

ABSTRACT

The amount of waste generated by humans has been increasing significantly in recent years. This is due to higher human consumption, including the use of disposable products such as plastic and masks. Improper management of waste can lead to environmental damage and pose health risks to the population. To manage waste effectively recycling plays a crucial role in transforming waste into new products. This can reduce the use of primary materials and minimize waste production. In this study, the classification of three types of inorganic waste using the Convolutional Neural Network algorithm and the MobileNetV2 architecture. The dataset consisted of several Roboflow datasets and images captured from mobile devices, resulting in a total of 1500 images divided into three classes: masks, beverage cans, and plastic bottles. The analysis of this study was based on accuracy, precision, recall, and F1-score. Additionally, four testing scenarios were performed to evaluate hyperparameters, namely input size, optimizer, learning rate, and batch size. After conducting the tests, the best results were obtained with an input size of 128x128, Adam optimizer, a learning rate of 0.0001, and a batch size of 8. Based on these findings, the achieved test accuracy was 100.00%, with a testing loss of 0.00266.

Keywords: Waste, Convolutional Neural Network, Recycling, Dataset.