# ABSTRACT

The highly variable form of human handwriting led to handwriting recognition of the Handwritten Character Recognition (HCR) system still has challenges. Therefore, in this study the handwriting recognition system constructed using Diagonal Feature Extraction and Artificial Neural Network Multilayer Perceptron. After preprocessing is done on the input image, the image is divided into equal zones. Each area is calculated the average pixel value on each diagonal then averaged to get the characteristic value in the area. In addition, the feature is combined with the horizontal and vertical mean values in the feature matrix to reinforce the information in the image. This method achieves 92.80 % accuracy at the test phase using 1000 C1 and 92.60 % accuracy at the test phase using 1000 MNIST datasets. The combination of diagonal and horizontal averages produces the highest accuracy in recognizing handwriting numbers.

**Keywords:** *Handwriting Recognition, Diagonal Based Feature, Multilayer Perceptron, Backpropagation.*