CURRICULUM VITAE - Apostolos-Paul N. REFENES

Apostolos-Paul Refenes (Bsc Mathematics & Computing 1984, PhD Computing 1987) is Professor of Financial Engineering and Director of the Financial Engineering Research Centre at Athens University of Business & Economics. He has held previous academic appointments at London Business School (Associate Professor), University College London (Senior Research Fellow), and the University of Athens (Visiting Professor), and various professional appointments including the Hellenic Accounting & Auditing Standards Oversight Board (Executive Chairman), OPAP International Ltd (Chief Executive), OPAP S. A. (Board member, Non-executive Director), Hellenic Competition Commission (Member), UK Cabinet Office (Member Technology Foresight Panel on financial services), and the DTI (Scientific Advisor). He has consulted for many financial institutions including Morgan-Stanley, CitiBank, Barclays, Dresdner, BNP, Societe General, Smith New Court, Golden Cross, KGAL, Bank of Greece, OTEestate, etc. and other organisations including the European Commission.

Author of over 100 papers and editor of six books on the subjects of neural computing and financial engineering applications. Recipient of research awards in excess of $15m from several public and private funds. Associate editor of the Intelligent Systems in Accounting and Finance Journal, International Journal of Computational Intelligence and Organisations, guest editor of the Journal of Forecasting, series editor Studies in Computational Finance, and a serving member of the editorial board of the Neural Computing & Applications Journal. Programme committee member in several International conferences including World Congress on Neural Networks, International Conference on Artificial Neural Networks, International Conference on Neural Information Processing Systems, Euromicro, the IEE annual conference on ANNS, and ICANN. Founded the international conference on Neural Networks in the Capital Markets (NnCM) and served as general chair for NnCM-93 and NnCM-95, Computational Finance 1997, International Chair for the Joint IEEE/IAFE conference on Computational Intelligence in Financial Engineering (CIFEr). Invited speaker at many international symposia.

Teaching interests include non-parametric statistics, neural networks, financial econometrics, financial mathematics, and computational finance. His classes include MBA, Masters in Finance and PhD students at London Business School as well as MSc and BSc in Management Science at Athens University of Economics & Business and University College London. Short executive courses in financial econometrics, advanced quantitative methods, advanced data analysis and forecasting have been developed over the years. Invited to give university lectures and short executive courses in over 20 countries in Europe, Asia, Australia, North and South America.

Research on Financial Engineering, Computational Finance and Neural Networks has been supported by the ESRC, the DTI, ESPRIT, VALUE, and privately by several companies in the finance sector. Work on neural network design methodology, model identification, and estimation procedures is cited regularly for a number of years. Applied work has also included tactical asset allocation, factor models for equity investment, dynamic risk management, nonlinear cointegration, exchange risk management, etc. Research papers have appeared in such journals as IEEE Trans on Neural Networks, Neural Networks, Neural Computing & Applications, Neurocomputing, Risk, Defense Economics, Journal of Forecasting, Int. Journal of Forecastiing, Journal of Int. Financial Markets, etc. Topical work has been reported in Scientific American, The New Scientist, Nature, Risk, IEEE spectrum, and the press The Financial Times, The Times, The Independent, The Guardian, The Daily Telegraph, and others. Listed in “who is who in the world”.

PERSONAL DETAILS

NAME	Apostolos-Paul N. Refenes
ADDRESS	Evelpidon 47a, Athens
TELEPHONE	(++30) 210 82 03 660

CURRENT POSITION

Professor of Financial Engineering, Athens University of Economics & Business (AUEB)
Director, Financial Engineering Research Unit, AUEB.

EDUCATION

PhD in Computer Science (1987).
BSc (Hons) in Mathematics and Computing (1984).

