Abstract

This paper is intended to give a review of metaheuristic and their application to combinatorial optimization problems. This paper comprises a snapshot of the rapid evolution of metaheuristic concepts, their convergence towards a unified framework and the richness of potential application in combinatorial optimization problems. Over the years, combinatorial optimization problems are gaining awareness of the researchers both in scientific as well as industrial world. This paper aims to present a brief survey of different metaheuristic algorithms for solving the combinatorial optimization problems. Basically we have divided the metaheuristic into three broad categories namely trajectory methods, population based methods and hybrid methods. Trajectory methods are those that deal with a single solution. These include simulated annealing, tabu search, variable neighborhood search and greedy randomized adaptive search procedure. Population based methods deal with a set of solutions. These include genetic algorithm, ant colony optimization and particle swarm optimization. Hybrid methods deal with the hybridization of single point search methods and population based methods. These are further categorized into five different types. Finally we conclude the paper by giving some issues which are needed to develop a well performed metaheuristic algorithm.
References

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**Index Terms**

- Computer Science
- Algorithms

**Keywords**

- Ant Colony optimization
- Combinatorial optimization problems
- Genetic algorithm
- Greedy randomized adaptive search procedure
- Particle swarm optimization
- Simulated Annealing
- Tabu search
- variable neighborhood search