LITERATURE SURVEY ON HAND WRITTEN DIGIT RECOGNITION

S.NO	YEAR	AUTHOR	TITLE	METHODOLOGY	CONTENTS
1	2021	Ali Abdullah Yahya, Jieqing Tan, Min Hu	A Novel Handwritten Digit Classification System Based on Convolutional Neural Network Approach	Convolutional neural network	The paper makes the following contributions First, the size of the effective receptive field (ERF) is determined after taking domain knowledge into account. They choose a typical filter size with the aid of the ERF calculation, improving the classification accuracy of our CNN. Second, excessive data produces inaccurate results, which has a detrimental impact on classification accuracy. Thirdly, data augmentation has been suggested as a way to reduce training and validation errors. Fourthly, the paper suggests adding an additive white Gaussian noise with a threshold of 0.5 to the MNIST dataset in order to imitate the natural factors that can affect image quality in the real world. With a recognition accuracy of 99.98% and 99.40% with 50% noise.
2	2021	Ayush Kumar Agrawal, Vineet Kumar Awasthi	Novel Deep Neural Network Model for Handwritten Digit Classification and Recognition	Deep neural networks	A deep neural network has numerous hidden layers with input and output layers. Deep neural networks use several hidden layers to increase model performance and achieve higher accuracy compared to accuracy of machine learning models. The suggested model consists of six layers with softmax and relu activation functions. After model implementation, accuracy for ARDIS samples reached 98.70% testing and 99.76% training, which is greater than accuracy from prior research.
3	2019	Rohini.M , Dr.D.Surendran	A Novel Method For Hand Written Digit Recognition Using Deep Learning	Deep Learning	This compares the results of some of the most widely used Machine Learning Algorithms like CNN-convolution neural networks and with Deep Learning algorithm like multilayer CNN using Keras with Theano and TensorFlow. MNIST is a dataset which is widely used for

					handwritten digit recognition. The dataset consists of 60,000 training images and 10,000 test images. The artificial neural networks plays main role in image processing field.
4	2019	Megha Agarwal, Shalika, Vinam Tomar, Priyanka Gupta	Handwritten Character Recognition using Neural Network and TensorFlow	Convolutional Neural network	The handwritten character recognition in this study will be carried out using Tensorflow and a convolutional neural network. a process known as using SoftMax Regression, one may assign probabilities to one of the many characters in the handwritten text The objective is to create software that is extremely accurate and that has a minimum level of spatial and temporal complexity. The feed forward model in neural networks is the back-propagation algorithm that was primarily used to classify the characters. The paper will describe the best approach to get more than 90% accuracy.
5	2017	Kh Tohidul Islam, Ghulam Mujtaba, Dr. Ram Gopal Raj, Henry Friday Nweke	Handwritten Digits Recognition with Artificial Neural Network	Artificial Neural Network	A multi-layer fully connected neural network with one hidden layer for handwritten digits recognition is implemented. They have used digit images pixels as features vector and ANN as classifiers for handwritten digits recognition. The testing has been conducted from publicly available MNIST handwritten database. From the MNIST database, they extracted 28,000 digits images for training and 14,000 digits images for performing the test. Our multi-layer artificial neural network has an accuracy of 99.60% with test performance.