POSITIONS HELD:

RESEARCH

(1995 - 2000)	Associate Professor in Decision Science, London Business School
(1996 - 2000)	Director, Computational Finance Programme, London Business School
(1994 - 1996)	Director, NeuroForecasting Club, London Business School
(1989 - 1993)	Senior Research Fellow, University College London
(1987 - 1989)	Research Associate, University College London
(1994 - 1996)	Visiting Professor, University of Athens
(1994 - 1995)	Visiting Senior Research Fellow, London Business School
(1990 - 1992)	Visiting Science Advisor, Department of Trade & Industry

ADMINISTRATIVE

(2003 - 2005)	Chair, Student Club, AUEB
(2001 - 2003)	Deputy Chair, Departmet of Management Science, AUEB
(1990 - 1991)	Chair, CEC Advanced Informatics in Medicine Working Group
(1990 - 1991)	Chair, DTI Mission to Assess Japanese FGCS Programme
(1989 - 1990)	Member, ESPRIT experts group for the Parallel Computing Action

PROFESSIONAL

(2004 - 2009)	Chief Executive, OPAP International Ltd.
(2004 - 2008)	Board Member, Hellenic Competition Commission
(2004 - 2004)	Board Member, OPAP S.A., Non-Executive Director,
(1993 - 1999)	Chairman, Hughes Financial Analtytics Ltd
(1996 - 2000)	Panel Member, Cabinet Office(UK), OST; Financial Services ForeSight

EDITORIAL

Assoc. Editor	Intelligent Systems in Accounting & Finance, Wileys, (1998 - 2000)
Assoc. Editor	Int. Journal of Computational Intelligence & Organisations, IJCIO (95- 00)
Guest Editor	Journal of Forecasting, Special Issue, co-edited H.White, Vol. 17(1998)
Editorial Board	Neural Computing & Applications Journal, Springer Verlag, (1991 -)
Editorial Board	Knowledge Based Intelligent Engineering Systems (2001 -)
Editor	Neural Networks in the Capital Markets, Wiley & Sons, Book (1995)
Editor	Proc. First Int. Wrksp. "Neural Networks in the Capital Markets", (1993)
Series Editor	Computational Finance, Kluwer Academic, Book Series (1998 -)

Co-editor	Decision Technologies for Financial Engineering, WSP, Book (1997)
Co-editor	Neural Networks in Financial Markets, Proc. NnCM96 WSP, Book (1996)
Co-editor	Decision Technologies in Computational Finance, Kluwer, Academic Proc. Computational Finance 1997, Book (1998).

CONFERENCE ORGANISATION

General Chair	COMPUTATIONAL FINANCE 1997, London (October 1997).
General Chair	3rd International Conference on "Neural Networks in the Capital Markets", NnCM, London (Oct. 1995).
General Chair	International Workshop on "Neural Networks in the Capital Markets" London Nov. 18-19 (1993).
International Chair	Joint IEEE/IAFE Int. Conf. on "Computational Intelligence in Financial Engineering", New York, Spring 1995.
Session Chair	"Dynamical Systems in Financial Engineering", WCNN (1995):- World Congress on Neural Networks Washington DC (1995).
Session Chair	Sixth European Congress on Intelligent Techniques & Soft Computing, Non-Parametric Methods in Financial Econometrics, Aachen, Sept. 98.
Advisory Boad Member	International Congress on Pervasive Computing * Management, New Delhi, (Dec, 2008)
Programme Committee	International ICSC Symposium on Soft Computing in the Financial Markets), June 1999, Rochester, NY, USA, (1999).
Programme Committee	Engineering Applications of Neural Networks (EANN'99), 13-15 September 1999, Warsaw, Poland.
Programme Committee	World Congress on Neural Networks, WCNN (1995 -)
Programme Committee	International Conference on Artificial Neural Networks, ICANN (1995 -)
Programme Committee	International Conference on Neural Information Processing Systems, ICONIPS (1995 -)
Programme Committee	IEE International Conference on ANNS, IEE (1992 - 1996)

