A genetic algorithm framework for multilocal optimization

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Abstract

Multilocal optimization is devoted to determine multiple local optima for an optimization problem. In this case, a special interest in the computation of global optima is made.

We proposed an hybrid algorithm that couples a genetic algorithm with a local search quasi-Newton method. A biobjective approach is used to optimize the objective function simultaneously with the gradient norm of the Lagrangian function.

An useful application of such an algorithm is in the context of reduction type methods for semi-infinite programming (SIP), and some numerical results will be shown with a set of SIP test problems.

Classification: 15 (Continuous optimization), 99 (Programming, Semi-infinite), 67 (Metaheuristics)

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