ECE 403 - PRELAB#1

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Lab reports will be marked based on:

Components	Percentage	Grading guideline
Prelab	10	Must be completed before the beginning of each lab. The prelab will be submitted with the final report and marked **individually**.
Results	60	Will be graded based on corresponding requirements specified in the Lab Manual ECE 403 2019. Must include MATLAB programs and figures, and description of the implementations.
Report clarification	30	Will be graded based on Page ii of the Lab Manual ECE 403 2019. Must also include table of contents, page number, table of figures, and references.

Each lab report has total of 100 points. Ideally students should form a group of **two**. Due to different grating rubrics for the course, undergraduate students will only work with undergraduate students and graduate students likewise. One group will only submit one lab report for each experiment.

Please answer the following five questions to show you have done your pre-lab for Exp1. Each question is worth 2 points.

Ex1 Pre-Lab questions:

1. What's the name of the given training dataset?

For the given training dataset, answer the following questions:

1. What's the value of n_0, n_1, n_2 ...n_j?
2. What's the size of u_j and C_j?
3. Explain in words how to implement calculation of mean vector?
4. For the given principle axis setup, what's the dimension of Uq_j?

1. X1600.mat file based on MNIST.

1. $n_0 = 0$; $n_1 = 1$; $n_2 = 2$; $n_j = j$

2. $u_j \Rightarrow 784 \times 1$; $C_j \Rightarrow 784 \times 784$

3. We take the transpose of a data set X. then we use the function mean(X) in matlab. This will give us the mean for each column. We can then transpose again to return the mean to a column matrix.

4. $U_{qj} \Rightarrow 784 \times 29$