Literature Survey

1. **Amirreza Fateh (2021) proposed a paper on "Multilingual handwritten numeral recognition using a robust deep network joint with transfer learning"**

Classification methods used for handwritten digit recognition is support vector machine.

Vertical and horizontal edges, and directions of numerals were extracted from the input images.

The CNN with a combination of global max pooling and global attentive pooling.

Transfer learning approach for handwritten digit recognition based on both the multi-layer perceptron and convolutional neural network models.

Advantage:

Accuracy of more than 99% with a multi-layered framework. Six different languages showed a high accuracy.

Disadvantage:

To extend this model to recognise multi-lingual handwritten characters

2. **Mohamed Ali Souibgui(2022) proposed a paper on "A progressive learning approach for low resource handwritten text recognition"**

Handwritten symbols together with their bounding boxes, to avoid such human effort through an unsupervised progressive learning approach that automatically assigns pseudo-labels to the unlabeled data.

Handwritten text recognition by few-shot learning. First, model is trained on synthetic data.

Create text line images using various Omniglot symbol alphabets.

Advantage:

To significant reduction in user effort and a minimal loss in recognition performance.

Disadvantage:

To enhance the quality of the provided labels to keep reducing the need of manual intervention.

To extend the approach to cover more low resource datasets.

3.**Ibrahim Karabayir , Oguz Akbilgic , and Nihat Tas (2021) have proposed a paper on "Learning Algorithm to Optimize Deep"**

To cope with the vanishing gradient problem, evolved gradient direction optimizer (EVGO), updating the weights of DNNs based on the first-order gradient and a novel hyperplane is introduced.

Compare the EVGO algorithm with gradient-based algorithms, such as gradient descent, RMSProp, Adagrad, and Adam on (MNIST) data set for handwritten digit recognition by implementing deep convolutional neural networks.

Advantage:

A novel hyperplane is established. Hyperplane make the gradient better by transferring properties.

Disadvantage:

Vanishing gradient remains as a issues in the parameter optimization of networks.

No agreement to choose the right optimization algorithm for deep models.

4.**Songbin Xu(2021) proposed a paper on "A Novel Unsupervised domain adaptation method for inertia-Trajectory translation of in-air handwriting"**

To solve the unsupervised inertia-trajectory translation problem. The model constructs a latent space to map inertial and trajectory samples into semantic representations.

To feature-level adversarial training, the model learns to translate between inertial data and handwritten trajectory with its semantic content preserved.

Advantage:

The samples can be identified by the CNN model with high accuracy.

Disadvantage:

The main disadvantage of our model is its dependence on the dataset.

5.**Mohamed Awni(2021) proposed a paper on "A transfer learning Approach"**

The performance of three deep convolution neural networks that have been randomly initialized for recognizing Arabic handwritten words.Then, we evaluate the performance of the

ResNet18 model that has been pre-trained on the ImageNet dataset for the same task.

Advantage:

The most effective way of applying transfer learning.

To improved the recognition accuracy by about 0.37%.

Disadvantage:

To investigate meta-learning algorithms such as prototypical and relation networks to increase the ability of DCNNs to adapt quickly to new few shot samples of words.

6.**Lei Kang(2022) proposed a paper on " Non-recurrent handwritten text-Line recognition"**

The use of transformers has been popularized in many different computer vision and natural language processing tasks such as automatic translation , speech-to-text applications and emotion recognition.

Advantage:

The use of such sequential processing deters parallelization at training stage, an affects the effectiveness when processing longer sequence lengths.

Disadvantage:

The transformer based methods have heavy network architectures, they might advance on bigger and more complex tasks.