Block iterative method using nine-point Laplacian for robot path planning

Abstract

Path planning is an important issue as it allows a robot to get from start point to goal point. In this study, we attempts to solve path planning problem for mobile robot based on potential field method that relies on the use of Laplace's Equation to constrain the generation of a potential function over regions of the configuration space of a mobile robot. An experiment based on finite-difference techniques shows a local minima-free motion with smooth path between the start and goal points. This paper proposed an Explicit Group (EG) iterative method using 9-Point Laplacian for solving robot path planning problem. The simulation result shows that this new method provides faster solution and smoother path compared to the previous work.