ABSTRACT

Tropical rainforests play a crucial role in maintaining the global ecosystem balance, yet their existence is increasingly threatened by massive deforestation activities. Deforestation has a significant long-term impact on the sustainability of surrounding ecosystems, making effective monitoring efforts essential. With the advancement of modern technology, satellite imagery provides a practical solution for monitoring deforestation activities by identifying changes in land cover through machine learning approaches. This study aims to classify deforestation and non-deforestation areas in satellite imagery using a Deep Learning approach. The method applied is the Convolutional Neural Network (CNN) with the MobileNetV2 architecture, chosen for its computational efficiency, utilizing the AMSGrad optimization algorithm to enhance model stability and performance. The dataset consists of 134 satellite images obtained from Google Earth, distributed into training (51%), validation (19%), and testing (30%) sets. The research results demonstrate excellent model performance, achieving a training accuracy of 96,15% and a testing accuracy of 100% with a loss value of 0,0108. These findings indicate that the combination of the CNN MobileNetV2 architecture with AMSGrad optimization is highly effective and accurate for identifying deforestation patterns based on satellite imagery.

Keywords: *Tropical Rainforest, Deforestation, Image Classification, CNN, MobileNetV2, AMSGrad.*