CS 789
INTELLIGENT SYSTEMS AND MACHINE LEARNING

SPRING 2018
Assignment #1

Due Date/Time: **02/02/2018 @ 11:59PM**
Total Points: **50**

This is an individual assignment; no teamwork is allowed.

Before you can complete this assignment, you will need to download the Probabilistic Modeling Toolkit for MATLAB/Octave from https://github.com/probml/pmtk3 and install it. Please follow steps 1 & 2 in the readme.txt file. If you are using Octave instead of MATLAB, you will need to run `initPmtk3Octave.m` instead of `initPmtk3.m`.

1) **(20 points)** Run `mnist1NNdemo` and find the **classification accuracy** and **total run-time** on:
   a) the first 1,000 test cases of MNIST
   b) the first 2,000 test cases of MNIST
   c) the first 5,000 test cases of MNIST
   d) the entire 10,000 test cases of MNIST

   Present the results in a table and explain which variables and/or arguments you needed to manipulate to complete this part of the assignment.

2) **(30 points)** Run `mnistKNNdemo` and find the **classification accuracy** and **total run-time** on the first 2,000 test cases of MNIST for:
   a) $K = 3$
   b) $K = 5$
   c) $K = 7$
   d) $K = 10$

   Repeat for training data size of 50,000.

   Present the results in a table and explain which variables and/or arguments you needed to manipulate to complete this part of the assignment.

Submission Instructions:

As you complete the two parts of the assignment, write your results and explanations in a single document and submit it through WebCampus as a **.doc**, **.docx**, or **.pdf** file.

Name the submission file **<YourLastName>_Assignment1**. For example if your last name is Smith and you are submitting a .pdf file, the file should be named Smith_Assignment1.pdf.

IMPORTANT: WebCampus Maintenance Downtimes

The regular WebCampus maintenance period is every Saturday from 12:01am - 6am. This period is reserved for necessary updates and maintenance to the system. Users should not plan on accessing WebCampus during this time. **http://wchelp.unlv.edu/students/home**