Image Manipulation Classification of Online Shop Products

Using Error Level Analysis and Convolutional Neural Network

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ABSTRACT

Online stores have become one of the fastest growing sectors in Indonesia since the start of the COVID-19 pandemic in 2020. The significant growth of the online store business raises concerns about the proliferation of fraudulent actions, especially in terms of manipulation and re-uploading of product images. This research aims to develop manipulated and original image detection methods on online store platforms and improve accuracy by combining Error Level Analysis (ELA) and Convolutional Neural Network (CNN) techniques. This research includes the development of detection methods, the incorporation of ELA and CNN techniques using VGG16 architecture, and the measurement of successful detection of manipulated and original images. Research results show that integration between ELA and CNN using VGG16 architecture has achieved detection accuracy with an average of 97% in use of 90% and 100% compression rates where all data is trained using 100 epochs. Evaluation metrics such as precision, recall, and F1-score provide a comprehensive overview of system performance. The conclusions of this study confirm success in achieving the primary objective, with further development potential on a broader scale. Furthermore, this study made important contributions to literature in the field of image manipulation detection and provided the foundation for further steps in the development of more sophisticated and responsive image detection technologies.

Keyword: Image Processing, Error Level Analysis, Convolutional Neural Network, VGG16, E-commerce