

# ***IDENTIFICATION OF SERIAL CODES ON ARWANA BRAND CERAMIC PRODUCTS USING THE CONVOLUTIONAL NEURAL NETWORK ALGORITHM***

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## ***ABSTRACT***

*Ceramic tiles are currently available in a variety of types and designs that are distinguished by the serial code on the product packaging. However, in the installation process, problems often occur such as a shortage of ceramics or incompatibility with previous products. This generally occurs because consumers forget to pay attention to the serial code on the packaging or product. This study aims to develop an image-based ceramic serial code identification system using the Convolutional Neural Network (CNN) method. CNN was chosen because of its ability to recognize visual patterns such as color, shape, and design in ceramic images. The dataset used consists of 1000 ceramic images with 10 different classes. The developed CNN model achieved an accuracy of 96.17% on training data and 91.75% on testing data with a batch size of 32, a Stochastic Gradient Descent (SGD) optimizer with a learning rate of 0.009, and 20 epochs. This system allows consumers to easily recognize matching ceramics simply by photographing or uploading ceramic images. The results of this study are expected to increase efficiency and accuracy in the ceramic purchasing process and reduce the risk of purchasing errors. In addition, this system has the potential to be applied to other ceramic brands, providing a broader solution for consumers in choosing the right product.*

***Keywords:*** Accuracy, Image, Convolutional Neural Network, Ceramics, Serial Code.

