Editorial

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Reaching the 6-year mark is indeed a significant milestone. Based on the papers that have been published in the earlier issues, it is clear that the journal has managed to maintain consistency in attracting good quality papers. With many young researchers establishing a foothold in the field, the orientation towards a meme-based computational approach in problem-solving is evident. By publishing their work in this journal, it serves as an implicit acknowledgement that the paradigm of memes has become an added dimension in enhancing the performance of most optimization techniques. To conclude the year, we have put together five articles for this issue, which is by far the most diverse in terms of applications.

The first paper is on digital game. The issue of learning has drawn significant attention from game designers and researchers. For a game to engage a player in an immersive manner, the game agents or characters must be believable. This paper by Tan et al. explores the idea of using noise as a basis to trigger learning that results in game agents having more believable and realistic reactionary behaviors. The authors experimented with using errors derived from the tendencies of a human player depressing input keys. This serves as a form of human judgment errors and the objective of the evolution of game agent is to optimize the parameters based on the errors. They then used the input actions histograms as the optimization objectives in modeling the human reactionary behavior tendencies.

Dermoscopy is a non-invasive skin imaging technique that uses sophisticated optics to expose subsurface structure, making it more visible. It is one of the most important tools in the diagnosis of melanoma, a form of skin cancer. In this paper, Shaefer et al. uses ensemble classification approach on dermoscopic images of skin lesions for melanoma diagnosis. The images are subjected to border detection to segment the lesion from background image of the skin. From these images, features based on color, texture and shapes are derived which are then classified using the ensemble learning approach reported in their paper. With a large dataset of dermoscopic skin lesion images, they showed that their classification approach showed statistically better recognition performance compared to other dedicated classification algorithms.

The quadratic assignment problem is by far one of the most widely studied classes of problems in the field of optimization. Over the years, many techniques have been studied and it is acknowledged to be one of the most challenging class of computationally intractable problems. Meanwhile, particle swarm optimization (PSO) is a computational paradigm inspired by the collective intelligence of swarms in the natural world. In this paper by Hebal and Abdelbar, they experimented with two ways of enhancing the PSO by incorporating memes. The first involves the use of heuristic function during PSO solution construction while the 2nd involves a local search step in the PSO. They compared the performance of their PSO algorithms against two other established tabu techniques; diversified-restart robust tabu and ejection chain neighborhood robust tabu.

Genetic programming originally conceived for symbolic regression, is a well-established technique which has been widely used in many problems, particularly in areas where the solution or knowledge can be represented as tree structures. Vanneschi's work in this paper is on the prediction of pharmacokinetic parameters, a crucial phase of the drug discovery process. Reliable prediction can result in substantial cost savings by enhancing the chances of success and reduc-

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ing the number of experiments required. The author came up with novel improvisation to circumvent the limitation of the canonical genetic programming approach to deal with the complexity of the problem.

To round up this issue, we include a paper by Contreras et al. In optimization, any knowledge about the problems being tackled will serve to enhance the chance of finding optimal or high quality solutions. The authors in this paper focus on optimization frameworks that rely on automatic classification of a given problem instance as a basis for selecting the solver to deal with the problem more effectively. The premise for such work is greatly inspired by the fact that the conventional mindset in optimization always treats each problem instance as a fresh new problem-solving initiative. In other words, the whole problem-solving starts from scratch, regardless of how many problems the optimizer has dealt with before. There is usually no attempt to capitalize on earlier problem-solving experiences in order to enhance the performance of the optimizer. The authors rightfully pointed out that the notion of a general optimizer can only be achieved if one steers away from this conventional mindset of problem-solving. This paper is a small step forward, making an attempt to study how problems can be classified for more effective optimization. They experimented with a universal similarity metric as a basis for problems classification and achieved encouraging results.

We look forward to having more submissions that will challenge the norms in optimization. The idea of memes as units of information or knowledge crucial in enhancing performance is evident. Issues on how and when memes are acquired should continue to be an interesting research focus. We feel that more research is required to push the boundary of optimization. Clearly, the complexity of problems we are facing now is overwhelming, driven primarily by the data tsunami we are experiencing. This is indeed the era of the so-called big data. More innovative techniques are required to deal with the complex and challenging problems that will continue to surface. We look forward to seeing greater advances in this field and encourage more work to tackle these prevalent issues. As always, we put on record our sincere thanks and appreciation to the Editors for doing such a good job in managing the review of the papers and more so the anonymous reviewers who have taken time to scrutinize the articles submitted for publication consideration.