

Convolutional Neural Network for Traffic Sign Recognition based on Color Space

Gülcan Yıldız
Computer Engineering Department
Ondokuz Mayıs University
Samsun, Turkey
gulcan.ozler@omu.edu.tr
ORCID : 0000-0001-8631-8383

Bekir Dizdarođlu
Computer Engineering Department
Karadeniz Teknik University
Trabzon, Turkey
bekir@ktu.edu.tr
ORCID : 0000-0002-2955-1776

Abstract— Traffic sign recognition has been one of the indispensable issues of Advanced Driver Assistance Systems. In this study, a new CNN model for traffic sign recognition based on deep learning is proposed. The proposed model has low number of parameter and high accuracy compared to most studies in the literature. Initially, in preprocessing stage, different color spaces are tried for the input image, and their combinations are given to the network together. Color spaces used in the study are RGB, CIELab, RIQ and LGI. In addition, the accuracy results were compared by experimenting on the input image dimensions. Additionally, data augmentation was applied during the training phase. As a result, 98.84% accuracy was obtained by giving the input image with RIQ and LGI color space to the network. The number of parameters is 0.95 M.

Keywords— *CNN; color spaces; deep learning; GTSRB; image processing; image resizing; traffic sign recognition.*