# ABSTRACT

Regular road maintenance is a key factor in ensuring traffic safety and security. Lack of road maintenance can lead to negative consequences, such as traffic accidents. Road damage is often seen in daily life, making regular identification of such damage essential. Convolutional Neural Network (CNN) algorithms have become a leading approach in detection and classification due to their high accuracy compared to other models. In this study, the road damages identified are categorized into four types: alligator cracking, corrugation, potholes, and no damage. This research examines a dataset of road damage images using three CNN models: Xception, VGG16, and ResNet50. The objective of this study is to evaluate the accuracy of CNN models in identifying road damage based on digital images. The results show that the ResNet50 model achieved the most stable performance and the highest accuracy, with a training accuracy of 99.69%, validation accuracy of 97.50%, and test accuracy of 98%. The Xception model achieved a training accuracy of 95%, validation accuracy of 91.25%, and test accuracy of 95,63%. Meanwhile, the VGG16 model achieved a training accuracy of 99.69%, validation accuracy of 92.50%, and test accuracy of 88%. The ResNet50 model demonstrated stable and consistent predictive ability across training, validation, and testing data, making it the superior choice for identifying road damage based on digital images.

Keywords: *Convolutional neural network*, road, digital images.