
Foreword

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Biographical note: Ahmad Rezaee Jordehi was born in 1980, received his BSc and MSc in electrical power engineering, from Shahid Chamran University, Ahvaz, Iran in 2002 and 2005, respectively. He received his PhD in electrical power engineering from University Putra Malaysia, Selangor, Malaysia in 2014. He is currently an Assistant Professor in Department of Electrical Engineering, Lashtenesha-Zibakenar Branch, Islamic Azad University, Lashtenesha, Iran. His main research interests are power system optimisation, metaheuristic optimisation algorithms and renewable energy systems.

There are lots of optimisation problems in different engineering disciplines. Engineering optimisation problems are typically constrained, multi-modal problems. Metaheuristics are the most commonly used approaches for solving difficult engineering optimisation problems. They are mostly population-based, bio-inspired, and stochastic algorithms that attempt to find near-global solutions in search space. This special issue covers engineering applications of metaheuristic optimisation algorithms. It encompasses the following five research articles.

In “Makespan minimisation for pre-emptive scheduling of mobile robots in FMS environment”, by Dang et al. the well-known genetic algorithm (GA) has been used for makespan minimisation in scheduling of mobile robots within a flexible manufacturing system. The results testify that the proposed GA outperforms mixed integer programming.

In “Discrete cuckoo search applied to capacitated arc routing problem”, by Badis et al., cuckoo search optimisation algorithm has been applied to capacitated arc routing problem. Experimental results indicate the superiority of the cuckoo search algorithm with respect to some state of the art algorithms.

In “Generic filtering and removing artefacts from document images using unsupervised PSO optimisation”, by Eutamene et al., the well-known particle swarm optimisation (PSO) algorithm has been used for image recognition. The results approve the efficiency of particle swarm optimisation in solving this complex optimisation problem.

In “Induction motor parameter estimation using disrupted black hole artificial bee colony algorithm”, by Sharma et al., a modified variant of artificial bee colony (ABC), named as disrupted black hole ABC, has been applied for parameter estimation of induction motors. The achieved results approve the efficiency of the proposed optimisation algorithm.

In “Tabu search-enhanced artificial bee colony algorithm to solve profit-based unit commitment problem with emission limitations in deregulated electricity market”, by Shanmugasundaram et al., an artificial bee colony (ABC) algorithm and tabu search (TS) have been hybridised and applied to well-known unit commitment problem in deregulated electricity markets. The unit commitment problem has been formulated as a multi-objective optimisation problem whose objectives are maximising profit of generation companies and minimising emission of contaminants. The results of IEEE 39 bus system indicate the outperformance of the proposed hybrid ABC-TS over an improved variant of ABC, shuffled frog leaping algorithm (SFLA) and ant colony optimisation (ACO).