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Survey on Recent Advancements in Traffic Sign Recognition and License Plate Detection

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Abstract: *Traffic sign detection and license plate detection are critical tasks in the development of intelligent transporta- tion systems (ITS), autonomous driving, and advanced driver assistance systems (ADAS). These technologies help in enforc- ing traffic rules, ensuring road safety, and automating vehicle monitoring. This review paper presents a comprehensive study of the various methods used for traffic sign and license plate detection, ranging from traditional image processing techniques to modern deep learning-based models. Early approaches relied on color segmentation, edge detection, and shape analysis, which were often affected by noise, lighting changes, and occlusions. In recent years, machine learning and deep learning, particularly Convolutional Neural Networks (CNNs), have shown remarkable improvements in detection accuracy and robustness under diverse conditions. This paper also discusses the datasets commonly used for training and evaluation, the performance metrics adopted in literature, and the challenges that remain in real-world deploy- ment. Furthermore, current trends, research gaps, and future directions are outlined to guide further work in this domain. This review aims to support researchers and practitioners in understanding the progress and potential of traffic sign and license plate detection technologies*

Keywords: YOLOv5, OCR, Traffic Sign Recognition, Li- cense Plate Detection, GTSDB, OpenALPR, Deep Learning

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