CENG 515 – Special Topics in Computer Science
Homework 3

May 24, 2017

Due Date: June 9, 2017

Exercise 1 Regularization

Modify `mnist_basic.py` to include L_1 and L_2 regularization at the same time. The strength of regularization of each type should be set by individual command line parameters, `--lambda_l1` and `--lambda_l2`, both defaulting to 0.0. Make sure that the data loss, L_1 regularization loss, and L_2 regularization loss are all visible seperately in Tensorboard. Save the resulting code in a script called `mnist_reg.py`.

Experiment with the regularization strengths using the validation set and report the best combination of these in a comment at the start of the script.

Exercise 2

Modify `mnist_layers.py` to use low level nodes from `tf.nn` instead of the high level `tf.layers` functions. At the end of the training the model parameters should be saved to disk using the `tf.train.Saver` class. Before testing create a new graph and load the model that you saved at the end of training from the disk. Make sure you have the same functionality of and obtain similar performance to the layers version. Save the resulting code in a script called `mnist_nn.py`.