A Hybrid Flower Pollination Algorithm for Engineering Optimization Problems

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Abstract

Flower pollination algorithm (FP) is a new nature-inspired algorithm, based on the characteristics of flowering plants. Combining with the features of flower pollination algorithm, an improved simulated annealing algorithm is proposed in this paper (FPSA). It can improve the speed of annealing. The initial state of simulated annealing and new solutions are generated by flower pollination. Therefore, it has the advantage of high quality and efficiency. The method combines the standard flower pollination algorithm (FP) with simulated annealing to enhance the search performance and speeds up the global convergence rate. Structural engineering optimization problems are presented to demonstrate the effectiveness and robustness of the proposed algorithm. The experimental results showed that the accuracy of finding the best solution and convergence speed performance of the proposed algorithm is competitive to those achieved by the existing algorithms.

References
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Index Terms

Computer Science Algorithms

Keywords
Flower pollination; simulated annealing algorithm; constrained optimization problems; engineering optimization problems; global optimization.