# Programming Assignment: Neural Network

## Machine Learning

## Total points: 150

**Note: This assignment is for each individual student to complete on his or her own.**

In this assignment, you will implement neural network by using backpropagation algorithm. To get started, you will need to download the starter code and unzip its contents to the directory where you wish to complete the assignment.

The problem considered in this assignment is to predict whether a person has diabetes or not by using the dataset downloaded from <http://networkrepository.com/pima-indians-diabetes.php>

You are required to use all eight input features (first eight columns) to build a neural network model with **a single hidden layer**.

You are required the complete the following steps:

1. Split the dataset into two, one for training (70%) and another one for testing (30%).
2. Normalize input features so that the mean value of each feature is 0 and the standard deviation is 1.
3. Run backpropagation to learn the neural network model using the training data
4. Evaluate the performance of the model on the testing data

To get started, first open the main script assignmentNN.m. You are required to modify this script as well as the following six scripts:

* loadData.m – Function to load and split the dataset into training and testing sets
* featureNormalize.m – Function to normalize features
* trainNN.m – Function to run neural network model
* evaluateAccuracy.m – Function to evaluate the performance of the neural network model
* predict.m – Function to predict the output
* sigmoid.m – Function to compute sigmoid

You can download Matlab by following the instructions provided in this link: <https://library.sdsu.edu/computers-technology/software/matlab>

**Your submission should be a zip file that includes all codes.**