaen University. His research interests include multidisciplinary design optimisation, soft computing, evolutionary computation, aircraft design, aeroelasticity, dynamic system identification, finite element analysis, agricultural machinery and mechanical vibration.

Zeng Meng is an Associate Professor in the School of Civil Engineering at Hefei University of Technology in China. Specialising in engineering mechanics, he received his PhD from the Dalian University of Technology in 2015 after completing a Bachelor's degree at Lanzhou University in 2009. He conducts research on reliability-based design optimisation using probabilistic and non-probabilistic modelling, with emphasis on new high-confidence uncertain modelling and accordingly high-performance algorithms. He developed the superparametric convex model and exponential convex model to measure the experimental data accurately. Moreover, he pointed out the directional property of first order reliability analysis for

nonlinear problems, and established the modified chaos control method and directional stability transformation method. His work has been applied in aerospace and civil engineering fields. His research is supported by the National Natural Science Foundation of China, the Foundation of State Key Laboratory of Structural Analysis for Industrial Equipment from Dalian University of Technology, and the Fundamental Research Funds for the Central Universities of China.

Nature inspired optimisation (NIO) algorithms have recently drawn attention from a great number of researchers and engineering designers around the globe. Such optimisers work by mimicking the behaviour of creatures and physical systems, for example, particle swarm optimisation imitates the behaviour of a swarm of birds seeking for food. The methods are advantageous as they are flexible and simple to understand, code and implement. They are efficient global optimisation methods with a derivative-free feature. Moreover, they can explore a Pareto front of multi-objective optimisation within one run. This makes the methods popular and they are implemented on a variety of engineering applications. The use of nature-inspired optimisers for vehicle component design is one of the most interesting research topics related to NIO.

In this special issue, a number of state-of-the-art nature-inspired optimisers were used for solving the design problems of vehicle components and other related systems. The design problems are single-objective, multi-objective and many-objective, where the last one implies that there are more than three objective functions. The function evaluations are mostly carried out by means of finite element simulation while some problems need surrogate modelling to reduce computing time. The NIO algorithms consist of mostly metaphorical metaheuristics, such as grey wolf optimiser and multiverse optimisation algorithm, while some optimisers are named based on their operators, e.g., a knee-point driven and reference vector guided evolutionary algorithm. The applications include structural components, suspension systems, brake components, crashworthiness design, electric vehicle components, and power sources. The work published in the special issue will greatly contribute to the development of the knowledge in the field of vehicle design.