Neural Computing and Applications, vol.35, no.2, pp.1493-1517, January, 2023.

Evaluating the performance of meta-heuristic algorithms on CEC 2021 benchmark problems

A.W. Mohamed; K.M. Sallam; P. Agrawal; A.A. Hadi; A.K. Mohamed

Abstract-

To develop new meta-heuristic algorithms and evaluate on the benchmark functions is the most challenging task. In this paper, performance of the various developed meta-heuristic algorithms are evaluated on the recently developed CEC 2021 benchmark functions. The objective functions are parametrized by inclusion of the operators, such as bias, shift and rotation. The different combinations of the binary operators are applied to the objective functions which leads to the CEC2021 benchmark functions. Therefore, different meta-heuristic algorithms are considered which solve the benchmark functions with different dimensions. The performance of some basic, advanced meta-heuristics algorithms and the algorithms that participated in the CEC2021 competition have been experimentally investigated and many observations, recommendations, conclusions have been reached. The experimental results show the performance of meta-heuristic algorithms on the different combinations of binary parameterized operators.

Index Terms- Benchmark functions; CEC2021; Meta-heuristic algorithms; Parameterization

Citation:
Mohamed, A.W.; Sallam, K.M.; Agrawal, P.; Hadi, A.A.; Mohamed, A.K. "Evaluating the performance of meta-heuristic algorithms on CEC 2021 benchmark problems", Neural Computing and Applications, vol.35, no.2, pp.1493-1517, January, 2023.