ABSTRACT

One form of identification verification that is often used in transactions and official documents is the signature. With the development of technology, signature identification can be done automatically using a computer so as to increase the efficiency and accuracy of the verification process. This research aims to determine the ownership of a person's signature by developing a signature identification system using the Convolutional Neural Network method. This research uses a deep learning approach by utilizing the Convolutional Neural Network architecture. The dataset used in this study consists of 8 classes of signature images, where each class amounts to 100 signature images so that the total number is 800 signature images, and the dataset is divided into 2 folders, namely train and test with the provisions of 80% for the train dataset and 20% for the test dataset. For the number of epochs used in this study, including epoch 10, epoch 20, epoch 30, epoch 40, and epoch 50 using a learning rate. This research process consists of various stages of data pre-processing, CNN model building, model training and model testing, and model performance evaluation. The data pre-processing stage involves processing and normalizing the signature image to improve the quality and consistency of the image data. The process of training and testing the model is carried out by optimizing the parameters that have been designed, with the parameters to be tested, namely loss, accuracy, validation accuracy, and validation loss, and testing the model to determine the final results of the model as desired or expected. In the test results of this study, for epoch 10 produced the highest accuracy up to 24.29%, for epoch 20 the highest accuracy up to 75.71%, for epoch 30 accuracy up to 97.86%, for epoch 40 accuracy up to 97.86%, and epoch 50 accuracy up to 100%, as well as for epoch model categories where epoch 10, epoch 20, epoch 30 fall into the overfitting model category, while for epoch 40, epoch 50 fall into the goodfitting category. From the above results and based on the graph of research results, it shows that the Convolutional Neural Network (CNN) method is effectively used for signature identification. The model trained and tested has succeeded in achieving a high level of accuracy in recognizing signatures on the dataset used. This research is expected to contribute to the development of automated systems for sign verification and can minimize signature recognition errors.

Keywords: Signature, convolutional neural network, dataset, train, test, vallidation accuracy, vallidation loss, epoch.