Editorial

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Published online: 25 September 2018
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I personally thank for the great opportunity offered to me to act as the Guest Editor of this special issue, which is on nature inspired algorithms and their applications. Nature-Inspired Algorithms (NIA) has attained immense popularity in recent years for tackling the hard real world (NP hard and NP complete) problems and complex optimization functions for which actual solution doesn't exist. The main purpose behind the development of such algorithms is to optimize engineering problems. Since the world is looking towards industrialization, engineering problems are becoming tedious and tricky to optimize. This is because of growing dimensions, time complexity, variables, space complexity and so on. In order to cope up with such situation, nature-inspired algorithms are designed to optimize multi-objective functions, numerical benchmark functions and solve NP-hard problems for more variables, dimensions, etc. In fact, NIA is mainly categorized into two: evolutionary algorithms and Swarm intelligence-based algorithms. Evolutionary algorithms are purely based on the evolutionary behaviour of natural systems. These algorithms employ recombination and mutation operators for optimizing the complex issues, e.g., genetic algorithm, differential evolution and so on. Swarm intelligence (SI) based algorithms, also termed as swarm optimization techniques attempt to optimize the engineering problems by imitating the collective searching behaviour of natural swarms. Swarm intelligence and evolutionary algorithms form a hot topic in the developments of new algorithms inspired by nature. Besides

these categories, NIA has different other classifications that are dependent on source of inspiration. For instance, artificial neural network mimics the decision-making process of human brain. It also gains much attention from the researchers to solve prediction and classification problems.

This issue is a perfect collection of selective nature-inspired algorithms on attempting to solve hard optimization and engineering problems. It covers the state-of-the-art evolutionary algorithms that play crucial role in complex and large-scale optimization problems as well as medical applications, cloud computing, text mining and design problems. In medical applications, the role and variants of nature-inspired algorithms are well investigated on brain tumour recognition and detection of diabetic retinopathy. Security on medical applications have been considered in this issue, by enhancing the medical image security and cloud security on handling healthcare data. Extensive experimental results on well-diversified problem area has been presented for lion algorithm by its inventor. In addition, the issue comes with advanced nature-inspired algorithms that aid image inpainting, optimizing the parameters of Tungsten Inert Gas (TIG) welding process and sentiment analysis.

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