INVITED/PLENARY TALKS - Conferences

Keynote address	ICANN' 93, International Conference on Neural Networks, "Neural Networks in the Capital Markets", Amsterdam, (Sept. 1993).
Keynote address	NIPS' 93, "Non-linear methods in Financial Engineering", Denver, Colorado, (Dec. 1993).
Keynote address	IEEE, Int. Conf. Computational Intelligence, Perth, Australia (Nov. 95)
Invited Speaker	Internationa Conference “On Chaos and Comple Systems”, Istanbul, (May 2008).
Invited Speaker	IIR Quantitative Portfolio Investment Techniques, London, (Oct 1999)
Invited speaker	Knowledge Based Intelligent Information Systems Engineering, Osaka, Japan, (Sept. 2001).
Invited speaker	EQMC, Non-parametric Methods in Quantitative Marketing, Madrid, July 1998.
Invited speaker	NnCM 96, (Neural Networks in the Capital Markets). Pasadena, CA, (Nov. 1996)
Invited speaker	ICONIPS96, (Int. Conf. on Neural Information Processing). Hong-Kong, (Sept. 1996).
Invited speaker	CIFEr'95 (Computational Intelligence in Financial Engineering). The first joint IEEE/IAFE int. conference on the topic. NY, NY, (April 1995).
Invited speaker	RISK, Risk Conference on Model Risk, "Evaluating and Managing

	Model Risk in the Non linear Context", NY, NY (Oct. 1995).
Invited speaker	WCNN'94, World Congress on Neural Networks, "Neural Networks in Investment Management", San Diego June 1994.
Invited speaker	IBC**,** Fifth Annual Forum, Advanced Technologies for Trading & Asset Management, "Nonlinear Data Analysis and Forecasting in Investment Management:, New York July 20, 21 (1994).
Invited speaker	IBC, 5th Annual Symp., Intelligent Systems in Business & Finance, "Neural Networks in Financial Engineering", London Feb. (1994).
Invited speaker	IIR' 93, Institute for International Research, conference on "Software tools fur portfoliomanagement und trading", Frankfurt, (April. 1993).
Invited speaker	IIR' 93, Institute for International Research, conference on "Modernes Portfolio Management", Frankfurt, (Sept. 1993).
Invited discussant	Economic Notes (Risks Involving Derivatives), Sienna, (Dec. 1996).

Invited speaker to many other conferences and workshops in the UK and abroad including Global Derivatives 95 (Paris), RISK (NY), BNCNN-95 (Curitiba, Brasil), NIPT-91 (Tokyo), IWIC (USSR), BCS, International Neural Networks Society, NCAF, IBC, Cambridge University "Advances in Options Research", etc).

AWARDS & DISTINCTIONS

Best Paper	INQUIRE – Institute for Quantitative Investment Research (1996)
Best Paper	ICONIP - Int. Conf. On Neural Networks (1995)
Best Student	University of North London - **Best Student Award**, Department of Mathematics & Computer Science (1982)

REFEREEING ACTIVITIES

- UK Research Councils ESRC/EPSRC
- Commission of the European Communities ESPRIT
- Hong Kong University Grants Committee
- Cyprus University Grants Committee

- IEEE Trans. on Neural Networks
- IEEE Trans. on Knowledge and Data Engineering
- Neural Networks
- Neural Computation
- Neural Computing and Applications
- Neurocomputing
- Neural Information Processing Systems
- Pattern Analysis and Applications
- Computational Statistics & Data Analysis
- Management Science
- International Journal of Forecasting
- European Journal of Operational Research
- Computers and Operations Research
- Journal of Business Finance and Accounting
- Journal of Defence Economics
- Journal of Mathematics Applied to Business and Industry

RECENT MEDIA

Topical work has been reported in professional media

- Scientific American
- The New Scientist
- Nature
- Risk
- IEEE spectrum
- Canadian Business Magazine
- Journal of Global Investment
- Managed Derivatives
- Listed in who-is-who in the World

and the national press

- The Financial Times
- The Independent
- The Guardian
- The Daily Telegraph
- Machine Intelligence News
- Expert System Applications and others.

