International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 04 | Apr 2019 www.irjet.net p-ISSN: 2395-0072

HANDWRITTEN CHARACTER RECOGNITION USING ARTIFICIAL NEURAL NETWORK

Archana[1], Deepana. L[2], Arun. G[3], Lohith Raj. B[4], Akshatha. M[5]

[1,2,3,4]Students Dept of Computer science and Engineering, Vidya Vikas Institute of Engineering and Technology College, Mysore, Karnataka, India
[5]Professor , Dept of Computer science and Engineering , Vidya Vikas Institute of Engineering and Technology College, Mysore, Karnataka, India

---

Abstract – *Character recognition, due to wide application many research activities are been taking place in past and in present generation. In this paper we are dealing with handwritten English words by recognizing single characters. This recognition can be done by classifying into two classes holistic and segmentation. In holistic only limited size words are considered and images of different features can be recognized. In segmentation we employ bottom up approach where neural networks are used to identify segmented individual character and recognize the words. We have used convolution neural network that trains a model accurately and recognize words. In later work we have also used long term memory networks that uses convolution network to built a bounding boxes for each character, the segemented character are then used by CNN for classification and then built a word on a basis of output that is obtained from classification and segmentation process.*

1. INTRODUCTION

It is a very interesting and challenging task to develop handwritten character recognition. The global features were introduced to get better accuracy. Another module in this system of character recognition is pattern matching. These character recognition can be classified into four approaches of pattern recognition such as template matching, statistical techniques, structured techniques, neural networks by using these techniques it will be better accurate for recognition of handwritten character recognition.

1.1 Problem definition

There are many Problems that have been seen to recognize handwritten character such as to built a profile of syntactic surface structure that helps to describe ambiguous words using geometric classification method by combining strokes and to use the advance next generation sequencoung. There are another problems that have been seen that is recognizing offline verses online handwritten characterand then is handwritten segmentation, the reliable identifying online stroke cluster that forms an individual character or words can be difficult.

1.2 Objectives

The objectives of handwritten character recognition that we have seen in real time is it has reduced manual work so that the old literatures can be converted into digitized for manually. Using neural signs in literature domain and proposed system serves as guide in recognizing words most accurately and efficiently then older system.

2. Exixting system

The current working system deals with recognition of English printed or written text words by a system. In this process the image of text character that is individual character wors by word is scanned and analyzes is done for the scanned image. The next step is translating character image into character codes like as ASCII code for further data processing.

3. Proposed system

In the proposed system we mainly sub divide into training and testing phases. In training phase we pass a sample training mage as an input and then there are pre processed and segmentation of images into various categories and by categorizing into various features techniques such as geometric shapes and strokes and extracted and we classify the rained image in training phase. In testing phase firstly we pass a input image and sementation process takes place were we categorize inputs into different parts and we apply various future extraction process to modify the words to recognize it in a efficient way and we finally simulate the classified words. we basically use convolution neural network algorithm in classifying and recognizing the words were in we come across various layers in convolution neural network they are convolution layer, relu layer, polling layer and fully connected layers.

4. Methodology

The main working part of the system is discussed in this contest where in we come across various stages they are pre-processing, segmentation, future extraction and finally classification and recognition

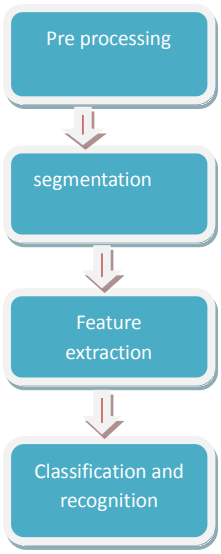

Fig 1 Methodology of working

4.1 Pre-processing

Pre processing involves various stages that had to be performed such as binarization coverting image pixels into binary digits and next is noise filtering were were various white spaces unwanted strokes are eliminated and smoothing process takes place were contrast and brightness of the image is enhanced.

4.2 Segmentation

In this stage the image is segmented into various sub images so that the representation can simplify and change the image in better enhanced way so that it can be analyzed easily.

4.3 Feature extraction

When the input data that we provide for an algorithm is large or redundant we need to reduce the representation of that images, this conversion of transferring input data to reduced form is known as feature extraction. Feature extraction is type were in we extract different geometric shapes, lines and textual features to enhance the representation of the character. In this system we provide certain data set which as particular limitation of feature that as to be considered such input image must be cropped and no white spaces must be seen and handwritten should be need and in cursive writing so that it iseasily recognizable by users.

4.4 Classification and recognition

We are mainly using convolution neural networks for classification and recognition process were we pass the input data into different layers of convolution such as convolution layer, relu layer, pooling layer, and fully connected by passing these through each layers we can easily classifify by representing the data in pixel form in matrix representation and we can recognize the words.

5. CONCLUSION

Artificial neural network which is cluster of networks which helps in recognition of various texts. Here we have seen the recognition of handwritten English characters by using various methodological steps and by passing the data through various laers of convolution layers we can classify and recognize the desired character.

REFERENCES

[1] Handwritten text recognition using Deep learning by Batuhan Balci, Dan Saadan, Dan Shiferaw.

[2] Offline Handwritten Character recognition using Neural network by Anshul Gupta, Manisha Srivastava, Chitralekha Mahanta IIt Guwahati, india

[3] Online Handwritten recognition problem: Issues and Techniques by Vikas kumar computer science and information technology department MIT, Moradabad, U.P , INDIA