

ABSTRACT

As the population of cities increases, the need for vehicles also increases. The more the number of vehicles, the wider the area or parking area needed. The current parking system is still inefficient, which can lead to congestion and vehicle theft. Therefore, it is necessary to use an intelligent parking system to overcome the problems that arise by using a vehicle license plate detection system. This study has a goal, which is to identify the number plates of vehicles entering the parking lot. To recognize objects, the structure of the license plate system uses Deep Learning with the Convolutional Neural Network (CNN) method. CNN is based on the YOLOv3 architecture which is capable of producing three different feature map outputs to scale multiple predictions. It also effectively helps improve the prediction of small and large objects in the model. Utilization of Tensorflow and OpenCV will also be carried out in building the framework. The system will be trained using a dataset in the form of an image and will look for the values of the learning rate, batch size and epoch parameters which will produce the highest Validation Accuracy values and the lowest Validation loss/error rate values. The best training values were produced at epoch 20, batch size 1, and learning rate 0.0001. The vehicle license plate detection system was tested, and the highest accuracy value was produced in bright conditions with a distance of 100 cm on a white plated car, with an accuracy value of 99.20%. With this system, it is hoped that it can help related parties to identify vehicle number plates, which can be done in real time.

Keywords: CNN, Deep Learning, Vehicle Number Plate Detection, YOLOv3