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Obstacle Classification Method Based on 2D LIDAR Database

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Abstract : In this paper is proposed a method uses only LIDAR system to classification an obstacle and determine its type by establishing database for classifying obstacles based on LIDAR. The existing LIDAR system, in determining the recognition of obstruction in an autonomous vehicle, has an advantage in terms of accuracy and shorter recognition time. However, it was difficult to determine the type of obstacle and therefore accurate path planning based on the type of obstacle was not possible. In order to overcome this problem, a method of classifying obstacle type based on existing LIDAR and using the width of obstacle materials was proposed. However, width measurement was not sufficient to improve accuracy. In this research, the width data was used to do the first classification; database for LIDAR intensity data by four major obstacle materials on the road were created; comparison is made to the LIDAR intensity data of actual obstacle materials; and determine the obstacle type by finding the one with highest similarity values. An experiment using an actual autonomous vehicle under real environment shows that data declined in quality in comparison to 3D LIDAR and it was possible to classify obstacle materials using 2D LIDAR.

Keywords : obstacle, classification, database, LIDAR, segmentation, intensity
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