V.S.B. ENGINEERING COLLEGE, KARUR

Department of Electronics and Communication Engineering

IBM NALAIYA THIRAN

LITERATURE SURVEY

TITLE : A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION SYSTEM

DOMAIN NAME : Artificial Intelligence

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ABSTRACT

Handwritten digit recognition has recently been of very interest among the researchers because of the evolution of various Machine Learning, Deep Learning and Computer Vision algorithms. In this report, We compare the results of some of the most widely used Machine Learning Algorithms like CNN- convolution neural networks and with Deep Learning algorithm like multilayer CNN using Keras with Theano and Tensorflow. MNIST is a dataset which is widely used for handwritten digit recognition. The dataset consist of 60,000 training images and 10,000 test images. The artificial neural networks can all most mimic the human brain and are a key ingredient in image processing field. For example Convolution Neural networks with back propagation for image processing. The applications where these handwritten digit recognition can be used are Banking sector where it can be used to maintain the security pin numbers, it can be also used for blind peoples by using sound output.

INTRODUCTION

This has been a topic of research for decades. Some of the research areas include signature verification, bank check processing, postal address interpretation from envelopes etc. Here comes the use of Deep Learning. In the past decade, deep learning has become the hot tool for Image Processing, object detection, handwritten digit and character recognition etc. A lot of machine learning tools have been developed like scikit-learn, scipy-image etc. and

pybrains, Keras, Theano, Tensorflow by Google, TFLearn etc. for Deep Learning. These tools make the applications robust and therefore more accurate. The Artificial Neural Networks can almost mimic the human brain and are a key ingredient in image processing field. For example, Convolutional Neural Networks with Back Propagation for Image Processing, Deep Mind by Google for creating Art by learning from existing artist styles etc..

LITERATURE SURVEY:

The author describes [1] The field of machine learning is a rapidly developing one. Recent developments in the field of image processing and machine learning has led to efficient extraction of features from images of peoples' faces. Recognizing handwritten digits from images isn't easy. It involves the difficulty of visual pattern recognition which becomes very apparent when an attempt is made to write a computer program to recognize digits. The goal of our work will be to create a model that will be able to recognize and determine the handwritten digits from its image. We aim to complete this by using the concepts of Convolution Neural Network. The aim of our study is to open the way to digitalization. Though the goal is to just to create a model which can recognize the digits but it can be extended to letters and then a person's handwriting. Through this work, we aim to learn and practically apply the concepts of Machine Learning and Neural Networks. Moreover, digit recognition is an excellent prototype problem for learning about neural networks and it gives a great way to develop more advanced techniques like deep learning.

The author describes [2] Hand written digit recognition is highly nonlinear problem. Recognition of handwritten numerals plays an active role in day to day life now days. Office automation, e-governors and many other areas, reading printed or handwritten documents and convert them to digital media is very crucial and time consuming task. So the system should be designed in such a way that it should be capable of reading handwritten numerals and provide appropriate response as humans do. However, handwritten digits are varying from person to person because each one has their own style of writing, means the same digit or character/word written by different writer will be different even in different languages. This paper presents survey on handwritten digit recognition systems with recent techniques, with three well known classifiers namely MLP, SVM and k-NN used for classification. This paper presents comparative analysis that describes recent methods and helps to find future scope

The author describes [3] A handwritten digit recognition system was used in a demonstration project to visualize artificial neural networks, in particular Kohonen's self-organizing feature map. The purpose of this project was to introduce neural networks through a relatively easy-to-understand application to the general public. This paper describes several techniques used for pre-processing the handwritten digits, as well as a number of ways in which neural networks were used for the recognition task. Whereas the main goal was a purely educational one, a moderate recognition rate of 98% was reached on a test set.

REFERENCES

[1] Dr.Kusumgupta2 ,"a comprehensive review on handwritten digit recognition using various neural network approaches", international journal of enhanced research in management & computer applications, vol. 5, no. 5, pp. 22-25, 2016.

[2] Ishani Patel, ViragJagtap and OmpriyaKale."A Survey on Feature Extraction Methods for Handwritten Digits Recognition", International Journal of Computer Applications, vol. 107, no. 12, pp. 11-17, 2014.

[3] Y LeCun,"COMPARISON OF LEARNING ALGORITHMS FOR HANDWRITTEN DIGIT RECOGNISATION". In International conference on Artificial Neural networks, France, pp. 53–60. 1995.