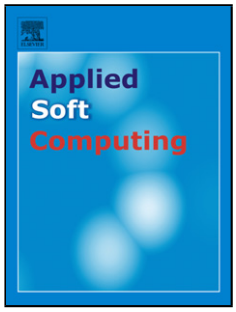

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A survey on applications and variants of the cuckoo search algorithm

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Abstract

This paper introduces a comprehensive and exhaustive overview of the cuckoo search algorithm (CSA). CSA is a metaheuristic swarm-based approach established by Yang and Deb in 2009 to emulate the cuckoo breeding behavior. Owing to the successful application of CSA for a wide variety of optimization problems, since then, researchers have developed several new algorithms in this field. This article displays a comprehensive review of all conducting intensive research survey into the pros and cons, main architecture, and extended versions of this algorithm.

It is worth mentioning that the materials of this survey paper are categorized in accordance with the structure of the CSA in which the materials are divided into the CSA versions and modification, publication years, the CSA applications areas, and the hybridization of CSA. The survey paper ends with solid conclusions about the current research on CSA and the possible future directions for the relevant audience and readers.

The researchers and practitioners on CSA belong to a wide range of audiences from the domains of optimization, engineering, medical, data mining, clustering, etc., who will benefit from this study.

Keywords:
Cuckoo Search Algorithm, Metaheuristic, Swarm-based approach, Nature-inspired Algorithms, Optimization

1. Introduction

Optimization resides in many domains, such as engineering, energy, economics, medical, and computer science. It is mainly concerned with finding the optimal values for several decision variables to form a solution to an optimization problem . An optimization problem is the minimization or maximization of a suitable decision-making algorithm normally adapted to the approximation methods. The principle of decision making entails choosing between several alternatives. The result of this choice is the selection of

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