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'inancial Forecasting

Neural Networks for Financial Forecasting

Edward Gately

Series Editor: Perry J. Kaufman

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The Trader's Advantage Series Preface

The Trader's Advantage Series is a new concept in publishing for traders and analysts of futures, options, equity, and generally all world economic markets. Books in the series present single ideas with only that background information needed to understand the content. No long introductions, no definitions of the futures contract, clearing house, and order entry. Focused.

The futures and options industry is no longer in its infancy. From its role as an agricultural vehicle it has become the alterego of the most active world markets. The use of EFPs (exchange for physicals) in currency markets makes the selection of physical or futures markets transparent, in the same way the futures markets evolved into the official pricing vehicle for world grain. With a single telephone call, a trader or investment manager can hedge a stock portfolio, set a crossrate, perform a swap, or buy the protection of an inflation index. The classic regimes can no longer be clearly separated.

And this is just the beginning. Automated exchanges are penetrating traditional open outcry markets. Even now, from the time the transaction is completed in the pit, everything else is electronic. "Program trading" is the automated response to the analysis of a computerized ticker tape, and it is just the tip of the inevitable evolutionary

process. Soon the executions will be computerized and then we won't be able to call anyone to complain about a fill. Perhaps we won't even have to place an order to get a fill.

Market literature has also evolved. Many of the books written on trading are introductory. Even those intended for more advanced audiences often include a review of contract specifications and market mechanics. There are very few books specifically targeted for the experienced and professional traders and analysts. *The Trader's Advantage Series* changes all that.

This series presents contributions by established professionals and exceptional research analysts. The authors' highly specialized talents have been applied primarily to futures, cash, and equity markets but are often generally applicable to price forecasting. Topics in the series will include trading systems and individual techniques, but all are a necessary part of the development process that is intrinsic to improving price forecasting and trading.

These works are creative, often state-of-the-art. They offer new techniques, in-depth analysis of current trading methods, or innovative and enlightening ways of looking at still unsolved problems. The ideas are explained in a clear, straightforward manner with frequent examples and illustrations. Because they do not contain unnecessary background material they are short and to the point. They require careful reading, study, and consideration. In exchange, they contribute knowledge to help build an unparalleled understanding of all areas of market analysis and forecasting.

NEURAL NETWORKS FOR FINANCIAL FORECASTING

This book will teach you how to use neural networks to create financial trading strategies. It is a clear, step-by-step approach to neural network applications—the only one I have seen so far. Ed Gately has done us all a great service by sharing his own experiences using the most important and powerful analytic tool to arrive in the past fifteen years (which is a long time considering the advances in computer technology).

Neural nets are an incredibly flexible tool. This technique enhances your ability to integrate fundamental and technical data. It is rapidly replacing traditional econometrics methods while its resources still remain mostly untapped. It can uncover cause-and-effect

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It is especially interesting that this method does not need continuous relationships between the data that is being evaluated in order to identify key events or patterns. Traditional analysis, for example, requires that the tradeoffs between supply and demand, economic growth, and interest rates, always be treated with the same importance over the long term. They must conform to a rigid formula. Neural nets are much more adaptable and can come closer to reality by applying one set of interactive data now, and a completely different group when circumstances change.

But this tremendous power holds as much danger as it does potential. Patterns can be found where none exist. The ability to compare interrelationships during isolated time intervals allows the program to find many coincidental patterns, having nothing to do with the problem. It is necessary for the user to control this process. You must limit the inputs to those that make sense, avoid duplication, and verify that the solution works. It is not the tool that fails, it is the one who uses it.

Ed Gately follows one primary example throughout the book. He goes, step-by-step through input selection, network specification, evaluation of results, and how to decide when you are done. It is important that the beginning be learned properly; it will prevent future problems. I hope you enjoy this book and find it as valuable as I have.

PERRY KAUFMAN

Wells River, Vermont

PREFACE

The rapid creation of new neural network architectures and training algorithms combined with the rapid increase in power of personal computers has lead to the development of much more robust neural networks for financial forecasting.

Many of the neural software packages that are sold today end up on a shelf somewhere because the promised results are not delivered. This book will help those new to using neural networks reach the results he or she is seeking.

My conversations at seminars have indicated that beginners often fall into the classic traps of not maintaining data integrity and using data that is nontypical, such as including market action data accumulated during the Persian Gulf War. These common mistakes are not covered in any other neural text with which I am acquainted.

Most neural network books can be classified as either academic or introductory. The beginning texts do not address the matters of classic errors or the need for testing of inputs, architectures, and training algorithms; the academic texts address these concerns, but tend to be top heavy on mathematics. It is my intention to provide a book that bridges the gap between these two approaches.

ED GATELY

Mahwah, New Jersey

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