# NEURAL NETWORKS IN FINANCE AND INVESTING

## Using Artificial Intelligence to Improve Real-World Performance

EDITORS

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# DEDICATION

To my wife and best friend, Cecilia.

*Robert R. Trippi*

To my daughters, Daphne and Sharon.

*Efraim Turban*

# PREFACE

Financial services firms are becoming more and more dependent on advanced computer technologies to establish and maintain competitiveness in a global economy. Neural networks represent an exciting new technology with a wide scope of potential financial applications, ranging from routine credit assessment operations to the driving of large-scale portfolio management strategies. Some of these applications have already resulted in dramatic increases in productivity. This book brings together from diverse sources a collection of survey and research articles that focus on the use of neural network technology to improve financial decision making.

Many of the first neural network researchers were initially inspired by the similarity of neural network architectures and learning paradigms with those of the brain. Although most early attempts to apply neural networks to financial decision making were naive, clumsy, and generally unsuccessful, recent innovations in the technology and improvements in our understanding of the strengths and weaknesses of neural networks vis-à-vis other forms of machine learning and human decision- making processes are now resulting in commercially successful systems. Early neural network research was typically highly product-oriented; today most researchers and system implementors take a much more hardware and software-independent view of neural network-based decision support systems than was formerly the case. In

addition, several of the applications discussed here are integrated with expert system technology.

Neural networks are especially suited for simulating intelligence in pattern recognition, association, and classification activities. These problems arise frequently in such areas as credit assessment, security investment, and financial forecasting. It is worth noting that, after the Department of Defense in 1989 embarked on a five-year, multimillion dollar program for neural network research, financial organizations have been the second largest sponsors of research in neural network applications.

It is our hope that a collection of articles such as this — dealing exclusively with investment, risk assessment, forecasting, and other financial applications — will prove to be a useful addition to the libraries of financial analysts, information system professionals interested in or already working on such applications, and managers with financial decision-making responsibilities who wish to keep abreast of new developments in the field.

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# SOURCES AND ACKNOWLEDGMENTS

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