An overview of mobile robot path planning

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Abstract:
The emerging trend of modern industry automation requires intelligence to be embedded into mobile robot for ensuring optimal or near-optimal solutions to execute certain task. This yield to a lot of improvement and suggestions in many areas related to mobile robot such as path planning. The purpose of this paper is to review the mobile robots path planning problem, optimization criteria and various methodologies reported in the literature for global and local mobile robot path planning. The classical approaches such as cell decomposition, roadmap approach, artificial potential field (AFP), and heuristics approaches such as genetic algorithm, particle swarm optimization (PSO) approach and ant colony optimization (ACO) method are considered in this study. It is observed that heuristics approaches are more popular and widely used compared to classical approaches due to its robustness and perform well in various environmental condition. Finally, few suggestions for future research work in this field are addressed at the end of this paper.

Keywords : Ant Colony Optimization (ACO); Particle Swarm Optimization (PSO); Artificial Potential Field (AFP),

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