ECE 403 – Pre Lab 4

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*1. How many samples are involved in training? How many samples are involved in testing?*

The training data is comprised of 1600 samples from digit between 0 and 9, this results in a total of 16000 training samples. There are 10000 samples in the testing dataset.

*2. Suppose HOG features do work more effectively than the original data, is there any drawback(s) of using HOG for classification?*

The benefits brought about by using HOG come at the cost of additional complexity. This complexity includes converting the raw input data into their HOGs in the pre-processing stage as well as an overhead in the testing stage where test samples must be converted into their HOGs for the classifier to apply.

*3. We can count separately the CPU time required for training and for testing. Which CPU time is more critical as a performance measure of an ML technique?*

Training a technique is generally not an ongoing process; therefore, once a technique has been trained the CPU training time becomes irrelevant. On the other hand, all future uses of this technique when applied to new data, as simulated by the testing data, will be subject to the same CPU time experienced by the training data. As a result, testing CPU time is more critical as a performance measure of an ML technique.