

A New Commodity Distribution Approach Based on Asymmetric Traveler Salesman Using Ant Colony Algorithm

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ABSTRACT

The traveling salesman problem is one of the most well-known hybrid optimization problems. It is one of the (NP-complete) problems that its various applications have theoretically and operationally attracted the attention of researchers. Given that the existing optimization methods to solve such problems include many variables and constraints and reduce their practical efficiency in solving problems with larger dimensions, we have seen the use of algorithms in recent decades. In this research, after determining a linear programming model for the asylum seeker problem with asymmetric distances and solving it in Lingo software, I used two ant cloning algorithms and a forbidden search algorithm to solve the problem in large dimensions. By adjusting the parameters of the two algorithms using the Taguchi method to prove the efficiency of the two algorithms, we compared their results by solving the linear programming model in small-dimensional problems. Then, to compare the results and execution time of the two algorithms, we solved the problem in medium and large dimensions.
