

# **CSC411: Assignment 2**

Due on Sunday, November 12<sup>th</sup>, 2017

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## 1 - Class Conditional Gaussians

1 - Using Bayes rule to derive an expression for  $p(y = kx, \mu, \sigma)$

2 - Expression for the negative likelihood function (NLL)

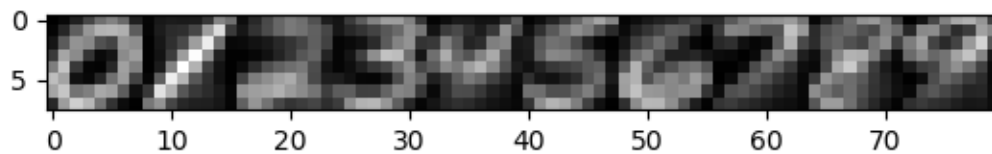
3 - Partial Derivatives of the Likelihood

4 - Find the maximum likelihood estimates for  $\mu$  and  $\sigma$

## 2 - Handwritten Digit Classification

0 - Loading the data and Plotting the Feature Means

The means (from 700 samples per digit) for each feature (64 features in total for an 8-by-8 pixel image) for 10 digits (digit 0 to digit 9) are plotted below:



1 - K-NN Classifier

2 - Conditional Gaussian Classifier Training

3 - Naive Bayes Classifier Training

4 - Model Comparison