Lion Hunting Optimization Algorithm (LHOA): A nature inspired algorithm

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**Index Terms**—Algorithm, LHOA, Lion hunting, Nature inspired, Optimization algorithm

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# 1 Introduction

THE need to solve complex optimization problems faster and faster has been inspiring researchers to develop algorithms with great performance to solve these kind of problems, some examples are data clustering [1], [2], image processing [3],[4], pattern recognition, neural networks tuning [5], etc. The common behavior of these problems is that the search space grows exponentially with the problem size.

During the past decades, a lot of algorithms has been developed using the inspiration of nature. Some examples of these algorithms are the Genetic algorithm [6], Ant Colony Optimization [7], Particle Swarm Optimization [8], Bacterial Foraging Algorithm [9] and many others. These algorithms are applied in different areas by researchers, but none of them provides the best solution for all problems, they provide a better solution for a particular problem compared with others.

In this paper, a nature inspired optimization algorithm based on lion’s hunting behavior, called Lion Hunting Optimization Algorithm (LHOA) is proposed. In the literature, Wang [10] and Rajakumar [11] proposed two algorithms inspired on lions behavior. The Lion׳s Algorithm [11] using mating, territorial defense and territorial takeover as main operators. The Lion pride optimizer [10] is based on fighting between individual and mating. Another proposed algorithm was Lion Optimization Algorithm (LOA) [12], in addition of mating and fighting exhibit, this algorithm is inspired by other behaviors prey capturing, territorial marking, migration and life style (nomad or resident). So, proposed algorithm is inspired by simulation of hunting, already proposed by LOA [12], but with some improvements which is different from the previous algorithms. The main idea is develop a light and less complex algorithm with better performance.

# 2 Procedure for Paper Submission

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Fig. 1. Magnetization as a function of applied field. Note that “Fig.” is abbreviated. There is a period after the figure number, followed by one space. It is good practice to briefly explain the significance of the figure in the caption.

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TABLE 1  
Units for Magnetic Properties



Statements that serve as captions for the entire table do not need footnote letters.

aGaussian units are the same as cgs emu for magnetostatics; Mx = maxwell, G = gauss, Oe = oersted; Wb = weber, V = volt, s = second, T = tesla, m = meter, A = ampere, J = joule, kg = kilogram, H = henry.

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Theorems and related structures, such as axioms corollaries, and lemmas, are formatted using a hanging indent paragraph. They begin with a title and are followed by the text, in italics.

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**Acknowledgment**

The authors wish to thank A, B, C. This work was supported in part by a grant from XYZ.

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