

An Ensemble-based Method for Vehicle Color Recognition

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Abstract : The vehicle color, as a prominent and stable feature, helps to identify a vehicle more accurately. As a result, vehicle color recognition is of great importance in intelligent transportation systems. Unlike conventional methods which use only a single Convolutional Neural Network (CNN) for feature extraction or classification, in this paper, four CNNs, with different architectures well-performing in different classes, are trained to extract various features from the input image. To take advantage of the distinct capability of each network, the multiple outputs are combined using a stack generalization algorithm as an ensemble technique. As a result, the final model performs better than each CNN individually in vehicle color identification. The evaluation results in terms of overall average accuracy and accuracy variance show the proposed method's outperformance compared to the state-of-the-art rivals.

Keywords : Vehicle Color Recognition, Ensemble Algorithm, Stack Generalization, Convolutional Neural Network

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