NeuroShell Trader

NeuroShell Trader provides a tool with which to build a complete trading model generating trading signals.

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Internet: http://www.neuroshell.com
Product: Neural nets for financial predictions
Equipment requirements: 100 MHz Pentium processor or faster, Windows 95, 98 or NT, CD-ROM, 20 MB on hard drive plus datafiles, 16 MB (32 MB recommended) RAM. Data in ASCII, MetaStock, CSI, AIQ, and Omega Research Downloader format.
Price: $795

by John Sweeney

Neural nets, like artificial intelligence and chaos theory, were once *the* hot topic among traders. As the usual frustrations with a new technique took hold, hype died down and vendors consolidated. Of the remaining few, Ward Systems is among the most dedicated of neural net vendors, developer Steve Ward being an enthusiast, to say the least.

Ward noted that 40-50% of his neural network customers were traders and resolved to offer them a complete package — one with easy data access, charting, indicators, and no neural net confusion. The goal was for them to turn it on and run it without being aware that it was a neural net at all.

NeuroShell Trader doesn't quite achieve that, but it gets close. The program focuses on trading research: predicting prices, developing trading signals, finding trends by testing and building complex indicators. NeuroShell Trader can do walk-forward testing, graph its indicators and predictions along with prices and export them to other programs, principally that of Omega Research and Equis.

To be clear, though, NeuroShell Trader doesn't provide you with a complete trading model generating trading signals. It does, however, provide the tool with which to build such a model, which means you are responsible for the results.

ANALYTICS

Traders usually aren't analysts, but an analyst's mindset is handy when dealing with a neural net. A neural net models its rules based on relationships between outputs (results) and inputs. It promises, through its algorithms, to discover the most reliable relationships without your having to think about them or even, eventually, knowing what they are. You are entitled to take this for what it's worth, and in NeuroShell Trader, that's the way it is.

The favored output is the closing price of the Standard & Poor's 500 index for tomorrow or a week, month or year from now. The input is usually the entire series of S&P's past prices. Ambitiously, it is a set of data including econometric times series such as interest rates and industrial production, as well as market statistics such as the advance-decline line and trading indicators. There's really no limit to how much you can ask the computer to consider.

When neural nets were first introduced to the public, you were responsible for getting the data out of your analytical program, into a spreadsheet for preprocessing and computation (of, say, a trading indicator), and then out of the spreadsheet and into the neural net's
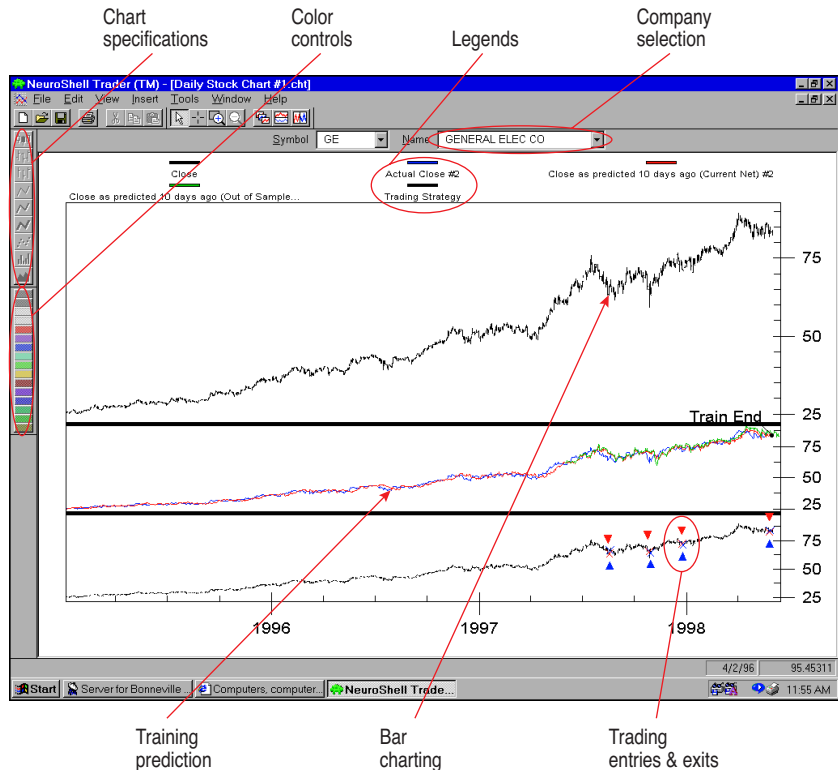

FIGURE 1: TRADING SIGNALS. A trading system developed by NeuroShell Trader oscillates in a trading range just like a trending system. NeuroShell Trader builds trading indicators and trading systems on its own.

