عنوان مقاله:

Double-Objective Optimization Based on Movement Dynamics of Charged Particles

نویسنده:

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خلاصه مقاله:

Double-objective optimization is a wide class of multi-objective optimization problems in different scientific and industrial applications. This paper proposes a method for the problem of constrained double-objective optimization that is called gravitational charged particles optimization (GChPO). The presented algorithm is based on the movement dynamics of charged particles in the electric field. The mass and electric charge of particles vary according to the value of the first and second objective function, respectively. Usually, in multi-objective optimization algorithms, the dominant and non-dominant solutions should be determined in every iteration, which increases the computation cost of the algorithm. In the proposed method, there is no need of determining the dominant and non-dominant solutions in every iteration that decreases the computation time of the algorithm, significantly. Performance of GChPO is evaluated by seven double-objective and four single-objective benchmark problems. The obtained results are compared with the recent multi-objective and well-known single-objective optimization algorithms that indicate not only the presented algorithm can find the Pareto solutions in the double-objective functions but also it performs better than other algorithms, generally.

کلمات کلیدی:

Double-objective optimization with constraints, electric force, gravitational force, meta-heuristic algorithm

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