LITERATURE SURVEY

A Novel Method for Handwritten Digit Recognition System

1.)"HANDWRITTEN DIGITS RECOGNITION WITH DECISION TREE CLASSIFICATION"-Tsehay Admassu Assegie -2019

Handwritten digits recognition is an area of machine learning, in which a machine is trained to identify handwritten digits. One method of achieving this is with decision tree classification model. A decision tree classification is a machine learning approach that uses the predefined labels from the past known sets to determine or predict the classes of the future data sets where the class labels are unknown. In this paper we have used the standard kaggle digits dataset for recognition of handwritten digits using a decision tree classification approach. And we have evaluated the accuracy of the model against each digit from 0 to 9

2.)"HANDWRITTEN DIGIT RECOGNITION USING VARIOUS MACHINE LEARNING ALGORITHMS AND MODELS "- Pranit s.patil ,Bhupinder kaur -2020

Handwritten digit recognition is a technique or technology for automatically recognizing and detecting handwritten digital data through different Machine Learning models. In this paper we use various Machine Learning algorithms to enhance the productiveness of technique and reduce the complexity using various models. Machine Learning is an application of Artificial Intelligence that learns from previous experience and improves automatically through experience. We illustrate various Machine learning algorithms such as Support Vector Machine, Convolutional Neural Network, Quantum Computing, K-Nearest Neighbor Algorithm, Deep Learning used in Recognition technique. KEYWORDSConvolutional Neural Network, Support Vector Machine, HandWritten Digit Recognition, Artificial Intelligence, Deep Learning.

3.)A Recognition System for Handwritten Digits Using CNN -Siddiga,chakrapani -2021

This paper presents a model of integrating the synergy of two superior classifiers: Convolutional Neural Network (CNN) and Random Forest Classifier (RFC), which have proven results in recognizing different types of patterns. Handwritten digit recognition is one of the practically important issues in pattern recognition applications. The applications of digit recognition include 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. The problem of handwritten digit recognition has long been an open problem in the field of pattern classification. Several studies have shown that Neural Network has a great performance in data classification. Ability for accurate digit recognizer modelling and prediction is critical for pattern recognition and security. A variety of classification machine learning algorithms are known to be effective for digit recognition

4.)"Handwritten Digit String Recognition using Convolutional Neural Network"-honhjianzhan -2019

String recognition is one of the most important tasks in computer vision applications. Recently the combinations of convolutional neural network (CNN) and recurrent neural network (RNN) have been widely applied to deal with the issue of string recognition. However RNNs are not only hard to train but also time-consuming. In this paper, we propose a new architecture which is based on CNN only, and apply it to handwritten digit string recognition (HDSR). This network is composed of three parts from bottom to top: feature extraction layers, feature dimension transposition layers and an output layer. Motivated by its super performance of DenseNet, we utilize dense blocks to conduct feature extraction. At the top of the network, a CTC (connectionist temporal classification) output layer is used to calculate the loss and decode the feature sequence, while some feature dimension transposition layers are applied to connect feature extraction and output layer.

5.)”**Multi-Digit Handwritten Sindhi Numerals Recognition using SOM Neural Network**“-A.chandio ,H.jalbani-2019

Handwritten digits recognition is one of the challenging tasks and a lot of research is being carried out since many years. A remarkable work has been done for recognition of isolated handwritten characters as well as digits in many languages like English, Arabic, Devanagari, Chinese, Urdu and Pashto. However, the literature reviewed does not show any remarkable work done for Sindhi numerals recognition. The recognition of Sindhi digits is a difficult task due to the various writing styles and different font sizes. Therefore, SOM (Self-Organizing Map), a NN (Neural Network) method is used which can recognize digits with various writing styles and different font sizes. Only one sample is required to train the network for each pair of multi-digit numeral