

ABSTRACT

Fingerprint is one of the biometric systems most often used by humans for various types of identification needs. The uniqueness of the fingerprint is very it is unlikely that every human being has identical fingerprints. Therefore, fingerprint formulation method is used to simplify the process of data collecting and identification. The problem that is present is the formulation The fingerprint is still done manually.

This study design a identification system based on fingerprint formula using the Convolutional Neural Network (CNN) method. This study compares two different CNN architectural models namely AlexNet and MobileNet to compare the parameters obtained. Fingerprint images will be pre-processed before entering the CNN model. Image preprocessing used include Contrast Limited Adaptive Histogram Equalization (CLAHE), Sobel Edge detection and Canny edge detection. CNN model will classify the fingerprint image into five fingerprint pattern. This system will simplify the process of classify patterns fingerprint.

Testing has been done with the fingerprint image used in the training process model is a dataset with 1491 images that are divided into five fingerprint pattern. Obtained that on the model AlexNet architecture with CLAHE preprocessing filters achieves 88% accuracy, MobileNet pretrained architecture with CLAHE preprocessing filters achieves 95% accuracy. The automatic fingerprint formulation system achieves 100 % accuracy.

Keywords: *Classification, Convolutional Neural Network, Fingerprint.*