**Day 36**

**What to do?**

Project #3 – Handwritten Digit Recognition System using MNIST dataset.

**Dataset:**

MNIST Handwritten Digit Recognition System from Analytics Vidhya (https://datahack.analyticsvidhya.com/contest/practice-problem-identify-the-digits/#About)

**Process:**

The data has been preprocessed by scaling the values. Two models have been built to see how the accuracy changes.

* Flatten the images to have 784 pixels and create two layers (hidden layer with 128 neurons and relu activation, and output layer with 10 neurons and softmax)
* Flatten the images to have 784 pixels and create three layers (2 hidden layers with 128 neurons each and relu activation, and output layer with 10 neurons and softmax)

Both the models are compiled with Adam optimizer and sparse categorical cross entropy loss function. The models are trained with 10 epochs, batch size of 500 and validation split of 20%.

**Results:**

* Training Accuracy of model 1 is 96.08%; Testing Accuracy is 95.13%
* Training Accuracy of model 2 is 97.06%; Testing Accuracy is 96.38%

**Recommendations:**

Model can be performed much better in terms of bias as some models achieved 99% - 100% accuracy.