A tire identification system by using the image processing methods

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ABSTRACT

The goal of this research is to develop a skid-mark identification system that can automatically identify the skid-mark belongs of the vehicles at accident scene. That is, the system developed by using the image processing can segment tire-mark from the pictures and search the numbers and widths of the light and heavy striations on tire-mark for doing tire-tread matching, then find out these tire-marks are made by which cars at accident scene. This system uses some image-processing techniques such as binary, Sobel filter, thinning, Hough transform, rotation, horizontal axle projection etc. The operational procedure of the system has three steps to identify the tire-mark. The first step is pre-processing. Using Sobel filter, thinning and Hough transform to find out the oblique angle of the skid-mark. The second step is segment and taking the feature. Firstly, rotate that the skid-mark picture to the vertical direction. Then, use the horizontal axle projection method to segment the skid-mark area from the picture. Final, combine Sobel filter and Hough transform to take the skid-mark's feature that is amounts and widths of the light and heavy striations on skid-mark. The final step is using the skid-mark's feature and the widths on tire-tread in data-base to do the template matching by Euclidean distance and find out each template's error. If the error is smaller, the template is more similarity and the tire-tread is more possible to make the skid-mark.

Keywords : Words   Accident scene, tire-mark, image processing.

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