

# **Analysis of the traditional method for detecting lane lines based on the Hough transform**

**-- Abstract**

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With the development of technology, automatic driving technology has come into being and it has been a critical topic of discussion in recent years. Accelerating the development of technological innovation in smart driving cars is of strategic importance to economic and social development. A prerequisite for several important functions of autonomous driving is that the vehicle must have the judgment and decision-making capability to know its surroundings, its location, and its destination so that it can avoid obstacles and develop a safe driving route. Lane detection is fundamental to the implementation of autonomous driving, as it is crucial to ensure that the car is driving in a defined area and to reduce the chances of traffic accidents, so lane lines detection is currently a key research topic in this area.

Lane line detection methods are divided into traditional methods and deep learning methods. This paper discussed the traditional method based on *Hough* transform. The program in this paper is written in Python based on the open-source computer vision library OpenCV. This paper described in detail the implementation of the traditional method, tested the Caltech dataset using the traditional *Hough* transform method, analysed detected results, discussed the improvements made to it by several scholars, and finally concluded.

The traditional *Hough* transform method is simple to implement and many scholars have improved it to improve the accuracy and speed of operation, but it still has three main shortcomings: It is only applicable to straight lanes, not to curved lanes; the *Hough* transform method is based on the features of the lane lines on the road to obtain lane line information, which is greatly affected by interference information; the algorithm is poorly adapted to the environment, if the parameters are not selected properly, it will easily lead to detection errors.