

عنوان مقاله:

Testing Soccer League Competition Algorithm in Comparison with Ten Popular Meta-heuristic Algorithms for Sizing Optimization of Truss Structures

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خلاصه مقاله:

Recently, many meta-heuristic algorithms are proposed for optimization of various problems. Some of them originally are presented for continuous optimization problems and some others are just applicable for discrete ones. In the literature, sizing optimization of truss structures is one of the discrete optimization problems which is solved by many meta-heuristic algorithms. In this paper, in order to discover an efficient and reliable algorithm for optimization of truss structures, a discrete optimizer, entitled Soccer League Competition (SLC) algorithm and ten popular and powerful solvers are examined and statistical analysis is carried out for them. The fundamental idea of SLC algorithm is inspired from a professional soccer league and based on the competitions among teams to achieve better ranking and players to be the best. For optimization purpose and convergence of the initial population to the global optimum, different teams compete to take the possession of the best rating positions in the league table and the internal competitions are taken place between players in each team for personal improvements. Recently, SLC as a multi-population algorithm with developed operators has been applied for optimization of various problems. In this paper, for demonstrating the performance of the different solvers for optimal design of truss structures, five numerical examples will be optimized and the results show that proposed SLC algorithm is able to find better solutions among other algorithms. In other words, SLC can discover new local optimal solutions for some examples where other algorithms fail to find that one

کلمات کلیدی:

,Optimization of Truss ,Genetic Algorithm,Soccer League Competition,Meta-heuristic Algorithms

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