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With Deep Reverence,

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**ABSTRACT**

Handwritten character recognition is one of the practically important issues in pattern recognition applications. The applications of digit recognition includes in postal mail sorting, bank check processing, form data entry, etc. The heart of the problem lies within the ability to develop an efficient algorithm that can recognize hand written digits and which is submitted by users by the way of a scanner, tablet, and other digital devices. This paper presents an approach to off-line handwritten digit recognition based on different machine learning technique.

The main objective of this paper is to ensure effective and reliable approaches for recognition of handwritten digits. Several machines learning algorithm namely, Multilayer Perceptron, Support Vector Machine, Naïve Bayes, Bayes Net, Random Forest, J48 and Random Tree has been used for the recognition of digits using WEKA. The result of this paper shows that highest 90.37% accuracy has been obtained for Multilayer Perceptron.

This paper presents an innovative application that can convert cursive handwriting document into digital text using intelligent word recognition (IWR).Intelligent Word Recognition uses artificial intelligence to recognize whole words in a document instead of individual characters. Handwriting Conversion helps preserve history by making information searchable, easily and reportable without the need for human labour. It can be applied for digitising old manuscripts which helps in preservation of historical data.

Keywords: Character conversion, Handwriting recognition, Segmentation, Cursive handwriting, Intelligent word recognition. pattern recognition, handwritten recognition, digit recognition, machine learning, WEKA, off-line handwritten recognition, machine learning algorithm, neural network, classification algorithm.

Handwritten character recognition is a difficult problem due to the great variations of writing styles, different size and orientation angle of the characters. Handwriting conversion is a technique of a Computer to receive handwritten inputfrom source such as text documents, scanned images etc. Intelligent Word Recognition (IWR) technologies use neural networks to find a meaningful of words to digitise text. In a neural network for handwriting recognition, a group of input neurons may be activated by the pixels of an input image representing a letter or digit. The activations of these neurons are then passed on, weighted and transformed by some function determined by the network's designer, to other neurons, etc., until finally an output neuron is activated that determines which character was read.

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