

博士论坛

动态环境中基于改进粒子群的机器人路径规划

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摘要 提出一种模糊隶属度函数对动态环境中机器人的运动状况进行建模, 该建模方法不会无谓地牺牲机器人的可运动空间, 可尽量减少机器人路径规划的约束强度; 同时提出通过调整位置加权趋向无约束最优解的算子改进粒子群算法, 提高算法的寻优速度。仿真结果表明, 通过两者结合, 可快速获得动态环境中的优化路径。

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分类号

Path planning of mobile robot based on improved Particle Swarm Optimization in dynamic environment

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Abstract

A new fuzzy membership function used to describe the motion state of mobile robot in dynamic environment is proposed. This method can make use of the working space of the robot and lessen the restriction power of robot's path planning due to the adding of "the dynamic obstacle" to the robot's planning space. In order to improve the convergence time of PSO algorithm, an operator of position weighted to unbounded optimization solution are proposed. The simulation of application in the path planning of mobile robot proved that the modeling method algorithm of path planning is feasible and efficient.

Key words [unbounded optimization solution](#) [improved PSO](#) [fuzzy model](#) [path planning](#)

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