IBM PROJECT REPORT

PROBLEM STATEMENT:

A Novel Method for Handwritten Digit Recognition System

DOMAIN:

Artificial Intelligence

TEAM MEMBERS:

1. Sanju S – Team Leader

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LITERATURE SURVEY

S.NO	TITLE	AUTHOR	ABSTRACT
1.	Handwritten Digit Recognition System Based on Convolutional Neural Network	Jinze li, Gongbo Sun, Leiye Yi, Qian Cao, Fusen Liang, Yu Sun	image recognition is widely used in the field of computer vision today. As a kind of image recognition, digit recognition is widely used. Today, the online recognition technology in digit recognition is relatively mature while the offline recognition technology is not. This paper mainly introduces an offline recognition system for handwritten digits based on convolutional neural networks. The system uses the MINST dataset as a training sample and pre-processes the picture with the Opencv toolkit. Then it uses LeNet-5 in the convolutional neural network to extract the handwritten digit image features, repeatedly convolution pooling, and pull the result into a one-dimensional vector. And finally find the highest probability point to determine the result to achieve handwritten digit recognition with the Softmax regression model. The application of this system can greatly reduce labor costs and improve work efficiency, which is of great significance in many fields.

2.			
	Segmentation and Recognition Strategy of Handwritten Connected Digits Based on the Oriented Sliding Window	Abdeljalil Gattal	In this paper, we propose a system to recognize handwritten digit strings, which constitutes a difficult task because of overlapping and/or joining of adjacent digits. To resolve this problem, we use a segmentation-recognition of handwritten connected digits based on the oriented sliding window. The proposed approach allows separating adjacent digits according the connection configuration by finding at the same time the interconnection points between adjacent digits and the cutting path. The segmentation-recognition using the global decision module allows the rejection or acceptance of the processed image. Experimental results conducted on the handwritten digit database NIST SD19 show the effective use of the sliding window for segmentation-recognition.

| 3. | Handwritten English Character and Digit Recognition | Al-Mahmud, Asnuva Tanvin, Sazia Rahman | In today's world, one of the most sought-after technologies is a handwritten character recognition system. It has the potential to solve a wide range of issues and bring about radical change in our lives. We used Convolutional Neural Networks (CNNs) to recognize handwritten English capital letters and digits in this research. We improved a previously developed CNN architecture by adjusting hyperparameters and minimizing the model's overfitting. The MNIST digit dataset is used to evaluate the experiments, which are then compared to different methods. On the MNIST dataset, 99.47 percent test accuracy was attained, which is superior to other approaches. The research was then expanded upon by the addition of a new dataset for recognizing English capital letters. 98.94 percent accuracy was achieved on this extended dataset. |