

ABSTRACT

Batik is a cultural heritage of Indonesia, rich in patterns and philosophical values. However, the public often faces difficulties in recognizing batik motifs due to visual complexity and limited access to information. This study aims to develop an Android-based application named Batikara, capable of automatically detecting and classifying batik motifs using the Convolutional Neural Network (CNN) method with the MobileNetV2 architecture, while also providing educational content through batik-related articles. The MobileNetV2 classification model achieved the highest accuracy of 92%, followed by DenseNet121 with 90%, and ResNet50 with 77%. MobileNetV2 demonstrated the most stable and efficient performance for mobile implementation and showed superior capability in classifying visually similar and complex batik patterns. In contrast, ResNet50 was less optimal in distinguishing motifs with high visual similarity. For object detection, the SSD MobileNetV2 model recorded the highest Average Precision (AP) of 0.722 at IoU 0.50, although its performance declined when detecting small objects. Usability evaluation through the System Usability Scale (SUS), black box testing, and task scenarios resulted in a SUS score of 83.17, effectiveness of 88.9%, and efficiency of 77.16%. Respondents, including MSME actors, found the scanning feature highly helpful and educational. Batikara has the potential to serve as a cultural preservation tool while also empowering batik MSMEs through digital technology.

Keywords: *Android Application, Batik, CNN, Image Classification, MobileNetV2, TensorFlow Lite*