**Day 35**

**What to do?**

Project #2: Build your own Neural Network from scratch.

**Dataset:**

Handwritten image recognition dataset MNIST.

**Functions included:**

To build NN from scratch, it requires the following functions:

* Sigmoid() – to calculate the sigmoid function for weights and biases
* CostFunction() – calculate the cost / loss for the network for both forward and backward propagation
* Sigmoidgradient() – differentiation of sigmoid function
* randInitializeWeights() – randomly initialize weights using Xavier’s initialization method
* computeNumericalGradient() – implements gradient checking
* checkNNGradients() – checks the backpropagation gradients by comparing the actual gradients and gradient computed by computeNumericalGradient() (they should be very similar)
* predict() – to predict instances of the NN model

**Network and results:**

A 3-layer neural network with accuracy of 96.50%.