Summary:

In *Learning representations by back-propagating errors*, the authors propose back-propagation procedure in neural networks which minimizes the total error by adjusting the weights of the connections in the network. Before back propagation, the neural networks such as perceptron does not have a true hidden layer because their states are completely determined by the input. Therefore, they will not be able to learn hidden important features of the task at hand. Back-propagation differs from earlier simpler neural network procedures in that it has true hidden units which can capture some useful features because of synaptic modification.