APPLICATION OF SOME SWARM ALGORITHMS FOR SOLVING FACILITY LOCATION PROBLEM WITH FLEXIBLE DEMAND [1]

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The approximate methods for solution of discrete plant location problems are developed in this work. These methods are constructed on analogies with biological processes and include algorithms inspired by the "collective intelligence". These include the Ant Colony and the Bee Colony Optimization Algorithms, the Firefly Algorithm, and so on [2, 3]. Such algorithms are heuristic and, as a rule, work well from point of view of CPU time and quality of solution obtained.

In this paper, heuristics are developed for following facility location problem [1]. There is a set of demand points and a subset of potential location for plants with different work scenarios. There are pre-existing competitive facilities. Unlike the majority of facility location models the customer demand is flexible, it depends on the total utility the customer derives from this facility. In [1] this demand is called "elastic". The goal is to optimize simultaneously the locations and scenario taken into account the maximum level of budget and pre-existing competitive facilities in terms of maximizing the demand side.

In this work, a new version of Bee Colony, Ant Colony and Firefly algorithms are offered and its experimental research is carried out.

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