

Optical character recognition using backpropagation neural network for handwritten digit characters

Mei Ing Yap^a, Kohbalan Moorthy^a, Kauthar Mohd Daud^b, Ferda Ernawan^a

^a Universiti Malaysia Pahang, Faculty of Computing, College of Computing and Applied Sciences, Pekan, 26600, Malaysia

^b Universiti Kebangsaan Malaysia, Center for Artificial Intelligence Technology, Fakulti Teknologi Dan Sains Maklumat, Bangi, 43600, Malaysia

ABSTRACT

Recognizing handwritten characters, the accuracy of the optical character recognition is usually not relatively high due to every person having their unique way of writing characters. Therefore, we focus on finding a high recognition accuracy of optical character recognition by using a backpropagation neural network. The input layer of the backpropagation neural network is the pixel number of the one-character image, which is 784 input nodes that will be the input layer of the neural network. Then the output layer of the neural network will be the 10-digit characters which are 0 to 9. The dataset that used for this research has a total of 280,000 data. The output of the neural network will a computerized digit representing the recognized digit characters. The performance measurement is the recognition accuracy where the recognized data and the expected output data are compared and calculated. Additionally, the dataset was applied with salt and pepper noise to represent the corrupted data and use a median filter to repair the image. The recognition accuracy for the corrupted image and the corrected image are obtained and discussed.

KEYWORDS

Optical character recognition; Backpropagation neural network; A handwritten digit character

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