IDEATION PHASE

LITERATURE SURVEY

Date	19 September 2022
Team ID	PNT2022TMID46416
Project Name	Project – A Novel Method for Handwritten digit Recognition System
Maximum Marks	

S.NO	PAPER TITLE	AUTHOR NAME	JOURNAL NAME AND YEAR OF PUBLICATION	REMARKS
1.	A Novel Method of handwritten digit recognition using deep learning.	Rohini. M, Dr.D. Surendran.	Technical Research Organization, India. 2019.	• Understanding CNN and applying it in handwritten recognition system, Mapping of image pixels, Bootstrap for HTML, CSS and JavaScript. • CNN as training algorithm, TENSORFLOW, Python3 command, Keras and Theano as backend.
2.	Recognition of Handwritten Digit using Convolutional Neural Network in Python with Tensorflow and comparison of performance for various Hidden layer.	Fathima Siddique, Shadman Sakib, Md. Abu Bakr Siddique.	5th International conference on advances in electrical engineering (ICAEE). 26-28 Sept. 2019.	• Aim to reduce the error rate and increase the accuracy by using different cases of layers. • Output is observed at different epoch (over 15) batch size 100. • Here, the overall Validation accuracy is 99.07% and total Test Loss is 0.028596.
3.	A novel handwritten Digit classification system based on convolutional neural network.	Ali Abdullah Yahya, Jiequing Tan, Min Hu	Sensors 2021. 18th September 2021.	• CNN architecture, Convolutional layer, fully connected layer, MNKIT handwritten digits 99.21% accuracy. • Data Preparation, Testing and training set, 784 features, Hidden and flatten layer, Rectified Linear Unit, Batch normalization, Max Pooling, Dropout.

4.	A Novel Method for Persian Handwritten Digit Recognition using Support Vector Machines	Mojtaba Mohammadpoor, Abbas Mehdizadeh, Hava Alizadeh Noghabi	Majlesi Journal of Electrical Engineering. September 2017.	• Overall classification accuracy is measured around 99% which shows improvement Automatic character recognition is widely used as information entry for many applications now days. • Persian is the main language of several countries such as Iran, Afghanistan, and Tajikistan and it's spoken by more than 110 million people's, has different forms, shapes and sizes in which recognition is more challenging. • Pre processing steps are 1.image squaring 2.resizing 3.noise removing and binarizations. • The proposed algorithm is based on applying sum over a publicly available dataset name HODA. • From this feature vector is extracted from each image using different features. • Over the existing methods.
5.	Improved Handwritten Digit Recognition Using Convolutional Neural Networks	Savita Ahlawat, Amit Choudhary, Anand Nayyar, Saurabh Singh, Byungun Yoon.	Sensors 2020 12 June 2020.	• A CNN integrate the features extraction and classification steps and requires minimal preprocessing and feature extraction effects. • The recognition experiment carried out for MNIST digit and accuracy of 99.79% was reported.
6.	Offline handwritten digits recognition using machine learning	Shengfeng chen, Rabia Almamlook, Yuwen Gu, Dr. Lee wells.	International conference on industrial engineering and operations management. 27-29,September 2018	• MNIST database for offline handwritten ranging from 0 to9. • K-nearest-neighbor method & artificial neural network (ANN) & preprocessing recognition system are used. • This system is used to recognize handwriting in offline with 95.93%.

7.	A comparative study on handwritten digit recognition using neural networks	M. Abu Ghosh, Y. Maghari.	International Conference on Promising Electronic Technologies. 2017.	• Three algorithms are used: • Convolutional Neural networks (CNN). • Deep Belief Networks (DBN), in this RBM is used. • Deep Neural Network (DNN). • Neural network toolbox in matlab to simulate.
8.	Handwritten digit recognition based on convolutional neural network	Chao Zhang, Zhiyao Zhou, Lan Lin.	Chinese Automation Congress (CAD) 2020.	• For character recognition, tradition feature extraction methods are used such as, SIFT, HOG, SURF & 13-ppoint feature extraction method. • It has high dimensionality. • It has high recognition like hard & low light illuminations.
9.	A novel method for handwritten digit recognition with neural networks	Malothu nagu, N. Vijay Shankar, K. Annapurna	International Journal of computer science and information technologies. 2011.	• Two techniques used in this are pattern recognition and artificial neural network. • Bayesian decision theory is used for pattern recognition. • Shape, Chinese and hand written recognition uses neural networks. • Unix editor paint is used to open. • The training results show that the system had more trouble identifying numeral-5.
10.	Handwritten digit Recognition Using Machine learning algorithms	S.M. Shamim, Mohammad badrul alam miah, Angona sarker, Masud rana & Abdullah al Jobair.	Global Journal of Computer Science & Technology. 15 July 2018.	• This paper contains several machine learning algorithms namely, Multilayer Perception, support vector machine (SVM),Naïve Bayes, Bayes net, Random forest and Random trees, J48 and WEKA. • The overall highest accuracy 90.37% is achieved in the recognition process by multiplier perception.