A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION SYSTEM

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Abstract:

The handwritten digit recognition is the capability of computer applications to recognize the human handwritten digits. It is a hard task for the machine because handwritten digits are not perfect and can be made with many different shapes and sizes. The handwritten digit recognition system is a way to tackle this
problem which uses the image of a digit and recognizes the digit present in the image. Convolutional Neural Network model created using PyTorch library over the MNIST dataset to recognize handwritten digits .

Handwritten Digit Recognition is the capability of a computer
to fete the mortal handwritten integers from different sources like images, papers touch defenses, etc, and classify. them into 10 predefined classes **(0-9)**. This has been a Content of bottomless- exploration in
the field of deep literacy. Number recognition
has numerous operations like number plate recognition,
postal correspondence sorting, bank check processing, etc . In Handwritten number recognition, we face numerous challenges. Because of different styles of jotting of different peoples as it. Is not
an Optic character recognition. This exploration provides
a comprehensive comparison
between different machine literacy and deep literacy algorithms for
the purpose of handwritten number recognition. For this, we've used Support. Vector Machine, Multilayer Perceptron, and Convolutional. Neural Network. The comparison between these algorithms is carried out on the base of
their delicacy, crimes, and
testing- training time corroborated by plots and maps that have been constructed using matplotlib for visualization.

LITRATURE REVIEW

Paper 1: Handwritten Character Recognition Using Neural Network

Publication year: 2009

Author: Hitesh Mohapatra

The main aim of this project is to design expert system for, Handwritten Character Recognition Using Neural Network (English) using Neural Network. That can effectively recognize a particular character of type format using the Artificial Neural Network approach. Neural computing Is comparatively new field, and design components are therefore less well specified than those of other architectures. Neural computers implement data parallelism. Neural computer are operated in way which is completely different from the operation of normal computers. Neural computer are trained (not Programmed) so that given a certain starting state (data input); they either classify the input data into one of the number of classes or cause the original data to evolve in such a way that a certain desirable property is optimized.

Paper 2: Handwritten Character Recognition Based on Improved Convolutional Neural Network

Publication year: 2021

Author: Ziming Yuan's, Shoubao Su's

There are a great number of text data that need to be processed. These data are closely related to people's lives. Such as signs everywhere on the street, product signs in daily life, and data that need to be processed by the staff in daily work. Therefore, to adapt to the development trend of the age of science and technology, or to free people from such complicated work has become more important. It is necessary to realize the automatic detection, the recognition, and the preservation of a great number of handwritten characters quickly and accurately. To solve these problems, researchers began to engage in character recognition research

Paper 3: Medical Prescription and Report Analyzer using CNN

Publication year: 2021

Author: Shivani Sharma**,** Bipin Kumar Rai

More often than not, we find prescriptions are not properly written which are being handed over to patients and the diagnostic reports handed can't be monitored without the doctor's involvement due to lack of medical knowledge. This has resulted in putting the patient's safety at risk, and also sometimes there is an unavailability of doctors for the required time for monitoring of reports because of which there is also a danger to patients' life. The objective of this Medical Prescription and Report Analyzer (MPRA) model is to help patients get an easy understanding of their report and prescribed medicine by addressing the important challenge of extraction of handwritten text data from images, analyzing it using test data then giving a much-refined output. Handwriting Character Recognition (HCR) technique, as well as Printer Character Recognition (PCR) technique, have been used to identify both handwritten as well as printed text in prescription and report, and techniques such as image processing to refine image to give an accurate output.

Paper 4: Machine Learning for Handwriting Recognition

Publication year: 2020

Author: Preetha S, Afrid I M, Karthik Hebbar P

With the knowledge of current data about particular subject, machine learning tries to extract hidden information that lies in the data. By applying some mathematical functions and concepts to extract hidden information, machine learning can be achieved and we can predict output for unknown data. Pattern recognition is one of the main application of ML. Patterns are usually recognized with the help of large image data-set. Handwriting recognition is an application of pattern recognition through image. By using such concepts, we can train computers to read letters and numbers belonging to any language present in an image. There exists several methods by which we can recognize hand-written characters. We will be discussing some of the methods in this paper.

Paper 5: Handwritten Letter Recognition using Artificial Intelligence

Publication year: 2022

Author: Jeevitha D, Muthu Geethalakshmi S, Nila I, Santhoshi V

The Handwritten Recognition is the ability of computer to recognize the human handwritten text from different manual sources like images, papers, photographs, documents etc. It is easy for humans to recognize the character from the image, but the question is whether it is possible for a machine to identify it accurately. Hence, the Deep Learning concept is applied.

Convolutional Neural Network, one of the deep learning algorithms is used to recognize the alphabet and compare the architectures of Convolutional Neural Network to deploy the highest accuracy with minimal loss to get the better results. Django framework is used in deployment of the model, where the user can upload the manually written alphabetic images and get the output.