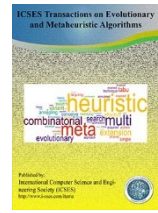




Editorial

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State-of-the-Art Nature-inspired Metaheuristic Algorithms for Optimization Problems

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THE real-world optimization problems, which have many applications, are often complex and difficult to be solved. The search space in these problems grows exponentially with the problem size. In the last few years, many meta-heuristic algorithms have been proposed to solve such these kinds of combinatorial problems, as the traditional optimization methods cannot provide a suitable solution in a restricted time budget.

Over the year, many metaheuristic algorithms are proposed by the inspiration of nature based on swarm intelligence, biological systems, physical and chemical systems, and are mimicking some successful characteristics of nature. These algorithms are known as nature-inspired metaheuristic algorithms. Particle Swarm Optimization (PSO), Cuckoo Search (CS) algorithm, Firefly Algorithm (FA), Bat Algorithm (BA), Harmony Search (HS), Ant Colony Optimization (ACO), BBO etc. are of some well-known nature-inspired metaheuristic algorithms in the community [1].

Recent developed algorithms are: i) Laying Chicken Algorithm (LCA), proposed by Eghbal Hosseini [2], for optimization of continuous programming problems that is an approach based on behavior of laying chicken to produce chicken. (ii) Yazdani, and Jolai proposed [3], a new population based algorithm, based on the special lifestyle of lions and their cooperation characteristics called Lion Optimization Algorithms (LOA) and (iii) Wang *et al.* [4] proposed a new swarm-based metaheuristic algorithm, called Elephant Herding Optimization (EHO), for solving global optimization tasks, which is inspired by the herding behavior of the elephant groups.

The flexibility and adaptability make these nature-inspired metaheuristics algorithms popular. A simple algorithm can handle very complex optimization problem. These algorithms

are used as a part of existing global optimization algorithms, computational intelligence and soft computing.

The advances in the use nature-inspired metaheuristics in engineering applications [5] bring an opportunity and also a challenge for researchers to improve and advance in design and optimization of products, systems, and services for societal benefit.

The purpose of our journal is to publish high-quality research or review articles that address recent developments from a variety of engineering fields and real-world problems, in relation to the application of nature-inspired algorithms and metaheuristics for design and optimization and that, hopefully, will stimulate other researchers to continue the efforts to improve the current state of the art on the aforementioned field.

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REFERENCES

- [1] Rajakumar, R., Dhavachelvan, P., & Vengattaraman, T., "A survey on nature inspired meta-heuristic algorithms with its domain specifications," in Proc. *International Conference on Communication and Electronics Systems* (IEEE), pp. 1-6, 2016. DOI: 10.1109/CESYS.2016.7889811
- [2] Hosseini E., "Laying Chicken Algorithm: A New Meta-Heuristic Approach to Solve Continuous Programming Problems," *J. Appl. Computat. Math.*, vol. 6, no. 344, 2017. DOI: 10.4172/2168-9679.1000344
- [3] Yazdani, M., & Jolai, F., "Lion optimization algorithm (LOA): a nature-inspired metaheuristic algorithm," *Journal of computational design and engineering*, vol. 3, no. 1, pp. 24-36, 2016. DOI: 10.1016/j.jcde.2015.06.003
- [4] Wang, G. G., Deb, S., Gao, X. Z., & Coelho, L. D. S., "A new metaheuristic optimization algorithm motivated by elephant herding behavior," *International Journal of Bio-Inspired Computation*, vol. 8, no. 6, pp. 394-409, 2016. DOI: 10.1504/IJBIC.2016.081335
- [5] Yang, X. S., *Engineering Optimization: An Introduction with Metaheuristic Applications*. NJ, USA: John Wiley and Sons, 2010. DOI: 10.1002/9780470640425