Assignment 3: Neural Network Classifier

Description

In this homework you will practice how to write Neural Network classifier in Python with NumPy package. You need to understand how Neural Network classifier work, including back propagation and gradient decent in order to implement this homework successfully. The goals of this homework are:

- To implement and understand Neural Network classifier.

Instruction

In this assignment, you need to fill the block of code in 2 python files, runTwoLayersNN.py and twoLayersNN.py.

- runTwoLayersNN.py: This is the main file that you will execute. It reads and processes CIFAR10 dataset, initializes the classifiers, trains, and also tunes up hyper parameters.
- twoLayersNN.py: Two layers Neural Network class that contains 5 functions, initialize, train, predict, calculate loss, and calculate accuracy.

Note:

- In each file there are comments that walk you through the implementation, and also, there is explanation in each block of code that you have to fill in.
- You should use leaky ReLU as the activation function
- Points for each block of code is also in the comment.
- Don't put any print function in your answer.
- Comment your codes.
- Edit/Add any source code outside **TODO** block is not allow.

Submission

- Your submission should contain 2 python files **runTwoLayersNN.py** and **twoLayersNN.py**
- **Zip** file named using the following convention:
  <SU-EMAIL>_<FIRST-Name>_AS3.zip
  Ex. zzhao37_ziyi_AS3.zip
- Upload zip file to blackboard before 11:59PM (EST Time) 3/5/2020