LITERATURE SURVEY

S. No	PAPER NAME	AUTHOR & YEAR	DESCRIPTION	ADVANTAGE
1.	Handwritten Digit Recognition using Machine and Deep Learning Algorithms	Ritik Dixit, Rishika Kushwah, Samay Pashine & 2021	Digit recognition has many applications like number plate recognition, postal mail sorting, bank check processing, etc. In Handwritten digit recognition, we face many challenges because of different styles of writing of different peoples as it is not an Optical character recognition. This research provides a comprehensive comparison between different machine learning and deep learning algorithms for the purpose of handwritten digit recognition.	• Training and Testing Accuracy • SVM has the highest accuracy on training data while on testing dataset CNN accomplishes the utmost accuracy • Trained our deep learning model up to 30 epochs and SVM models according to norms to get the apt outcome
2.	A Novel Handwritten Digit Classification System Based on Convolutional Neural Network Approach	Ali Abdullah Yahya , Jieqing Tan and Min Hu	The handwritten digit recognition problem is a topic of heated debate in recent years. Despite that there are enormous convolutional neural network algorithms proposed for handwritten digit recognition, issues such as recognition accuracy and computation time still require further improvement.	• presented a novel convolutional neural network architecture based on data preparation, receptive field, data augmentation, optimization, normalization, and regularization techniques for handwritten digit recognition • Batch normalization has been used to improve the training performance

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3.	Handwritten Character Recognition from Images using CNN-ECOC	Mayur Bhargab Bora, Dinthisrang Daimary, Khwairakpam Amitab, Debdatta Kandar & 2020	The OCR is a process of classifying the optical patterns present in a digital image to the corresponding characters.he OCR is a process of classifying the optical patterns present in a digital image to the corresponding characters.The character recognition is achieved through important steps of feature extraction and classification. The OCR system simulates the human capability to recognize.	● The CNN is used for feature extraction and ECOC for recognition of characters. In order to find a suitable feature extractor, three popular CNN architectures have been explored, namely LeNet, AlexNet and ZfNet. ● AlexNet is the most suitable CNN for combining with ECOC, in order to recognize handwritten characters.
4.	Deep Convolutional Self-Organizing Map Network for Robust Handwritten Digit Recognition	Saleh Ally, Sultan Almotairi & 2020	Classical unsupervised feature learning approaches almost focus on exploiting the availability of unlabeled training data images to understand the underlying structure of data. The learning algorithm of Self-Organizing Map SOM) can be considered as one of the most distinctive algorithms which employ neighborhood function to learn topology of the high-dimensional input space.	● The network utilizes multiple cascades of convolutional SOM layers to extract hierarchical features from training images. ● proposed deep architecture is unique and different from other deep networks which are based on SOM.

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