Article

EOFA: an extended version of the optimal foraging algorithm for global optimization problems

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Abstract: The problem of finding the global minimum of a function is applicable to a multitude of real-world problems, and for this reason a variety of computational techniques have been developed to efficiently locate it. Among these techniques, evolutionary techniques play a central role, which seek, through the imitation of natural processes, to efficiently obtain the global minimum of multidimensional functions. An evolutionary technique that has recently been introduced is the optimal foraging algorithm, which is a swarm - based algorithm, and it is notable for its reliability in locating the global minimum. In this work, a series of modifications are proposed that aim to improve the reliability and speed of the above technique, such as a termination technique based on stochastic observations, an innovative sampling method and a technique to improve the generation of offspring. The new method was tested on a series of problems from the relevant literature and a comparative study was made against other global optimization techniques with promising results.