

ABSTRACT

Technological advancements make it more difficult for the human eye to recognize image forgery, facilitating the spread of misinformation through images and potentially causing public unrest. Identifying fake and authentic images is a significant challenge, especially for lossy format images like JPEG, which are widely shared on social media. To address this, Error Level Analysis (ELA) can be used as a feature extraction method to provide information about the error level in an image. Additionally, a lightweight and fast classification model can be built using a pretrained model such as MobileNetV2, an improved version of its predecessor. This study aims to analyze the contribution of ELA feature extraction in developing a fake and authentic image recognition model using MobileNetV2. Two research scenarios—one without ELA and one with ELA—were designed to compare the model's performance, both tested using the CASIA 2.0 dataset. Fine-tuning was applied to the pretrained model in each scenario to better adapt it to the problem. Experimental results show that incorporating ELA feature extraction with MobileNetV2 increases model accuracy to 93.1%, compared to 76.41% without ELA. Furthermore, validation using k-fold cross-validation demonstrated a high average F1-score of 96.83% for the model utilizing ELA features.

Keywords : classification, error level analysis, MobileNetV2, fine tuning, k-fold cross validation, pretrained