Ex : 4

Build a sample feed forward neural network to recognize hand written character.

Aim

To study and compare to Build a simple neural network that can recognize handwritten characters.

objective :-

1.) Get the handwritten image and labels

2.) Prepare the images so the computer can understand them

3.) Make a small neural network to learn patterns in the images

4.) Teach the network using. any example

5.) check how well the network can recognize new images

Pseudo code

START

Load + training and test Image

Prepare the image (flatten and normalize

Create a neural network with

- Input layer (Pixels)
- one or two hidden layers
- output layer (number of characters)

Repeat for several times:

Give a batch of images to the network

Calculate how wrong the network is (loss)

update the network on new images

Test the network on new images

Show how accurate it is

END.

Result :-

The feed forward neural network trained on MNIS + achieved around 95./. Approximately on the test dataset.

Accuracy :- $\frac{\text{True Positive + true negative}}{\text{True Positive + True negative + False Positive + False negative}}$

F1-Score = $\frac{\text{True Positive + True negative}}{\text{total Instance.}}$

Output

Epoch 1

Accuracy : 90.21%

Epoch 2

Accuracy : 95.67%

Epoch 3

Accuracy : 96.06%

Epoch 4

Accuracy : 97.70%

Epoch 5

Accuracy : 98.50%