

[Home](#) > [SPSS Modeler 15.0.0](#) > ... > [Neural Networks](#) >[Previous](#) [Next](#)

The Neural Networks Model

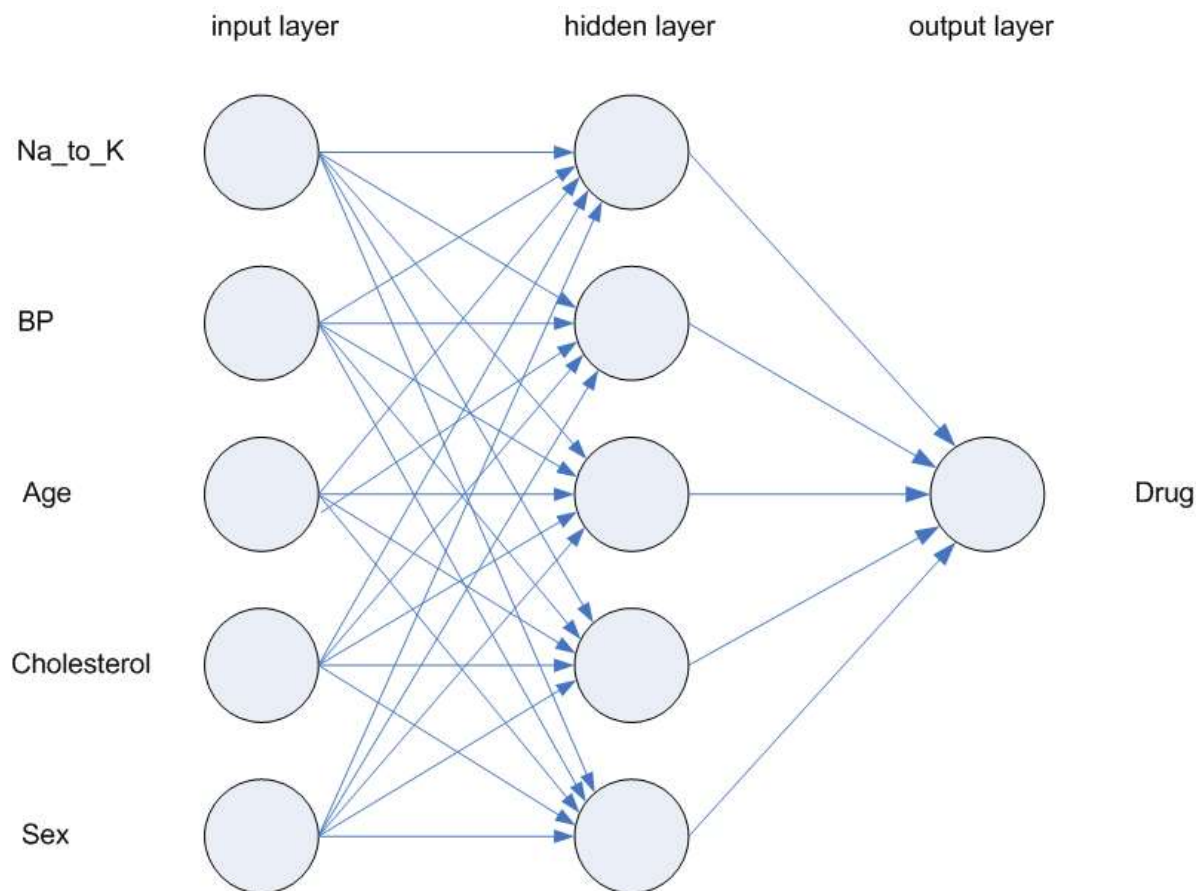
[Table of contents](#) [Change version](#) ▾

Search in this product...



Neural networks are simple models of the way the nervous system operates. The basic units are **neurons**, which are typically organized into **layers**, as shown in the following figure.

Structure of a neural network



A **neural network** is a simplified model of the way the human brain processes information. It works by simulating a large number of interconnected processing units that resemble abstract versions of neurons.

The processing units are arranged in layers. There are typically three parts in a neural network: an **input layer**, with units representing the input fields; one or more **hidden layers**; and an **output layer**, with a unit or units representing the target field(s). The units are connected with varying connection strengths (or **weights**). Input data are presented to the first layer, and values are propagated from each neuron to every neuron in the next layer. Eventually, a result is delivered from the output layer.

The network learns by examining individual records, generating a prediction for each record, and making adjustments to the weights whenever it makes an incorrect prediction. This process is repeated many times, and the network continues to improve its predictions until one or more of the stopping criteria have been met.

Initially, all weights are random, and the answers that come out of the net are probably nonsensical. The network learns through **training**. Examples for which the output is known are repeatedly presented to the network, and the answers it gives are compared to the known outcomes. Information from this comparison is passed back through the network, gradually changing the weights. As training progresses, the network becomes increasingly accurate in replicating the known outcomes. Once trained, the network can be applied to future cases where the outcome is unknown.

© Copyright IBM Corporation 1994, 2012.

Please note that DISQUS operates this forum. When you sign in to comment, IBM will provide your email, first name and last name to DISQUS. That information, along with your comments, will be governed by [DISQUS' privacy policy](#). By commenting, you are accepting the [DISQUS terms of service](#).




Sign In

0 Comments IBM Knowledge Center

 Recommend  Share

Sort by Best ▾

Nothing in this discussion yet.

 Subscribe  Add Disqus to your siteAdd DisqusAdd  Privacy

More topics

[The Neural Networks Model](#)[Using Neural Networks with Legacy Streams](#)[Objectives \(neural networks\)](#)[Basics \(neural networks\)](#)[Stopping Rules \(neural networks\)](#)[Ensembles \(neural networks\)](#)[Advanced \(neural networks\)](#)[Model Options \(neural networks\)](#)[Model Summary \(neural networks\)](#)[Predictor Importance \(neural networks\)](#)[Predicted By Observed \(neural networks\)](#)[Print this topic](#)[Help](#)[Select a product](#)[Contact](#) [Privacy](#) [Terms of use](#) [Accessibility](#) [Feedback](#)

English

