Abstract

In this paper, a probabilistic roadmap planner algorithm with the multi robot path planning problem have been proposed by using the A* search algorithm in a dynamic environment. The whole process consists of two phases. In the first phase: Preprocessing phase, the work space is converted into the configuration space, constructing a probabilistic roadmap graph in the free space, and finding the optimal path for each robot using a global planner that avoids the collision with the static obstacles. The second phase: Moving phase, moves each robot in a prioritized manner from its starting point to its ending point through a near optimal path with avoiding collision with the moving obstacles and the other robots. A comparison has been done with the depth first algorithm to see the difference. The simulation results shows that choosing A* search algorithm affect positively the speed of the two phases together in comparison to the depth first search algorithm.

References
Index Terms

Computer Science

Algorithms

Keywords

Multi-robot  path planning  decoupled planning  A*  Depth First Search (DFS).