

ABSTRACT

Most of the problems in Multi-agent system are how to coordinate the agents so that they can work together optimally. The robots in decentralized system that work in the same workspace have to work optimally and coordinately. Since the workspace can change unpredictably, the robots have to find the free path, which is supposed to be the optimally one. They have to consider the other robots in order to avoid the collision and obstruction.

When many robots move in the same workspace, it is necessary to select the reasonable collision-free path so that the robots can avoid the collision, and minimal the costs, which are distance, time, and energy. One solution to minimize these costs is to construct a motion planning. To construct a motion planning, robots have to know about their working environment so that they can exchange their information with others. Each robot has to build a motion planning for its own, they might have to consider about their tasks, the free path, the location of itself and others. Anyway in many cases, the obstruction cannot be avoided.

The major problem in construction the plan is how to find a collision-free path from a starting point to the destination and how to maintain the corporation level with their teammate agents. This thesis will use the graph for searching collision-free path, and create a motion corporation plan. This thesis will introduce a new task and path planning in decentralized multi-agents system using Link-up graph technique. The purpose of this paper is to introduce a new strategy of coordinate, and optimize the cost in multi-agent system.