Binary Komodo Mlipir Algorithm for Feature Selection

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Abstract

Komodo Mlipir Algorithm (KMA) is a metaheuristic algorithm that mimics the behavioral patterns of Komodo and the unique walking manner called "mlipir" in the Javanese language. Nevertheless, the KMA is a recently developed algorithm that has not yet been methodically applied for feature selection issues. This work presents a variant of the Komodo Mlipir Algorithm (BKMA) that is specifically tailored to tackle binary issues, with a particular focus on feature selection. The proposed approach consists of eight alternative transfer function variations, denoted by the forms S and V, with each shape having four distinct versions. The BKMA is composed of two binarization rules, namely Standard and Elitist, which are combined to create a total of sixteen versions. The comparison is performed by transforming a continually search area into a discrete search area. In order to assess the efficacy of the proposed approach, a total of 12 benchmark datasets were collected from the repository curated by the University of California, Irvine. The K-nearest neighbors (KNN) algorithm is used inside an objective function to facilitate the selection of the suggested features. The study's results suggest that the suggested strategy outperforms others in terms of both the fitness value and the classification accuracy.

Index Terms

Binarization schemes, binary optimization, feature selection, metaheuristics, transfer functions