Occlusion Detection and Shadow Removal of Moving Vehicles

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ABSTRACT

Due to the national quality of life in the fast growing, making significant increases in the number of vehicle to highlight the needs of traffic management. Based on the computer vision technology in intelligent traffic surveillance system, often the shadow of the light source irradiation, and arising from overlapping the car occlusion, so declined in accuracy of traffic ’ s statistics. This study expected to simulate vision of human to judge to remove shadows, detach the occlusion, and enhance the accuracy of intelligent traffic monitoring system with continuous image analysis technology. In this study, we do vehicle detection, using background subtraction method to capture the foreground object. In part of the shadow removal, using characteristics, which shadow is darker than the background, and the darken ranges of tricolor is closing, to remove pixels of shadow preliminary. Furthermore, according to mobile feature of foreground pixels in this study, the pixels of fine shadow were removed again. In part of the occlusion separation, analyticing the characteristic by using optical flow analysis method for moving vehicles pixels. The occlusion is determined according to grouping number by using improved K-means method, and occlusion was cut further by using intersection of clustering as place of occlusion segmentation. Finally, we get the complete mobile vehicles. Experimental results on part of shadow removal and occlusion segmentation, the correct rates can be achieved 93% and 91% respectively, so the study ’ s methodology is feasible. The study can be going to make intelligent traffic monitoring system more stable.

Keywords : shadow removal、video surveillance systems、occlusion detection

Table of Contents

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