TDT4171- Assignment 5

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Implementation

In the 'Backprop_skeleton.py' file the three functions: 'computeOutputDelta()', 'computeHiddenDelta()' and 'updateWeights()' had to be implemented with the expressions 1 through 6 in the exercise text. Also, the functions 'train()' and 'countMisorderedPairs()' had to be implemented as described in the comments in the code.

In the 'dataLoaderSkeleton.py' file training and test pattern pairs had to be made in the 'runRanker()' function as described in the comments. Also logic to train, test, run and plot the code had to be implemented.

Results

Figure 1 shows the accuracy of the ANN averaged over the 5 runs. We can see from the figure that the accuracy increases for both the test and the training sets as we train the ANN. This is what we would expect if implemented right. The accuracy exceeded 75% for the training data. If we were to run for more epochs we would expect the accuracy to approach some asymptotic limit.

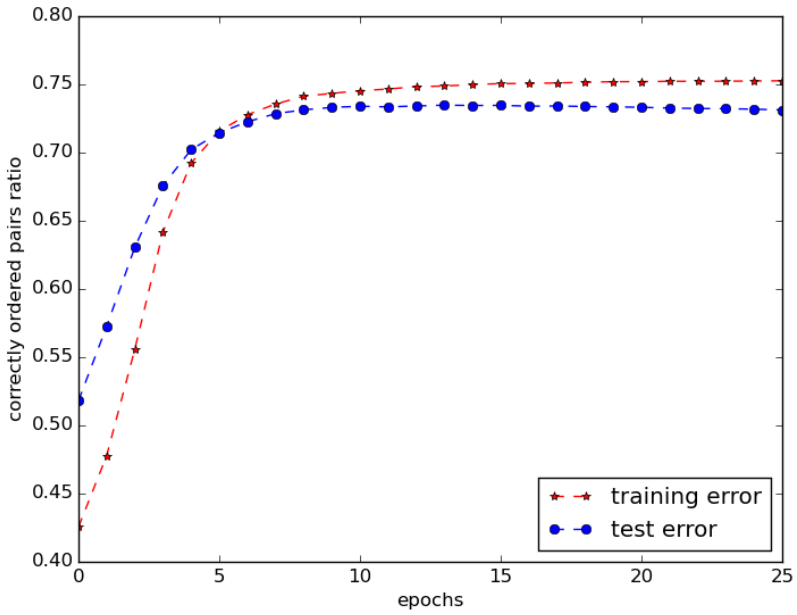

Figure 1: Average accuracy after 5 runs for the training and test sets

Difficulties

Problems with implementation of rankNet algorithm:

- Hard to figure out what variable corresponded to what in the code.
- Inconsistent notation. When two scalars a and b are multiplied. ab and $a \times b$ are both used. see expression (5) and (6) in the exercise text.
- Ambiguity in updating of the weights.