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computational engine. You also commonly specified the type of neural net to construct and how many layers it was composed of. This engendered lots of work and, often, confusion.

NeuroShell Trader beats all this. It

> **NeuroShell Trader is top-flight for ease of use, ease of learning and its provision of the trader's tools and techniques.**

scans your drives for data it can read and then accesses whatever you specify. Its wizard† helps you pick out what you want to predict (for example, the price 10 days from now) and the inputs to use. It automatically runs the analysis and lets you plot actual vs. predicted next to the price chart. The wizard helps you construct a trading strategy based on the prices and indicators (including the neural net prediction you just completed) that you specify and summarizes the trading historical trading results. For visual inspection, it puts the trades on your chart as well (Figure 1). As you go along, context-sensitive instructions can be automatically displayed in a window, giving you guidance and ideas concurrently.

The results of this facility are twofold: quickly learning the program and quick results. I'd guess that just about anyone with data on his or her hard drive would have the first prediction half an hour after installation, especially if they followed the tutorials included with the program.

USAGE
NeuroShell Trader comes with a security feature for your printer port and data from 1985 on, on stocks, indices, Canadian stocks, exchange rates, 35 cash data series and 151 futures continuous series, industry groups, 1,183 market funds, and 8,571 mutual funds (and counting). It even has a built-in data downloader that automatically handles splits in data it inspects. A wizard helps you pick the one to use and the

tutorials give examples of picking, say, the continuous contract over the individual contracts.

The data is loaded as a chart (point, bar or candlestick) and the charting allows a few of the usual sort of things: zooming, unzooming, reading out data values, arranging the windows of several charts. Other data series can be added to the chart; for instance, an economic series or an index. Later, you can use them as inputs to your prediction.

Using trading indicators in neural net predictions is a boon. Here, all you have to do is choose Insert Indicator and you then have the problem of choosing from everything in the 38 categories you can see here, many of which have multiple subselections. Take a moment to appreciate this list:

- Basic, such as lead, lag, max, min, range, sum, multiply, and cumulatives
- Simple and exponential moving averages
- Linear and volume-weighted moving averages
- Change (16 varieties of momentum)
- Regression (12 kinds)
- Statistical (standard deviation, variance and Z-score)
- Bollinger bands, spreads and relative strength
- MACD, CCI, DMI, RSI, stochastics, accumulation/distribution, %R — and smoothed versions of each via volume or averaging
- Range and midpoint — differences and averages
- Classic volume indicators such as Arms ease of movement, negative volume index, OBI, PVI, volume accumulation, and volume life force.

Parameters can be modified and the Help function explains each.

Once you've loaded the pricing plus the related time series and indicators you want to study on your display, generate a neural net and its associated prediction by selecting Insert Prediction. Defaults are available for most

everything, but you can tweak the walk-forward testing specifications. Neuro-Shell Trader creates the net, then creates the prediction and plots it right on the chart for you. The average error for the training and evaluation data sets is the only statistical reporting, but the relative importance of each input is reported to assist in weeding out extraneous information.

Immediately go from prediction to trading strategy by selecting Insert Trading Strategy. Here, a wizard steps you through long/short, entry/exit specifications. You can still use market orders, stops, limits and market-on-close orders as well as specify up to six conditions for action. The rules can be Boolean, relational, chart patterns, some candlestick patterns, crossovers, or breakouts, and most things can be specified. Chartists will love the automatic identification of such things as hook reversals, inside days, islands and head-and-shoulders.

Power users wanting system optimization and genetic algorithms won't find them here, but most users were combining NeuroShell Trader with other packages, particularly TradeStation. Although I did not have time to test it, analytical results from NeuroShell Trader can be sent back to TradeStation, where they appear as indicators.

SUMMARY
NeuroShell Trader is top-flight for ease of use, ease of learning and its provision of the trader's tools and techniques. The tutorials and Help are first rate! Add, however, the inevitable tendency of historical results to differ from future results. True traders, finally, must live with a black-box system.

John Sweeney is Technical Editor of STOCKS & COMMODITIES.

†See Trader's Glossary for definition   **S&C**