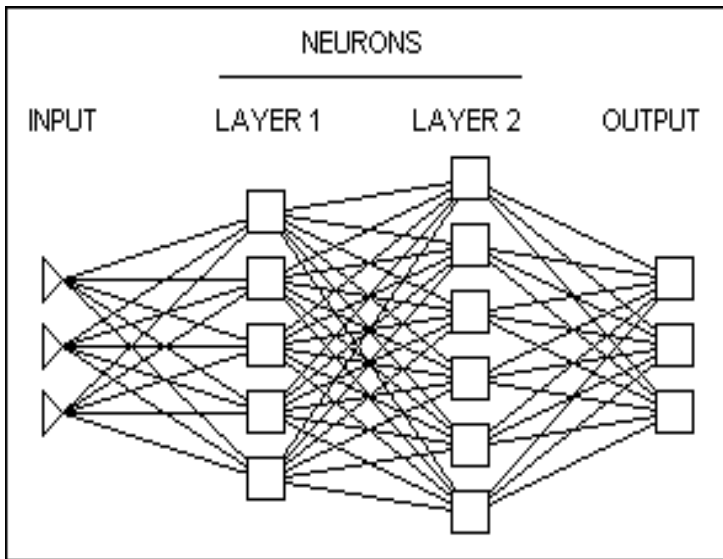


Dialog Processing with Neural Networks

Andrew Richardson

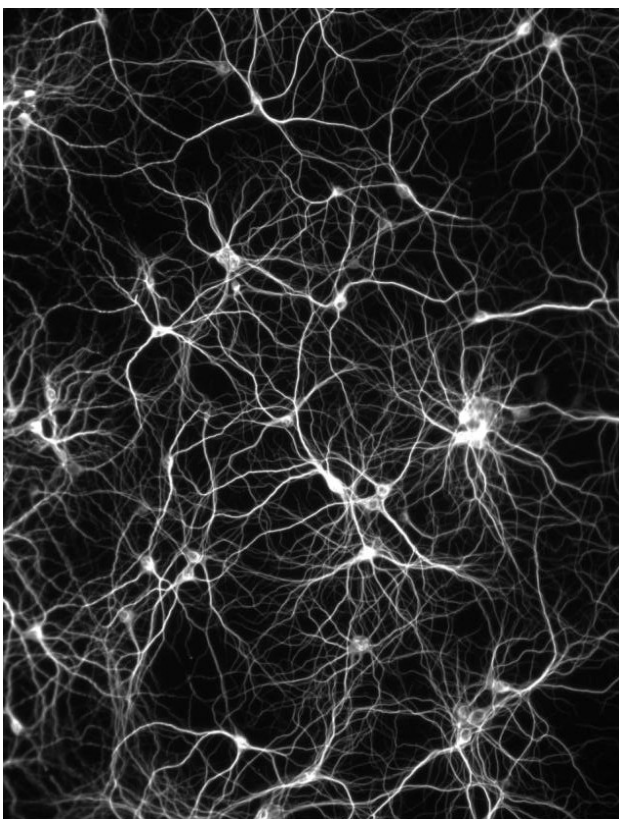
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Thomas Jefferson Computer Systems Laboratory



Outside of research, the neural networks used today are supervised, such that output for an input is matched against the right answer, and connections that produce the right answer are reinforced. The idea is that connections which have been right in the past will be right in the future.

However, I think that unsupervised neural networks have more promise for complex tasks. This is more analogous to the neurons within the brain. Instead of affecting the network in a series of supervised tests, the network is systematically modified as a series of inputs, such as words, are read in. In an attempt to mimic the brain, my network reinforces connections between nodes that often fire one after the other. In this case, each word is represented by a node.



However, it's not as simple as that. If the brain only noted connections between words, it wouldn't note connections to emotions or abstract ideas. In order to mimic these attributes of the brain, the ones that really think, nodes are added to the network that do not represent words. These take on meaning as they build connections to words and to each other. In time, they may let the network form complex ideas represented by nodes that have been influenced by the input text.