

1 Multi-Layer Perceptron

So far, we have seen that a perceptron can be understood as anything that takes multiple inputs and produces one output. For example, the figure 1 depicts a single layer perceptron consisting of layer of three input nodes i.e X_1 , X_2 and X_3 and a layer of output node Y .

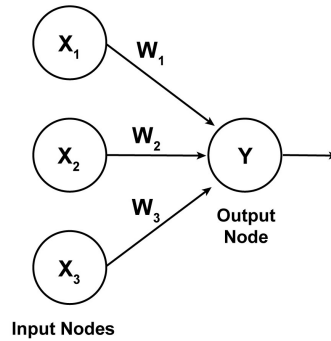


Figure 1

Single-layer perceptron can only learn linear functions. For non linear functions, multi-layer perceptron utilizes a nonlinear activation function (mainly hyperbolic tangent or logistic function) that lets it classify data that is not linearly separable. Every node in a layer connects to each node in the following layer making the network fully connected.

Multi-Layer Perceptron consists of multiple layers called layers of hidden nodes stacked in between the layer of input nodes and the layer of output nodes as shown below.

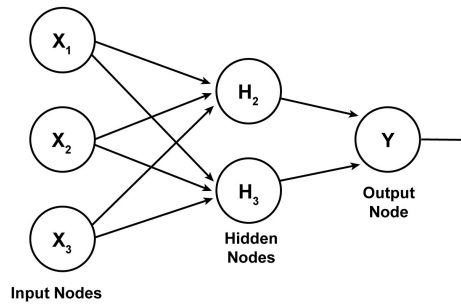


Figure 2

The figure on previous page shows just a single layer of hidden nodes but in practice can contain multiple output nodes and multiple hidden layers which is depicted in the below figure.

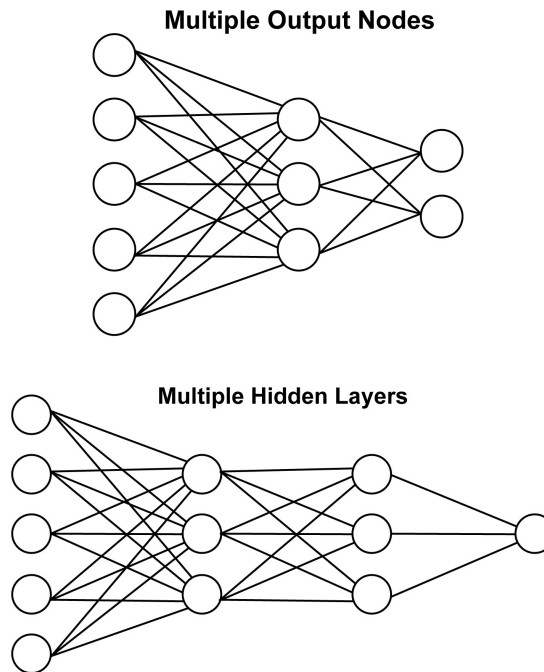


Figure 3

References:

For more details on MLP,
https://en.wikipedia.org/wiki/Multilayer_perceptron