EE239AS, Winter 2018 **Homework #2**
Neural Networks & Deep Learning Prof. J.C. Kao
UCLA ECE TAs: W. Chuang & M. Kleinman & K. Liang & A. Wickstrom

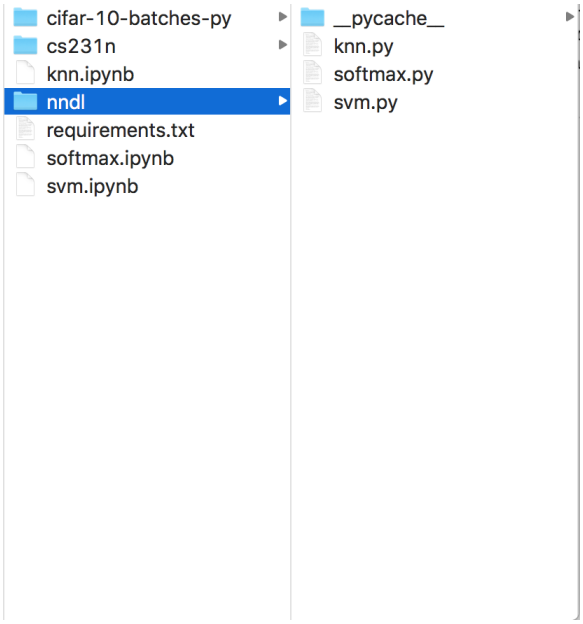
Due Monday, 28 Jan 2019, by 11:59pm to Gradescope.
100 points total.

1. (20 points) **k-nearest neighbors.** Complete the k-nearest neighbors Jupyter notebook. The goal of this workbook is to give you experience with the CIFAR-10 dataset, training and evaluating a simple classifier, and k-fold cross validation. In the Jupyter notebook, we'll be using the CIFAR-10 dataset. Acquire this dataset by running:

```
wget http://www.cs.toronto.edu/~kriz/cifar-10-python.tar.gz
tar -xzvf cifar-10-python.tar.gz
rm cifar-10-python.tar.gz
```

   If you don't have `wget` you can simply go to: `https://www.cs.toronto.edu/~kriz/cifar.html` and download it manually.

   We have attached a screenshot of the paths the files ought to be in, in case helpful (though it should be apparent from the Jupyter notebook).



   Print out the entire workbook and related code sections in knn.py, then submit them as a pdf to gradescope.

2. (40 points) **Support vector machine.** Complete the SVM Jupyter notebook. Print out the entire workbook and related code sections in svm.py, then submit them as a pdf to gradescope.

3. (40 points) **Softmax classifier.** Complete the Softmax Jupyter notebook. Print out the entire workbook and related code sections in softmax.py, then submit them as a pdf to gradescope.