ECE 456/556 –Pattern Recognition
Spring 2022
Homework #5
Thursday, 10 March 2022

Neural Networks - Startup

There are two aspects about Neural Networks you will need to code for Project 3: the feed forward part and the Backpropagation Gradient Descent training part. For this assignment you will code and test the feed forward part of a network.

Structure your network to have 8 inputs, 4 hidden nodes, 10 outputs, and use $f(x_i) = 1/(1+e^{-2x_i})$ as the activation function.

To test that your code works properly, text files will be posted with values for the w_{ji} and w_{kj} weight values. You will have to read these in, assign them to variables and use them in your network. You will use the feature values for the first and second "a" in train_dat with RMS normalization. I will post the expected results for a1. You need to submit documented code and values you got for a2 and z10.

I encourage you to write your code modularly, and to write it to allow a variable number of hidden nodes and alternate activation functions. Some other variations will be asked for in Project 3. You will use the output calculated, plus the values of net_j and net_k when you write your code to train the network.