Introduction:

is a machine learning based project aims to build Multilayer perceptron from scratch to detect handwritten digits.

Objective:

Estimates the computation efficiency of running neural network in Atmega32, AMD microcontroller.

It consists of:

1-Atmega32 Microcontroller.
2-AMD Microcontroller.

About the Data:

We will use MNIST handwritten digit data sets for training and testing.

The MNIST database contains 70,000 standardized images of handwritten digits and consists of 4 files:

(1) A training set of 60,000 images.

(2) The labels (correct answers) for the training set.

(3) A testing set of 10,000 images.

(4) The labels (correct answers) for the testing set.

Each MNIST image has a size of 28*28 = 784 pixels. Each pixel is provided as a number between 0-255 indicating its density.

Simple Equation:

Y`=W*X

W size= no of neurons in a (hidden) layer * no of inputs

X size= no of pixels in image. (28*28).

Approach:

We will start using one layer neural network and check the efficiency and then extend it to more layers and observe the performance.

For validation and verification , we will compare the result of our program by a same program written in python.