

Task Description

You will train a CNN (TensorFlow) that classifies the images in the CIFAR-10 dataset, which contains 60000 32x32 color images in 10 classes with 6000 images per class. Specifically, you will train your model using two different regularization methods; Ridge and Lasso. Then, you should plot how values of the weights in your model change per epoch (i.e. <http://christopher5106.github.io/deep/learning/2016/09/16/about-loss-functions-multinomial-logistic-logarithm-cross-entropy-square-errors-euclidian-absolute-frobenius-hinge.html>) in your report. You should also explain what these regularization methods do and the change in the weights.

- You will submit 2 different notebooks. The first notebook will be used to train your model and save it on the disk. The second notebook will be used to read this model and test its performance. You must share your network via <https://wetransfer.com>. Add the link of your model into the report.
- Your model should achieve at least 90% test accuracy. Those who exceeds this threshold will receive bonus points. (i.e. 91% gets 1 bonus point)
- You should submit a report that explains regularization methods, your architecture and compares the results of these regularization methods.
- **Deadline: 13th April 2018**

Hints and Grading

Your Assignment will be disregarded if your code does not work or you don't submit a report!

- 50% implementation and 50% report
- Start early, training may take some time without GPU enabled.
- This tutorial (https://www.tensorflow.org/tutorials/deep_cnn#highlights_of_the_tutorial) can be your starting point.
- Using save/load network functionality of Tensorflow will save your time.
- You should occasionally save your network during training (e.g. at every 100 iterations) in case you need to stop the script during a time consuming training.