Applying Flatworm Algorithms to the Traveling Salesman Problem

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Abstract

The Flatworm Algorithm (FA) is an algorithm proposed by observing the evolutionary characteristics of flatworms. The main mechanisms of the FA can be classified into growth, splitting and regeneration. They can evolve generation by generation to improve the solution quality. In this study, we try to apply the FA to solve the Travelling Salesman Problem (TSP). The objective of a TSP is to find the shortest visit path. It is defined that the salesman will visit each city and after visiting all the cities, he will return from the last city to the first city visited, finishing a complete visit path. In this study, 16 examples of different numbers of cities were used for tests. Moreover, we selected two genetic algorithms and two ant algorithms for comparison. The results showed that the FA has relatively better solution quality than the selected genetic algorithm and ant algorithms.

Keywords: Flatworm Algorithms, Traveling Salesman Problems, Genetic Algorithms, Ant Colony Optimization