

ABSTRACT

Vehicle type classification is an important method to facilitate traffic management and improve road safety. However, the performance of visual recognition systems is often compromised under low illumination conditions, which can affect visual perception and the performance of image-dependent systems or devices. To solve this problem, several image enhancement methods, such as Multi-Scale Residual Network (MIRNet) and Zero-Reference Deep Curve Estimation (Zero-DCE), can be used. In this study, the EfficientNet Convolutional Neural Network (CNN) model is used to assess the performance of a vehicle type recognition system under low lighting conditions. This study aims to analyze and evaluate the effectiveness of image processing in improving the accuracy of vehicle type recognition. The experimental results show that by using Zero-DCE, the recognition accuracy reaches 75%, which is 6% better than the original image without processing, which is 69%.

Keywords: vehicle type classification, low light intensity, convolutional neural network, image enhancement, MIRNet, Zero-DCE