CONSULTING

- CITIBANK
- Morgan Stanley
- Barclays BZW
- Credit Lyonaisse
- Societe Generale
- Dresdner Bank
- Deutsche Morgan Grenfell
- Reuters Plc
- County NatWest Investment Management
- Smith New Court
- Golden Cross
- Bradford & Bigley Building Soc.
- Abbey National
- Barclays UKBS
- ECONOSTAT
- Thinking Machines
- Shell
- IBM
- UK Department of trade & Industry
- EU ESPRIT advisory board

TEACHING

Executive Courses

- Mastering Advanced Quantitative Methods, Athens University of Economics and Business
- Financial Engineering and Risk Management, GC, Brazil

- Pricing Options, Futures and other Derivative Securities with Nonparametric Methods, Golden Cross
- Factor Models for Tactical Asset Allocation, Citibank, Singapore
- Advanced Quantitative Investment Methods, Forum, Frankfurt.
- Advanced Forecasting Methods for Financial Engineering, London Business School
- Neural Networks in Financial Economics, Int. Center for Monetary & Banking Studies, Geneva
- Tactical Asset Allocation, International Faculty of Finance, London

Graduate Courses

- Financial Mathematics (Stochastic Processes, stochastic flows and differential equations)
- Financial Econometrics (Time Series, ARCH/GARCH, State-Space Models, Neural Networks)
- Stochastic Optimisation and Genetic Algorithms
- Computational Finance (Numerical methods, Re-sampling, Monte-Carlo, Bootstrap Statistics)
- Uncertainty Analysis and Hypothesis Testing

Undergraduate Courses

- Foundations of Investment Management, HK
- International Investment Decisions in Emerging Markets, Singapore
- Systems Analysis, UCL
- Networks and Architectures, UCL
- Neural Networks, UCL

DOCTORAL DISSERTATIONS

- **Dotsis G.,** "Jumps and Estimation Risk in Finance and Decision Making", Athens University of Economics & Business, PhD, (2006).

- **Phsychojios D. "**Volatility Derivatives", Athens University of Economics & Business, PhD, (2006).

- **Skitzi V.,** "Dynamic Correlation Models", Athens University of Economics & Business, PhD, (2004).

- **Towers N**. "Evolutionary Methods for Decision and Risk Analysis in Active Investment management", London Business School, PhD (2000).

- **Bolland P.,** "Robust Neural Estimation and Diagnostics", PhD, London Business School, (June 1998).

- **Bentz Y.,** "Identifying and Modelling Conditional Factor Sensitivities: Applications in Equity Investment", PhD, London Business School, (Nov. 1999).

- **Burgess A. N.,** A Computational Intelligence Methodology for forecasting noisy, non-stationary time-series, London Business School, PhD, (Nov. 1999).

- **Holt W.,** "Statistical Diagnostics and Test Procedures for Neural Models", London Business School, PhD (Feb. 1999).

- **Pandelidaki S.,** "Neural and Econometric Models for Sales Forecasting", London Business School, PhD (Nov. 1998).

- **Zapranis A.,** "A Methodology for Neural Model Identification, Variable Selection, and Adequacy Testing", PhD, London Business School, (June 1997).

- **Azema-Barac M.,** "Parallel Neural Network Architectures", PhD University College London, (1994).

- **Balou A.,** "A Basic Object Oriented Platform for the execution of high-level OO languages", PhD University College London, (1995).

- **Oliveira C.,** "A Distributed Object-Oriented Machine for Parallel Processing", PhD University College London (1994).

RESEARCH

Since 1984 Refenes has been working on dynamical systems theory and developed neural network applications in image understanding, voice recognition, medical diagnosis, and database marketing. Current research on methodology at the Decision Technology Centre, London Business School deals with the development of nonlinear methods for data analysis and forecasting. The main research themes cover the following :

- **Nonparametric models & machine learning**: non-parametric model estimation and learning procedures based on neural networks.

