# Literature Survey

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| Date | 19 September 2022 |
| Team ID | PNT2022TMID30139 |
| Project Name | A NOVEL METHOD FOR HANDWRITTEN DIGIT RECOGNITION SYSTEM |
| Maximum Marks | - |

## 1. HANDWRITTEN DIGIT RECOGNITION USING CNN (Mayank Jain et al, 2021)

The basic target of this paper is to administer effective and solid procedures to acknowledgment of transcribed numerical by viewing totally different existing arrangement models. This paper is bothered the exhibition of Convolutional Neural Network (CCN). Written digit recognition is performed mistreatment the Convolutional neural network from Machine Learning. So, essentially to perform the model they add some libraries like Numpy, Pandas, TensorFlow, Keras. These area units the most structure on that my main project stands. MNIST knowledge contains regarding 70,000 pictures of written digits from 0-9. So, it's a category ten classification model. This dataset is split into a pair of components i.e. coaching and check dataset.

## 2. HANDWRITTEN CHARACTER RECOGNITION ON ANDROID FOR BASIC EDUCATION USING CONVOLUTIONAL NEURAL NETWORK (Thi Thi Zin et al, 2021)

Handwritten characters or words written on tablets were saved as input pictures. Then, they performed character segmentation. For the character recognition, the Convolutional Neural Network (CNN) was used for recognizing segmental characters. For building their own dataset, written information were collected from primary level students in developing countries. The network model was trained on a high-end machine to scale back the employment on the humanoid pill. Numerous varieties of classifiers were created so as to scale back the inaccurate classification. As per the

experimental results, the planned system achieved 95.6% on the 1000 elite words and 98.7% for every character.

## 3. HAND WRITTEN DIGIT RECOGNITION USING MACHINE LEARNING (Rohan Sethi et al, 2020)

Hand-written character and digit recognition are one among the foremost exigent and absorbing field of pattern recognition and image process. The aim of this paper is to demonstrate and represent the work that is expounded to hand-written digit recognition. The hand-written digit recognition may be a terribly exigent task. During this recognition task, the numbers aren't accurately written or scripted as they dissent in form or size; thanks to that the feature extraction and segmentation of hand-written numerical script is arduous. The vertical and horizontal projections strategies square measure used for the aim of segmentation within the planned work. SVM is applied for recognition and classification, whereas lenticular hull formula is applied for feature extraction.

## 4. IMPROVED HANDWRITTEN DIGIT RECOGNITION USING CONVOLUTIONAL NEURAL NETWORKS (Savita Ahlawat et al, 2020)

Proposed work is to explore the assorted style choices like variety of layers, stride size, receptive field, kernel size, cushioning and dilution for CNN-based written digit recognition. Additionally, their aim is to gauge numerous SGD improvement algorithms in raising the performance of written digit recognition. A network’s recognition accuracy will increase by incorporating ensemble design. Here, the objective is to attain comparable accuracy by employing a pure CNN design while not ensemble design, as ensemble architectures introduce raised machine price and high testing quality. Thus, a CNN design is planned so as to attain accuracy even higher than that of ensemble architectures, beside reduced operational quality and price.

## 5. ARABIC HANDWRITING RECOGNITION SYSTEM USING CNN (Najwa Altwaijay et al, 2020)

Fewer studies are finished the Semitic. During this paper, they had a tendency to gift a replacement dataset of Arabic letters written solely by youngsters aged 7–12. The dataset contains 47,434 characters written by 591 participants. Additionally, they had a tendency to propose associate degree automatic handwriting recognition model supported convolutional neural networks (CNN). They also has a tendency to train our model on Hijja, also because the Arabic written Character Dataset (AHCD) dataset. Results show that our model's performance is promising, achieving accuracies of 97% and half of one mile on the AHCD dataset and therefore the Hijja dataset, severally.

## 6. A COMPARATIVE STUDY ON HANDWRITING DIGIT RECOGNITION USING NEURAL NETWORKS (Mahmoud M.Abughosh et al, 2017)

This paper focuses on Neural Network approaches. The foremost 3 noted NN approaches are a unit deep neural network, deep belief network and convolutional neural network. During this paper, the 3 NN approaches area unit compared and evaluated in terms of the many factors like accuracy and performance. However there are a unit fascinating criteria like execution time. Random and customary dataset of written digit are used for conducting the experiments. The results show that among the 3 NN approaches, DNN is the most correct algorithm; it's 98.08% accuracy rate. However, the execution time of DNN is comparable to the opposite 2 algorithms. On the opposite hand, every algorithmic rule has a slip rate of 1–2% as a result of the similarity in digit shapes, specially, with the digits (1,7) , (3,5) , (3,8) , (8,5) and (6,9).