**Literature Survey:**

Prepare below table after reading and analysing IEEE Papers:

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| --- | --- | --- | --- | --- |
| **Sr. No** | **Title of Paper** | **Name of Authors** | **Published Year** | **Remarks** |
| 1 | Handwritten Digit Recognition using Machine and Deep Learning Algorithms | 1. Ritik Dixit 2. Rishika Kushwah 3. Samay Pashine | 23 Jun 2021 | In this paper **Support vector machine** are used firstly .because its faster the an most algorihms and it gives trainig accuracy rate high but, due o its simplicity**, it’s not possible to classify complex and ambiguous images as accurate.**  **METHODOLOGY USE:**  **CNN MLP**  **ALGORITHMS :**   1. Support Vector Machine 2. Multi-Layered Perceptron 3. Convolution Neural Network   Then they people goes to **CNN & MLP algorithms**.  **ADVANTAGES:**   1. gave the most accurate results for handwritten digit recognition. 2. Suitable for any type of prediction problem including image data   **DISADVANTAGES:**   1. comparing execution time of the algorithms we have concluded that increasing the number of epochs without changing the configuration of the algorithm is useless 2. If epochs are increasing the model start overfitting   **APPLICATIONS:**   1. government agencies as well as for the common people 2. hospitals application for detailed medical diagnosis, treatment and monitoring the patients 3. we can use it in surveillances system to keep tracks of the suspicious activity under the system |
| 2 | Handwritten Digit Recognition using Machine Learning Algorithms | 1. SM Shamim 2. Mohammad Badrul Alam Miah 3. Angona Sarker 4. Masud Rana 5. Abdullah Al Jobair | 2020 | In this paper used different machine learning algorithm for recognition of handwritten numerals i.e. y Support Vector Machine, Multilayer Perceptron, Random Forest Algorithm, Random Tree, Naïve Bayes, Bayes Net and Decision tree algorithms are used  **METHODOLOGY THEY USE :**  **Multilayer Perceptron**   1. Multilayer Perceptron Correctly Classified Instances % (value) is 90.37 and time taken in seconds 3.15 2. Support Vector Machine Correctly Classified Instances % (value) is 87.97 and time taken in seconds I 0.56 3. Random Forest Correctly Classified Instances % (value) is 85.75 and time taken in seconds 0.44   **algorithms are used.**   1. Support Vector Machine 2. Multilayer Perceptron 3. Random Forest Algorithm 4. Random Tree 5. Naïve Bayes 6. Bayes Net 7. Decision tree   **ADVANTAGE:**   1. High accuracy   **DISADVANTAGE:**   1. Compare to other algorithms it takes more time   The overall highest accuracy 90.37% is achieved in the recognition process by Multilayer Perceptron  **APPLICATIONS:**   1. in fingerprint and retinal scanners 2. database filtering applications 3. Equipment checking for national forces |
| 3 | HANDWRITTEN DIGIT RECOGNITION USING OPENCV AND CNN | 1. K. Swetha 2. Y. Hithaishi 3. N.L. Tejaswini 4. P.Parthasaradhi 5. P.V.Venkateswara Rao | 6 June 2021 | **METHODOLOGY USE:**  **CNN MLP**  **algorithms are used**.   1. Support Vector Machine 2. K-Nearest algo 3. Logistic regreesion 4. CNN 5. Random Forest Classifier   Here theY compile the model by ‘**categorical\_crossentropy’as loss function, ‘adam’ as an optimizer , and ‘accuracy’ as metrics**. Then, the model is trained using CNN.  **CNN got high accuracy with 99.63** compared five classification algorithms namely K-Nearest Neighbors, Logistic Regression, Convolutional Neural Network, Random Forest Classifier and Support Vector Machine on the MNIST database  **APPICATIONS:**  surveillances system to keep tracks of the suspicious |
| 4 | Review on Deep Learning Handwritten Digit Recognition using Convolutional Neural Network | 1. Akanksha Gupta 2. Ravindra Pratap Narwaria 3. Madhav Singh | 5, January 2021 | **METHODOLOGY THEY USE :** **CNN**    **ALGORITHMS USED:**   1. KNN 2. SVM 3. CNN   Many classifiers like KNN, SVM, CNN are used to identify the digit from the handwritten image. as per the review, CNN is providing better performance than others  **ADVANTEGES:**   1. gave the most accurate result |
| 5 | Implementation of Handwritten Digit Recognizer using CNN | 1. B M Vinjit 2. Mohit Kumar Bhojak 3. Sujit Kumar 4. Gitanjali Nikam | February 2021 | Firstly, in this paper they discuss the segmentation process and implementation of the CNN model we created using **Tensor Flow** for digit recognition from the image.  They used the **OpenCV** library for the segmentation of a string.  Here, there **CNN model has a training accuracy of 99.36% and a testing accuracy of 99.15%.**  **APPLICATIONS:**   1. used for building a proposed system to automate the process of storing marks and other details like roll number and subject code in a database by just taking a photograph. 2. remove the manual process which is hectic, tedious, and errorprone |
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**(Remarks: It will include all the points that you understand from the paper..such as methodology, algorithms, advantages, disadvantages, applications, etc.)**

**Recent 3 years…..**