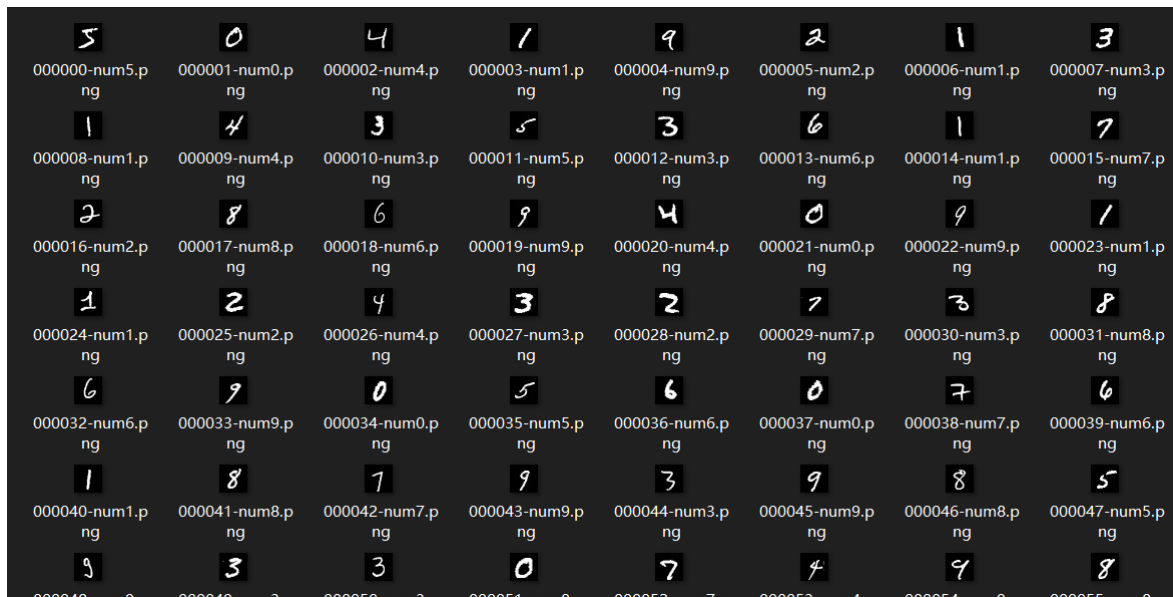# MNIST hand-written digit classification

Digit range from 0~9, training set consist of 60000 images, and test set consist of 10000 images.

Task 1: One layer SoftMax Classifier

The Forward Pass of SoftMax Classifier

Compute Class scores

$$y_i = Wx_i + b$$

Use SoftMax to convert from scores to probs

$$p_{i,j} = \frac{e^{y_{i,j}}}{\sum_k e^{y_{i,k}}}$$

You should be able to get a test accuary higher than 80%

In [ ]:

Task 2: Two Layer neural network

The Forward Pass of a Two layer neural network

Input Layer to Hidden Layer

$$h_i = act(W_{(1)}x_i + b_{(1)})$$

Hidden Layer to Output Layer

$$y_i = W_{(2)}h_i + b_{(2)}$$

Then convert the score to softmax

You should be able to get a test accuary higher than 95%

In [ ]: