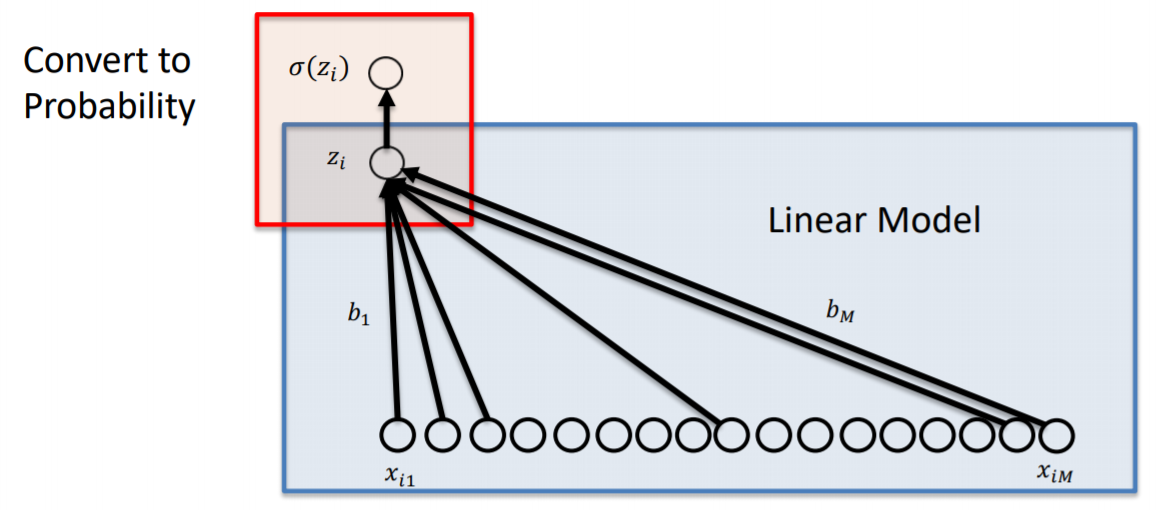
Deep Learning – Assignment 1

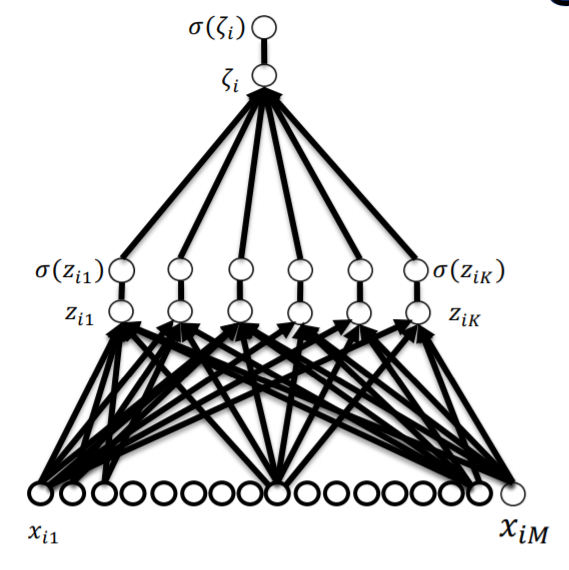
Aaron Williams

**Problem 1:**

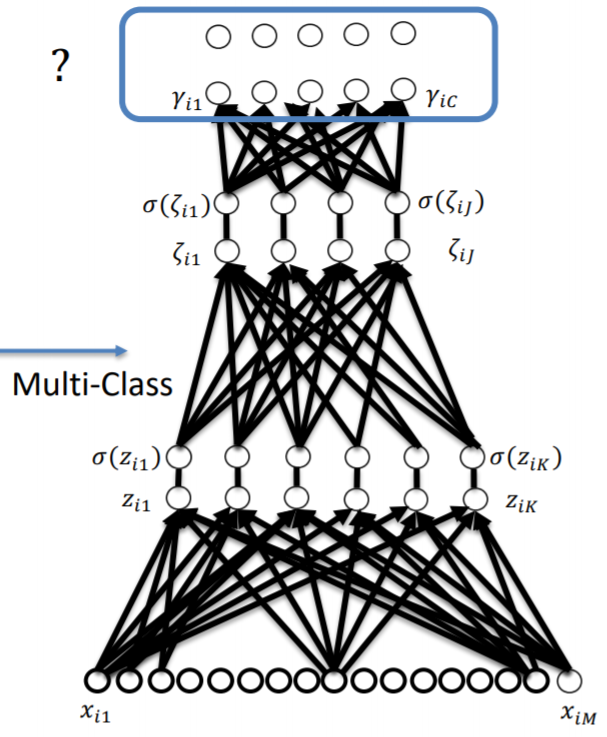
a)



b)

****

c)



Considering we have some set of results from a multi-class system such that is a vector

of the single layer and of the double layer would be replaced by the above backpropagation term. Additionally, each weighting term (such as ‘a’ or ‘b’) would become a matrix with an additional dimension of length. Here is the single layer problem with multi-class.

And for network with another layer,

**Problem 5:**

a)

I have not yet run code on the cluster, but it will be my next priority on submission of this assignment. I may also try and use my own GPU, but it might be outdated depending on the computation power required.

b)

Problem 1: 3 hours

Problem 2: 4 hours

Problem 3: 4 hours (stuck 2.5 hours because I didn’t see I had to randomize my layer values :/)

Problem 4: 25 minutes

Problem 5: 5 minutes

Total: 11 hours and 30 minutes

c)

I adhered to the Duke Community Standard in the completion of this assignment.