Thread synchronization

All neurons expose a number of lists: incoming links, outgoing links and a list of clusters they belong to. NeuronClusters themselves also have a list of children. Because a neural network is massively multi threaded, access to these lists must be thread-safe.

To accomplish this, all access to the lists is done through a ‘Transaction’ object, which must be retrieved from the neuron. This transaction object will lock the list for as long as it is alive. By default, this is in read mode, meaning multiple read objects are allowed at the same time. Some transaction objects can also be put in write mode, which blocks all other threads for as long as the transaction is in this mode.

Typically, a transaction object is retrieved inside a ‘using’ statement. This takes care of destroying the object as soon as possible.