Cifar-10 Report

1. No of epochs:

Numbers to pass all data in the model

More epochs will increase accuracy, but will increase running time a lot

2. Batch size:

Numbers of data pass in each batch,

Higher batch size increase accuracy, except for over-fitting batch size

3. number of neurons in a layer

every NN has only one neurons in input layer, only one in output layer

in hidden layer it goes between it, to eliminate unnecessary nodes.

It should be change to avoid over-fitting or under-fitting. So if we decrease layers in hidden layer, it will increase accuracy at first, but when we reduce more and more nodes, accuracy will decrease.

4. numbers of layers

we can have many hidden layers as we want, but if data is close to linear separable, we need less hidden layers. If we only have 3 layers, one input, one hidden, one output layer, it is way more accuracy than multiple hidden layers.

5. learning rate

base on my exercise, higher learning rate gives a huge loss change in the experiment, and it decrease the accuracy.

6. activation function

it is just a transfer function that add node to neural network. As a result, ELU is the best activation function for Cifar-10 MLP and CNN analysis

7. dropout rates

dropout rate ignore such units during training session, it just a function to avoid over-fitting for other functions. Lower than 0.5 seems not affect result much. But when higher dropout rate comes out, like 0.8, the accuracy in fact becomes lower.