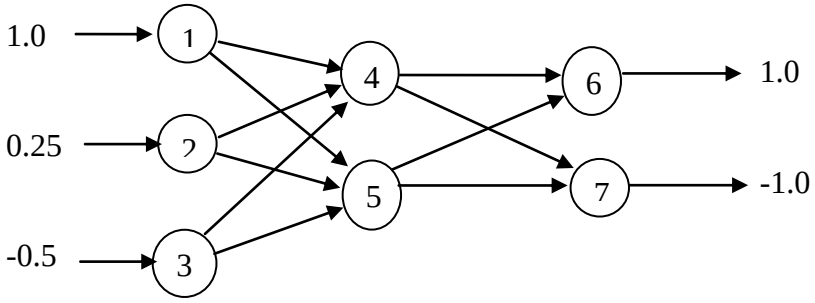
PESIT Department of Computer Science and Engineering

Course: Data Mining
Semester: 2016 Spring (January – May)
Instructor: BNR (Dr. B. Narsing Rao)

Assignment: 08
Topic: Classification – Neural Networks
Due by: Midnight on Tuesday, March 8, 2016
Method: Send program and output by email using standard naming conventions.
Send two separate zip files named
DM-A08A-USN-Name and DM-A08B-USN-Name

Part A

Write a program using any language of your choice to train the following neural network (using a single training tuple and the outputs shown):



Choose all initial weights and biases randomly in the range of (-1.0, 1.0). Indicate clearly what termination criterion has been used.

The program should print the following:

- Initial value of weights and biases
- Number of iterations
- Termination criterion
- Final values of all weights and biases
- Final values of all outputs from the network

Optional: A graph showing the change of error sum of squares as the iterations progress.

Submit the following using standard naming conventions:

- Program source
- Program output (in a text file)

Part B

Use the Weka GUI to train a neural network (using 10 fold cross-validation) to predict whether a person will have diabetes (use the data set **diabetes.arff**).

For this purpose:

- Choose “MultilayerPerceptron” under “functions”
- GUI = “true” will help you visualize the network

Answers to the following questions:

- How many nodes were used in the intermediate layer and why?
- What was the terminating criterion?
- What learning rate was used?

Submit the following

- Result buffer with accuracy and confusion matrix (text file)
- A graphical depiction of the Neural Network accepted (showing the weights for each connection and the thresholds for each node)
- Answers to the above questions (PDF file)