Detection of vehicle line pressing on straight lane based on Cascade Hough transform principle and improved YOLOV5 model

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Abstract

In this study, a detection method based on the Cascaded Hough Transform (or CHT for short) and an improved YOLOV5 model is proposed for the detection of vehicle pressing lines in straight lanes. This method combines traditional image processing with depth learning by integrating background modeling, cascade Hough transform principle and YOLOV5 depth learning framework. The specific process of this method is as follows. First, MOG2 background modeling is used to obtain the road background image, then the CHT principle is used to extract the lane lines in the road background image, and finally the improved YOLOV5 model is used to recognize the position of vehicles and judge whether the vehicles are pressing the line. The experimental results show that this method has good recognition speed and accuracy, can meet the basic requirements of road monitoring vehicle line detection, and also provides some reference experience for the research of vehicle line detection.

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