

عنوان مقاله:

Dynamic Ant Lion Optimizer for Solving Dynamic Engineering Problems

محل انتشار:

اولین کنگره و نمایشگاه بین المللی علوم و تکنولوژی های نوین (سال: 1397)

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خلاصه مقاله:

Dynamic engineering problems are actually optimization problem that changes over time. These changes can include optimal location and value, and objective function or problem constraints over time. Also, the type of these changes can be uncertain and complex. Therefore, the optimizer should have the ability to adapt quickly to time-varying conditions. In this paper, a new algorithm is proposed based on the Ant Lion optimizer for dynamic environments. This algorithm by appropriately changing the number of ants and the effective search range, always in the process of optimization has the ability to find and follow up several time-varying optimum in environments where the changes are not detectable. Another employed idea to convert static to dynamic optimization algorithm includes trap area definition and success index. The aim of trap area definition is to concentrate the ants in the area with the possibility of more optimal. The mentioned mechanism leads to accelerate the local searching process and prevent the early convergence. Success index is and factor for evaluation of ants behavior in the trap area to an environmental condition. The results of the proposed algorithm were evaluated on the Moving Peak benchmark (MPB) function and compared with the results of several valid algorithms. The results showed the positive impact of the used mechanisms, including the variable number of ants and the size of the trap range, on the times of finding and following up the several optimums compared to another multi population-based optimizer.

کلمات کلیدی:

.Dynamic Optimization Problems (DOPs), Local Search, Heuristic optimization, Ant Lion optimizer

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