Types of Script

There are three types of script, distinguished by having a mode value of *standard*, *train* or *test*.

Standard Scripts
An input file with mode *standard* is called a *standard script*. It is used to train a neural net by repeatedly adjusting the weights (including the bias weights) with the aim of making the calculated values of the output nodes as close as possible to the values given in the specified dataset (line 2).

Running a standard script also creates a new standard script identical to the original except that the initial values of the weights (including bias weights) are replaced by their final values. The name of the new script is formed by taking the first component of the name of the original script and appending to it '.epoch', followed by the number of epochs, followed by '.txt'. For example, a standard script with the name *example.txt*, run for 100 epochs, will generate another standard script with the name *example.epoch100.txt*.

Training and Test Scripts
An input file with mode *train* or *test* is called a *training script* or a *test script*, respectively.

Training Scripts
When a training script is run the neural net takes the specified initial weights (including bias weights) and repeatedly updates them.

Running a training script also creates a test script, which is useful if the neural net is being used for a classification task where class values are encoded using 'one hot encoding'. As an example of this encoding, if there are three classifications 1, 2 and 3, there will be three output nodes with the classification encoded in each instance as:
1,0,0 representing class 1 or
0,0,1 representing class 2 or
0,0,1 representing class 3

The test script is identical to the training script with the following exceptions:

(1) The value of mode (line 1) is test not train.
(2) The name of the datafile (line 2) is changed so that the file extension becomes tst.
(3) The initial values of the weights (including bias weights) are replaced by their final values.

The name of the test script is formed by taking the first component of the name of the training script and appending to it '.test', followed by the number of epochs, followed by '.txt'. For example, a training script with the name *example.txt*, run for 100 epochs, will generate a test script with the name *example.test100.txt*.

Test Scripts
A test script is run in 'feed-forward mode' only with no backpropagation and for only one epoch. Each instance in the test set is therefore processed once only, to calculate a value for each output node.

If the neural net is being used for a classification task where class values are encoded using 'one hot encoding', the predicted classification for each test instance is calculated. If there are three output nodes, they will have values such as: 0.3, 0.25, 0.4. The largest of these values is found and used to determine the predicted classification, in this case, class 3. The predicted classification is then compared with the actual classification held in the test set, converted from the one hot encoding back to the original classification (1, 2 or 3), and a confusion matrix is updated.