

for : 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.) Preprocess the images so the computer can understand them
- 3.) Make a small neural network to learn patterns in the images
- 4.) Train the network using any example
- 5.) Check how well the network can recognize new images

### Pseudo code

#### START

Load + training and test image  
Preprocess the image (filter and normalize)

Create a neural network with

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



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.

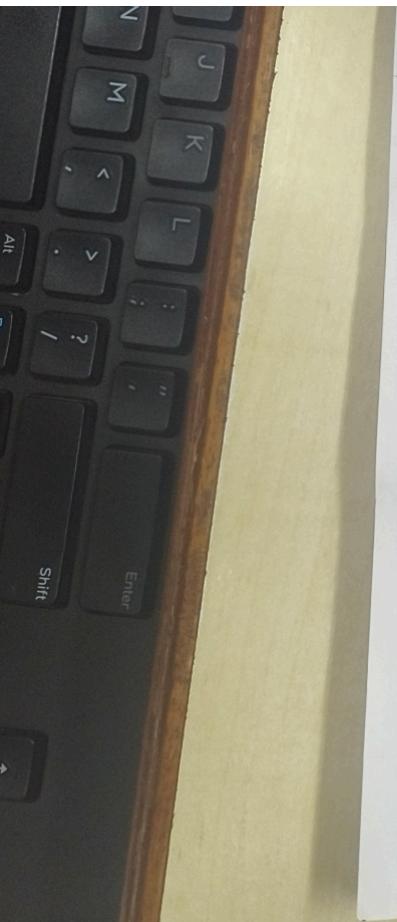
Result:-

The food forward neural network  
Learned on MNIST + achieved around  
98%. Approximately on the test data.

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

~~F<sub>1</sub>-Score~~ =  $\frac{\text{True Positive} + \text{True negative}}{\text{total instances}}$

total Instances.



### output

of sensorial system  
notices best

### E Rock 1

Accuracy : 90.2%

E Rock 2, in phone or

Accuracy : 95.6%.

### E Rock 3

Accuracy : 94.06% (in

phone)

### E Rock 4

Accuracy : 94.7% (in

phone)

### E Rock 5

Accuracy : 98.50% (in

phone)

Accuracy : 98.50% (in

phone)

Accuracy : 98.50% (in

phone)

### hand closed

#### DATE

spans test - hand pressure + hand

two (2) spans with telephone

2nd choice

notices under phone or phone

(phone) regular telephone -

regular rabbit, just not me -

to regular (regular telephone -

(regular)

Caps Lock

A S