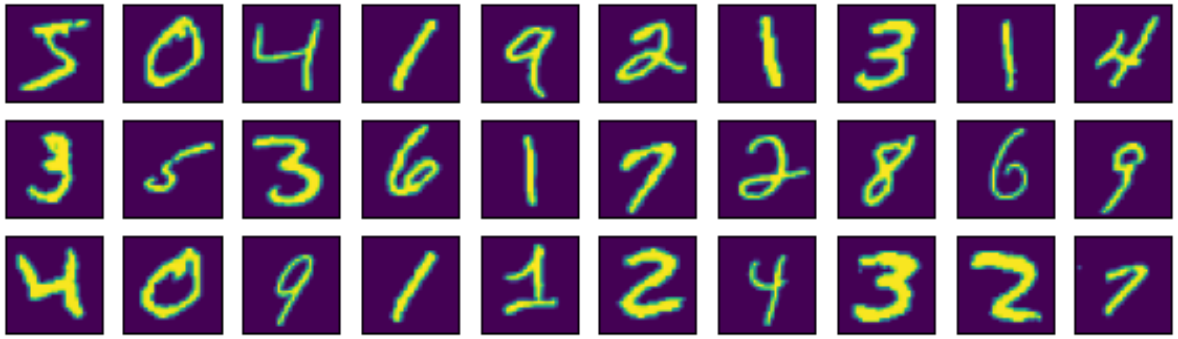
Lab Week 12

You are handed a dataset of handwritten digits, MNIST, with the initial script.



Task 01 Build a 3-layer MLP to classify digits

You will have 784 neurons in the input layer and 10 neurons in the output layer. Likely you can choose to have 50-200 neurons in the hidden layer.

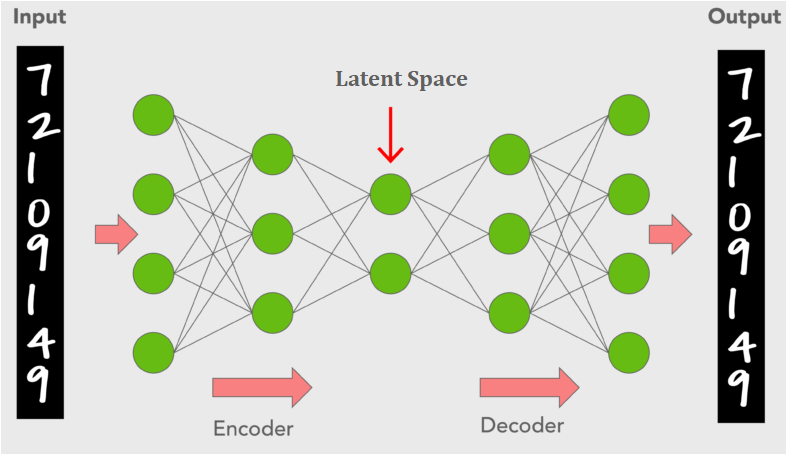
Try to develop your own backpropagation algorithm for your MLP.

In your attempts,

1) You may try different loss functions: least square, KL divergence, or JS divergence.
2) Try to include different regularizers, and compare against no regularizer case.
3) Try different optimization method: direct SGD, moment, RMSProp, & Adam.

Challenge for this week:

Please consider the following DNN architecture. You have a 5 layer neural network with the numbers of neurons: 784, 100, 32, 100, 764.



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You can have the MNIST images as both inputs and outputs, namely $y=\mathrm{F}(x, w)=x$. How will you use your BP to train it?