FAST AND KINEMATIC CONSTRAINT-SATISFYING PATH PLANNING WITH OBSTACLE AVOIDANCE

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ABSTRACT

In this paper, we present an improved path planning method and obstacle avoidance algorithm for a 2-wheel mobile robot. Firstly, we briefly introduce the rapidly exploring random tree (RRT) and the single polar polynomial (SPP) algorithm. Secondly, we present additional 2 methods for applying our proposed method. Thirdly, we propose a global path planning, smoothing and obstacle avoidance method that combine RRT and SPP algorithm. Finally, we present simulation using proposed method and check the feasibility. This shows that proposed method is better than existing methods in terms of the optimality of the trajectory and the satisfaction of the kinematic constraints.

KEYWORDS: Path Planning, Path Smoothing, Autonomous Traveling Robot, RRT, SPP Curve