Editorial

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The five papers selected for this issue offer a glimpse of the multi-facets dimension of memetic computation. Aspects of memes in the context of neural networks, rough sets, artificial bee colony (ABC) and particle swarm optimization are demonstrated in this issue. Clearly, papers covering different facets of memes representation and integration have been increasing as seen from the last few issues. This is a good and healthy trend, an indication of the growing awareness of memes and its central role in problem-solving.

We feature the first article by Salama, Hassanien and Revett for this issue with a paper that focuses on meta-learning, an important aspect of memetic computing. Some works on meta-learning have been published in the earlier issues of this journal. This paper offers a fresh perspective by incorporating neural network and rough set as tools for meta-learning. The idea is applied to tackle the selection of suitable classifiers from an ensemble of classifiers in a multiple-classifier system. Based on the quantitatively derived meta-features, the neural network serves as the black-box prediction model of suitable classifiers while the rough set theory provides a framework for generating decision rules that controls the prediction. This paper is an excellent demonstration of the diverse manifestation of memes in dealing with complex real-world problems.

The second paper by Ghonaim et al. discusses about chaotic neural networks applied to cryptanalysis. In their work, they improved on the chaos-based hash function

using chaotic neural networks. The main idea is to incorporate a piecewise linear chaotic map that utilizes as a transfer function in the input and output of the neural network layer. They discussed on the security of the improved hash function and proposed a novel type of collision resistant hash function called semi-collision attack, which is based on the collision percentage between the two hash values. They incorporated *PSO* algorithm to define the fitness function parameters and simulated the performance of the improved hash function. Through numerical and simulation results, they demonstrated strong collision resistance and high performance efficiency for the improved hash function.

Artificial bee colony is a nature-inspired technique that is based on the foraging behaviour of honey bees. The third paper by Xin and Shiu addresses the issue of convergence speed for large scale optimization. They proposed a one-position inheritance (OPI) to deal with the slow convergence brought about by the single-dimension variation type of exploration in ABC search. One advantage of the OPI mechanism is that it does not introduce any additional parameter. The OPI mechanism is deployed on the employed bee stage of the ABC algorithm; while the other stages are kept unchanged. The intention is to promote information exchange amongst the employed bees. Results are competitive when tested on a repertoire of test functions of varying complexity and characteristics.

Similar to the earlier paper, Sharma, Bansal and Arya in their paper addresses the convergence issue of ABC. In order to balance the diversity and convergence capability of the ABC, they introduced and incorporated the Lévy Flight random walk based local search strategy along with opposition based learning strategy into the ABC. They compared their enhanced ABC with the basic ABC and several popular variants of ABC using standard benchmark test-functions and

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some well-known engineering optimization problems and showed that their proposed Lévy Flight random walk mechanism was beneficial in establishing complementary balancing search bias.

The fifth paper by Deep, Chauhan and Pant on particle swarm optimization proposes three nonlinear strategies for selecting inertia weight which has a strong influence on the particle's foraging behaviour. The first strategy is based on an adaptive inertia weight while the second and third strategies are based on double exponential function. They validated their

proposed method on a suite of benchmark test-functions. Their results show improvement in performance of the PSO in terms of solution quality and convergence rate.

We are pleased with the fact that the journal has been attracting good quality papers covering very interesting and novel aspects of memes in problem-solving. This issue is a clear indication of the positive trend and we thank the authors for their contributions in this issue. We thank the reviewers for their diligence in reviewing the papers and the Editors who managed the review of the papers.