## عنوان مقاله:

Clustering Based on Cuckoo Optimization Algorithm

## محل انتشار:

دوازدهمین کنفرانس ملی سیستم های هوشمند ایران (سال: 1392)

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## خلاصه مقاله:

This paper presents four novel clustering methods based on a recent powerful evolutionary algorithm called Cuckoo Optimization Algorithm (COA) inspired by nesting behavior andimmigration of cuckoo birds. To take advantage of COA in clustering, here, an individual cuckoo represents a candidatesolution consisting of clusters' centroids. Fitness function calculates sum of intra cluster distances. Three proposed approaches named Random COA Clustering, Chaotic COAClustering and K-means COA Clustering differ in initial step of original COA algorithm. In COA Clustering, initial population isproduced randomly. In Chaotic COA Clustering, to cover whole search space and enrich algorithm, chaotic Arnold's Cat map isused to produce initial population instead of randomness. In KmeansCOA Clustering, to start from closer to global optimum, well-known K-means algorithm is conducted to produce initialcuckoos. In order to local search in COA, each cuckoo lays its own eggs within a specific radius. The aim of producing betterneighbors and escape local optimum in proposed Enhanced COA Clustering (ECOAC), this boundary doesn't exist and eachcuckoo puts its eggs via Lévy flight. The results of conductingthese novel methods on four UCI datasets illustrate their comparable stability and power of them.

## کلمات کلیدی:

Cuckoo Optimization Algorithm (COA), Chaotic Arnold's Cat Map, K-means, Lévy flight