Memetic Algorithm for Dynamic Optimization Problems

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Abstract

Dynamic optimization problems has attracted much attention of researchers. However, due to complexity and uncertainty to solve dynamic optimization problems, it very difficult to find out the optimum solution that could be changed over time. Thus, it is necessary to develop efficient or improved an algorithms to solve dynamic optimization problems. A memetic algorithm that based on local search along with an evolutionary algorithm such as genetic algorithm can be used to tackle dynamic optimization problems. This paper investigates the use of multi-crossover operator that is based on heuristic and arithmetic with GA as well as local search for dynamic optimization problems. The proposed approach utilises solution features in terms of diversity and selection to generate better solution. To evaluate the efficiency and feasibility of the proposed operator, a comparison between the results of this study and the results of different works is conducted through a number of evaluations over dynamic optimization problems with various levels of difficulty. The significant findings emerge from this study are the efficiency of the proposed algorithm in solving dynamic environments when compared with other method.
References

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Index Terms

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Keywords

Arithmetic Crossover Operator, Dynamic optimization problems, Evolutionary algorithms, Genetic algorithm, Heuristic crossover, Local search, Mutation Operators, Memetic algorithm.