EvoloPy: An open source Nature-Inspired Optimization Toolbox in Python

First Author Name[1], Second Author Name[1] and Third Author Name[2]
[1]*Institute of Problem Solving, XYZ University, My Street, MyTown, MyCountry*
[2]*Department of Computing, Main University, MySecondTown, MyCountry*
{*f_author, s_author*}*@ips.xyz.edu, t_author@dc.mu.edu*

Keywords: The paper must have at least one keyword. The text must be set to 9-point font size and without the use of bold or italic font style. For more than one keyword, please use a comma as a separator. Keywords must be titlecased.

Abstract: EvoloPy is an open source and cross-platform Python toolbox that implements a wide range of classical and recent nature-inspired metaheuristic algorithms. The goal of this toolbox is to facilitate the use of metaheuristic algorithms by non-specialists coming from different domains. With a simple interface and minimal dependencies, it is easier for researchers and practitioners to utilize EvoloPy for optimizing and benchmarking their own defined problems using the most powerful metaheuristic optimizers in the literature. On the other hand, the design of this toolbox makes it very easy for the researchers in the domain to integrate their own optimizers and compare their performance to the state of art algorithms.

1 INTRODUCTION

Nature-inspired metaheuristic algorithms are considered to be the one of the most efficient approaches to solve optimization problems. Nature-inspired metaheuristics imitate natural phenomena such as the the behavior of the nature systems like swarm based algorithms, and evolution based algorithms. Over last three decades, many nature-inspired metaheuristics algorithms have been developed. Swarm intelligence algorithms simulate the natural swarms such as flocks of birds, ant colonies, and schools of fishes such as Particle Swarm Optimization (PSO), Cuckoo Search (CS), Ant Colony Optimization (ACO), Grey Wolf Optimizer (GSO), Multi-Verse Optimizer (MVO), Moth-flame optimization (MFO), Whale Optimization Algorithm (WOA), Bat Algorithm (BA). Most of the previous algorithms reaches the best solutions by exchanging the information between the swarm's individuals. on the other hand, evolutionary based algorithms, which is based on the biological evolution concept in nature such as Genetic algorithm (GA), Genetic Programming (GP), and Evolution Strategy (ES). These algorithms use different strategies to evolve and find good solutions for difficult problems.

2 BENCHMARKS PROBLEMS

1.

$$f(x) = \begin{cases} \frac{1}{\mu} e^{\frac{-x}{\mu}} & x > 0 \\ 0 & x \leq 0 \end{cases} \quad (1)$$

ACKNOWLEDGEMENTS

If any, *section*{APPENDIX}

APPENDIX