Literature Survey

A Novel Method for Handwritten Digit Recognition System

S.No	TITLE OF THE PAPER	AUTHOR	YEAR	TECHNOLOGY	JOURNAL NAME
1.	Handwritten Digit Recognition using Machine and Deep Learning Algorithms	Ritik Dixit, Ishika Kushwah, Samay Pashine	2021	Deep Learning, Machine Learning, Convolutional Neural Network(CNN)	International Journal of Computer Applications
2.	Handwritten Digit Recognition System Based on Convolutional Neural Network	Jinze Li, Gongbo Sun, Leiye Yi, Qian Cao, Fusen Liang, Yu Sun	2020	Deep Learning, Convolutional Neural Network(CNN)	IEEE International Conference on Advances in Electrical Engineering and Computer Applications (AEECA)
3.	Handwritten Digit Recognition Using Machine Learning:A Review	Anchit Shrivastava, Isha Jaggi, Sheifali Gupta, Deepali Gupta	2019	Convolutional Neural Network(CNN)	2nd International Conference on Power Energy, Environment and Intelligent Control (PEEIC)
4.	Recognition of Handwritten Digit using Convolutional	Md.Anwar Hossain & Md. Mohon Ali	2019	Convolutional Neural Network(CNN)	Global Journal of Computer Science and Technology: D

	Neural Network (CNN)				Neural & Artificial Intelligence
5.	Recognition of Handwritten Digit using Convolutional Neural Network in Python with Tensorflow and Comparison of Performance for Various Hidden Layers	Fathma Siddique, Shadman Sakib2, Md.Abu Bakr Siddique	2019	Convolutional Neural Network(CNN)	5th International Conference on Advances in Electrical Engineering (ICAEE)
6.	Handwritten Digit Recognition using Machine Learning Algorithms	S M Shamim, Mohammad Badrul Alam Miah, Angona Sarker, Masud Rana & Abdullah Al Jobair	2018	Machine Learning, Convolutional Neural Network(CNN)	Global Journal of Computer Science and Technology: D Neural & Artificial Intelligence
7.	A Comparative Study on Handwriting Digit Recognition Using Neural Networks	Mahmoud M. Abu Ghosh, Ashraf Y. Maghari	2017	Convolutional Neural Network (CNN), Deep Neural Networks (DNN), Deep Belief Network(DBN)	International Conference on Promising Electronic Technologies

<u>**Observation**</u>

Handwritten Digit Recognition using Machine and Deep Learning Algorithms:

Three models have been used in this research for

Deep learning-based handwritten digit recognition using MNIST datasets and algorithms for machine learning. They have contrasted them using different qualities to determine which model among them is the most accurate. One of the fundamental classifiers is the support vector machine. Given that it is quicker than other algorithms in this situation, and maximum training accuracy rate, however because of how straightforward it is, it's not feasible to identify confusing and complicated pictures as precisely as accomplished using the CNN and MLP algorithms. We discovered that CNN exhibited the best-handwritten digit recognition results. This leads us to conclude that CNN is the most appropriate for any prediction problem with input from image data. Next, by comparing the execution time of the algorithms they concluded that increasing the number of epochs without changing the configuration of the algorithm is useless because of the limitation of a certain model and they noticed that after a certain number of epochs the model starts overfitting the dataset and give us the biased prediction.

Handwritten Digit Recognition System Based on Convolutional Neural Network:

This study develops a convolutional neural network-based system for handwritten digit recognition. The system employs the MNIST data set and the deep learning technique as a practice set. Once the instruction is finished, the image's handwritten digits can be identified by the regression model called Softmax. The instruction and acknowledgment Net-5 is used to complete this system's process. Repeated convolution process in a convolutional neural network and pooling activity. The ability to recognize handwriting significance. Recognition of handwriting serves as a link between Machines and handwriting can both be very important notably in the disciplines of finance, accounting, education, and other lowering the cost of labour The awards that were announced by the current recognition technology frequently requires manual. The correctness requires revision and improvement.

Handwritten Digit Recognition Using Machine Learning: A Review

The accuracy and computing time in this paper both increases as the system's layer count rises. However, even after extensive research. The systems lack of ability to compete with the intelligence of people. Comparing several classifiers, they find the highest accuracy but require a lot of computer power the most effective approach for recognizing handwritten numbers is a 6-layer NN with a 0.35 minimum error rate a Mizukami.

Recognition of Handwritten Digit using Convolutional Neural Network (CNN)

Here, they have shown a model that can identify handwritten digits. Later, character recognition and real-time person identification handwriting. The first is handwritten digit recognition. take a look at the expansive subject of artificial intelligence and digital imaging. As evidence, the findings of the experiment show that CNN is significantly superior to other classifiers. With this, the outcomes might be more precise. Extra hidden layers and convolution layers neurons. It may eliminate the necessity for typing. Digit recognition makes for a great prototype issue for learning about neural networks and is an excellent method to move forward. To create more sophisticated deep learning methods. Plans include the creation of a real-time mechanism for recognizing handwritten numbers.

Recognition of Handwritten Digit using Convolutional Neural Network in Python with Tensorflow and Comparison of Performance for Various Hidden Layers

Because there are many distinct combinations of hidden layers, the six scenarios operate differently. The layers were chosen at random in regular order so that each scenario behaved differently. During the experiment, differently. the highest and minimum accuracy was noted for several concealed 100-batch versions with layers. Out of all the observations, the performance's highest level of accuracy was during 15 epochs in instance 2 (Conv1, pool1, Conv2, discovered 99.21% pool2 with two withdrawals). This style of digit recognition uses greater accuracy and will work with faster performance. The expansion intends to experiment with batch size and hidden layer counts to see how the overall classification accuracy varies.

Handwritten Digit Recognition using Machine Learning

Finding a representation of isolated handwritten digits that enables their efficient detection is the major goal of this work. This paper utilized various using machine learning techniques to recognize numbers written by hand. Any recognition procedure involves addressing the issue of feature extraction is a crucial and accurate classification technique. The suggested Algorithm attempts to take into account both the elements and well in terms of timing intricacy and precision. The total recognition achieves the highest accuracy (90.37%). Multilayer perceptron processing This task is completed as a first effort, and the purpose of the paper is to make it easier to read handwritten numbers without using any common classification methods.

A Comparative Study on Handwriting Digit Recognition Using Neural Networks

 In this study, they compared three neural network-based recognition algorithms to identify the most effective algorithm in terms of performance and accuracy. Other factors like execution time have also been considered, and random and typical datasets of written by hand. The algorithms have been assessed using digits. The outcomes demonstrated that the most accurate algorithm is DNN. DNN and the CNN algorithm are both nearly equally accurate. However, the DNN

algorithm was superior to CNN and DBN in terms of speed of execution. The margin of error may exist when determining the proper digits.