Name : Kareem Ayman Farag **ID:20190696**

Mnist using Neural Network

A neural network is a series of algorithms that endeavors to recognize underlying relationships in a set of data through a process that mimics the way the human brain operates. In this sense, neural networks refer to systems of neurons, either organic or artificial in nature.

In our case we use centroid function that uses 2x2 grid with NN algorithm on the Mnist hand written numbers so we have to divide a single image to multiple blocks and find its centroid and create a features vector

This is a basic model that I've written myself which implements a neural network from scratch without using any external libraries "except numpy for multi-dimensional arrays"

The corresponding table displays the accuracy of my model given different Number of layers (rows) and different number of Nodes (columns) on 10000 sample

"Number calculated with 0.1 learning Rate"

Number of Nodes/ Number of Layers	4	5	6
1	96.63%	96.74%	98.18%
2	93.34%	96.74 %	98.13%
3	93.32%	96.72%	98.16%

Note that changing the Layers Number doesn't change the percentage that much but the increases the run time

While changing the Nodes Number has a noticeable impact on the accuracy while also increasing the run time