

ABSTRACT

A banknote is an economic tool used as a generally accepted medium of exchange. However, it is prone to counterfeiting, such as in Indonesia, in which the case of banknotes counterfeiting continues to increase. Hence, some computer-based applications have been developed to detect the authenticity of banknotes to reduce counterfeiting cases. Unfortunately, they focus on either nominal detection only or authenticity detection only. Besides, they use noiseless datasets and augmentation processes to be subject to overfitting or prediction errors. In this paper, the Indonesian banknote detection system is developed to identify both authenticity and nominal using the region of interest (ROI) and convolutional neural network (CNN). The evaluation shows that the authenticity model achieves a high accuracy of 95%, while the nominal classification model achieves an accuracy of 99%.

Index Terms—banknotes, convolutional neural network, currency, counterfeiting, image processing, Indonesian Rupiah.