Domain : Artificial Intelligence

Title : A Novel Method for Handwritten Digit Recognition System

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| 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.