Domain : Artificial Intelligence

Title : A Novel Method for Handwritten Digit Recognition System

Who does the problem affect?	The handwritten digits are not always of the same size, width, orientation and justified to margins as they differ from writing of person to person.
What are the boundaries of the problem?	One of the difficulties in the overall recognition of hand-written digits is the variation and distortion of the hand-written digit collection, because different cultures will employ multiple handwriting kinds and control to extract the characters and identical patterns from their recognized language.
What is the issue?	Digital recognition is also remarkable an important issue.
When does the issue occur?	As the manually written digits aren't of a comparable size, thickness, position and direction, numerous difficulties need to be taken into consideration to decide the problem of handwritten digit recognition. The distinctiveness and collection in the composition styles of numerous people additionally affect the instance and presence of the digits.
Where does the issue occur?	Recognizing handwritten text is a problem that can be traced back to the first automatic machines that needed to recognize individual characters in handwritten documents. Think about, for example, the ZIP codes on letters at the post office and the automation needed to recognize these five digits.

Why is it important that we fix the problem?	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.
What solution to solve this issue?	Convolutional neural networks (CNNs) are very effective in perceiving the structure of handwritten characters/words in ways that help in automatic extraction of distinct features and make CNN the most suitable approach for solving handwriting recognition problems.
What methodology used to solve the issue?	Deep learning techniques are used to 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 Python library over the MNIST dataset to recognize handwritten digits.

Problem Statements :

1. Banks need an automation tool to recognize digits in a cheque to speed up the cheque approval process which usually takes time with high accuracy.

2. Postal agencies need an automation tool to sort out mails using pin code to increase profit by cutting man power and speed up the delivery process to gain customer trust.

3. Companies need a data entry tool to reduce manual data entry errors and

improve entry speed with high accuracy to increase profit, reduce manual work and improve performance.

4. The Department of traffic enforcement needs a number plate digit recognition tool to integrate with traffic monitoring system to remove manual monitoring which is error prone and impose penalty for speeding online.

Business Model

Speed up the cheque approval process

Store transaction records

Social impact

Ensure road safety by identifying the owner of the speeding vehicle by using the registration number of that vehicle.