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Bezier Curve Based Path Planning in a Dynamic Field using Modified Genetic Algorithm

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Abstract

Mobile robots have been used in different applications such as assembly, transportation, and manufacturing. Although, the great work to get the optimum robot's path, traditional path planning algorithms often assume that the environment is perfectly known and try to search for the optimal path that contains sharp turns and some polygonal lines. This paper proposes an efficient, Bezier curve based approach for the path planning in a dynamic field using a Modified Genetic Algorithm (MGA). The proposed MGA aims to boost the diversity of the generated solutions of the standard GA which increases the exploration capabilities of the MGA. In our proposed method, the robot's path is dynamically decided based on the obstacles' locations. With the goal of optimizing the distance between the start point and the target point, the MGA is employed to search for the most suitable points as the control points of the Bezier curve. Using the chosen control points, the optimum smooth path that minimizes the total distance between the start and the end points is selected. Our model was

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