

COMS 4030A

Adaptive Computation and Machine Learning

LAB EXERCISE 2

(1) Code up an algorithm that computes the feedforward step of a neural network.

The neural network must have an input layer, a single hidden layer and an output layer.

(You can add more hidden layers if you feel like it, but at least one is needed.)

You will need to declare two weight matrices and two lists of bias values, and choose an activation function for the hidden layer and output layer.

The entries in the weight matrices and bias lists can be randomly chosen.

Once the weight matrices and bias values of the neural network have been declared, your code should take as input a list of values (of length equal to the number of input nodes) and compute the output values.

To test your code, you can use the examples and exercises in Lecture 2 notes.

(You don't need to submit anything for this lab exercise, but in the next lab you will be asked to implement a neural network training algorithm for which you will need this code. It will also form part of the assignment you have to submit.)

(2) Please source the Iris DataSet from the UCI Machine Learning Repository.

Create code to load this dataset into an input array X and a target array T .

Then change the target dataset to a one-hot encoding.

(We will use this dataset as a test set for the neural network training algorithm.)