Abstract

This paper describes the problem of offline autonomous mobile robot path planning, which consists of generating optimal paths or trajectories for an autonomous mobile robot from a starting point to a destination across a flat map of a terrain, represented by a 2-D workspace. An improved algorithm for solving the problem of path planning using Artificial Bee Colony algorithm is presented. This nature-inspired metaheuristic algorithm, which imitates the foraging behavior of bees around their hive, is used to find the optimal path from a starting point to a target point. The proposed algorithm is demonstrated by simulations in three different environments. A comparative study is evaluated between the developed algorithm, the original ABC and other two state-of-the-art algorithms. This study shows that the proposed method is effective and gets trajectories with satisfactory results.

References

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Index Terms

Computer Science

Algorithms

Keywords

Autonomous robots  Holonomic robot  Path planning  Optimization methods
Artificial bee colony algorithm