ABSTRACT

As the demand for transportation increases due to population growth, the number of traffic accidents also rises, mainly caused by drivers failing to obey traffic signs. Autonomous Driving Systems (ADS) emerge as a solution by utilizing machine learning technology to recognize and make decisions based on objects around the vehicle, such as traffic signs. This research aims to develop a traffic sign image classification model using a Convolutional Neural Network (CNN) with the InceptionV3 architecture. The data is divided into three: training, validation, and testing. Training was conducted through 36 experiments to obtain the best hyperparameters, including dropout, batch size, and learning rate. The best model obtained in this study used hyperparameters of a dropout of 0.3, a batch size of 8, and a learning rate of 0.001. This model achieved an accuracy of 99,20% and an f1-score of 99.21%. This research proves that this particular hyperparameter configuration provides the lowest level of overfitting compared to other configurations.

Keywords   : Classification, Traffic Sign, InceptionV3 Architecture, CNN, Autonomous Driving System, Deep Learning