

Traffic Sign Recognition

Tejaswini Salunkhe¹, Sakshi Gaikwad², Sadaf Sayyed³, Prof. Kshitija Potdar⁴

Students, Department of Computer Engineering^{1,2,3}

Guide, Department of Computer Engineering⁴

Dhole Patil College of Engineering, Pune, Maharashtra, India

Abstract: *Traffic sign detection and recognition are significant in the development of intelligent vehicles. And enhanced traffic sign detection and recognition algorithm for intelligent vehicles is proposed to address problems such as how easily affected traditional traffic sign detection is by the environment, and poor real-time performance of deep learning-based methodologies for traffic sign recognition. Firstly, the HSV is used for spatial threshold segmentation, and traffic signs are effectively detected based on the shape features. Secondly, the model is considerably improved on the basis of the classical convolutional neural network model by using Gabor kernel as the initial convolutional kernel, adding the batch normalization processing after the pooling layer and selecting Adam method as the optimizer algorithm. Finally, the traffic sign categorization and recognition experiments are conducted based on the German Traffic Sign Recognition Benchmark. The favourable prediction and specific recognition of traffic signs are achieved through the continuous training and testing of the network model. Experimental results show that the specific recognition rate of traffic signs reaches 99.75%, and the average processing time per frame is 5.4 ms. Compared with other algorithms, the proposed algorithm has remarkable accuracy and real-time performance, strong stimulus generalization ability and high training efficiency. The specific recognition rate and average processing time are markedly improved. This improvement is of considerable importance to reduce the accident rate and enhance the road traffic safety situation, providing a strong technical guarantee for the steady development of intelligent vehicle driving assistance.*

Keywords: Driving Assistance; Intelligent Vehicles; Traffic Sign Detection; Convolutional Neural Network; Traffic Sign Recognition.

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