DHANALAKSHMI COLLEGE OF ENGINEERING

ComputerScienceandEngineering

IBM NALAIYA

THIRANLITERATURES

URVEY

TITLE	ANOVELMETHODFORHANDWRITTENDIGITRECOGNITIONSYSTEM
DOMAINNAME	ARTIFICIALINTELLIGENCE
TEAMMEMBERNAME	ADITHYAN.M,CHANDRASEKAR.P,GOKULAKRISHNAN.G
LEADERNAME	MOHANRAJ.M
MENTORNAME	RENI HENA HELEN.R

ABSTRACT:

Handwrittendigitrecognitionhasrecentlybeenofveryinterestamongthe researchers because of the evolution of various Machine Learning, Deep Learning and ComputerVision algorithms. In this report, we compare the results of some of the most widely used MachineLearning Algorithms like CNN- convolution neural networks and with Deep Learning algorithm likemultilayer CNN using Keras with Theano and TensorFlow. MNIST is a dataset which is widely used forhandwritten digit recognition. The dataset consists 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 imageprocessingfield.Forexample,ConvolutionNeuralnetworkswithbackpropagationforimageprocessing.TheapplicationswherethesehandwrittendigitrecognitioncanbeusedinBankingsectorwhere it can be used to maintain the security pin numbers, it can be also used for blind peoples byusingsoundoutput.

INTRODUCTION:

Handwritingrecognitionisoneofthecompellingresearchworksgoingon becauseeveryindividualinthisworldhastheirownstyleofwriting.Itisthecapabilityofthecomputerto identify and understand handwritten digits or characters automatically. Because of the progress inthe field of science and technology, everything is being digitalized to reduce human effort. Hence,there comes a need for handwritten digit recognition in many real-time applications. MNIST data setiswidelyusedforthisrecognitionprocessandithas70000handwrittendigits.WeuseArtificialneuralnet works to train these images and build a deep learning model. Web application is created wherethe user can upload an image of a handwritten digit. his image is analysed by the model and thedetectedresult is returnedontoUI

LITERATURESURVEY

TheAuthorDescribes[1]

Character recognition plays an important role in the modern world. It can solve more complexproblems and makes humans' job easier. An example is handwritten character recognition. This is asystem widely used in the world to recognize zip code or postal code for mail sorting. There aredifferenttechniquesthatcanbeusedtorecognizehandwrittencharacters.Twotechniquesresearched inthispaperarePatternRecognitionandArtificialNeuralNetwork(ANN).Boththeniquesaredefinedandd ifferentmethodsforeachtechniqueisalsodiscussed.BayesianDecisiontheory, Nearest Neighbour rule, and Linear Classification or Discrimination is types of methods forPattern Recognition. Shape recognition, Chinese Character and Handwritten Digit recognition usesNeural Network to recognize them. Neural Network is used to train and identify written digits. Aftertrainingandtesting,the accuracy rate reached99%. This accuracyrateisveryhigh.

TheAuthorDescribes[2]

This paper summarizes the top state-of-the-art contributions reported on the MNISTdataset for handwritten digit recognition. This dataset has been extensively used to validate novel techniques incomputer vision, and in recent years, many authors have explored the performance of convolutional neuralnetworks (CNNs) and other deep learning techniques over this dataset. To the best of our knowledge, this paperis the first exhaustive and updated review of this dataset; there are some online rankings, but they are outdated,andmostpublishedpaperssurveyonlycloselyrelatedworks,omittingmostoftheliterature.Thispapermakesa distinction between those works using some kind of data augmentation and works using the original dataset out-of-the-box. Also, works using CNNs are reported separately; as they are becoming the state-of-the-art approachforsolvingthisproblem.Nowadays,asignificantamountofworkshaveattainedatesterrorratesmallerthan1%o nthisdataset;whichisbecomingnon-challenging.Bymid-2017,anewdatasetwasintroduced:EMNIST,whichinvolves both digits and letters, with a larger amount of data acquired from a database different than MNIST's. Inthispaper, EMNIST isexplainedand someresultsaresurveyed.

REFERENCES:

Nagu, M., Shankar, N. V., & Annapurna, K. (2011). A novel method forhandwrittendigitrecognitionwithneuralnetworks.*Int.J.Comp.Sci.Inf.Tech*, *2*(4),1685-1692.[1]

Baldominos,Alejandro,YagoSaez,andPedroIsasi."Asurveyofhandwrittenchar acterrecognition with mnistand emnist."*Applied Sciences*9.15(2019):3169.[2]