- **Model selection / specification**: identification procedures for mispecified (neural network) models; and diagnostics/residual analysis for (non-linear) model (mis-) specification.

- **Hypothesis testing & confidence intervals**: development of distribution theory for hypothesis testing and confidence intervals on parameter/variable significance estimation.

- **Robust model estimation**: outlier- and leverage-resistent estimation procedures for neural models and diagnostics for outlier/leverage identification in the context of nonlinear models.

- **Parameter sensitivity & prediction uncertainty**: model sensitivity to sampling variance and parameter perturbations. Bounds for prediction uncertainty.

- **Nonlinear cointegration**: development and identification of nonlinear models with error correcting terms on cross-sectional as well as time series data.

- **Generalised Nonlinear Least Squares Models:** development and application of GLS methods for nonlinear models to deal with problems of stationarity, level changes, etc.

For the past five years he is working on non-linear methods for data analysis and forecasting in the context of financial engineering, and business applications. He has been awarded external research grants of over $10m and led teams in several research projects including machine learning, non-linear systems for currency trading, tactical asset allocation, and portfolio management. In the past three years as part of the NeuroForecasting Research Programme at London Business School he directed research and led teams working on the following projects:

- **Factor Models for Tactical Asset Allocation:** Factor models are widely used in portfolio management. This project extended the approach to tactical asset allocation whereby performance differentials between the main asset classes (bonds *vs* equities vs cash) can be explained in terms of changes in fundamental economic and financial variables. This approach relaxes the assumptions on linearity and uses neural networks instead of regression analysis to model relative performance between the main asset classes on the basis of their exposure to a set of (17) economic and financial factors. **With:** Postel (Hermes) Investment Management.

- **Arbitrage Models for Tactical Asset Allocation:** Statistical arbitrage models are finding increasing use in tactical asset allocation as an alternative to factor models. The basic idea is to exploit short-term pricing anomalies between different asset classes. A model for the UK, exploiting daily pricing anomalies between equities and gilts was completed on January 1995. **With:** Societe Generale.

- **Factor Models for Equity Investment**: Linear factor models are widely used in equity investment. By relaxing the assumptions on linearity we use neural networks to model stock returns on the basis of stock exposure to fundamental factors, financial ratios and cyclicity indicators. The models are applied to a universe of stocks drawn for the CAC-40. These non-linear factor models are then used to construct portfolios which are immune and/or sensitive to given factor exposures by choosing the weights so that the partial derivatives of the portfolio return over the chosen factor exposures are set to the desired values. **With**: Societe Generale and Banque Nationale de Paris.

- **Nonlinear Cointegration in European Equity Futures**: A nonlinear co-integration model of the FTSE with a basket of European indices (including DAX, EoE, CAC, and SMI) was developed on daily data. The residuals of the cointegration are modelled as a nonlinear function of exogenous variables (e.g. interest rate volatility, oil price changes, etc) selected via ANOVA and neural network analysis. **With:** CitiBank.

- **Forecasting Intra-day Volatility for Option Pricing**: Multivariate neural models are developed to produce estimates of implied volatility to be utilised in the context of option pricing for futures contracts. High frequency tick-data from the Ibex-35 is used to develop the methodology. The neural networks give incremental value in terms of forecasting accuracy over time-series models and regression analysis. Sensitivity analysis is used to verify the plausibility of the neural models. **With:** CitiBank.

- **Modelling Quarterly Returns on the FTSE-ALSH and S&P 500:** Neural networks are utilised to model quarterly returns on the FTSE-ALSH and S&P 500 on the basis of fundamental factor changes (e.g. dividend yield, business cycle, etc.). Up to eight fundamental variables are selected from a universe of 20 candidate variables, using regression and neural network analysis to construct parsimonious models. Project focuses on outlier and leverage-resistant neural network modelling methodlogy. **With:** Henderson Administration.

- **Term-structure Models of Eurodollar Futures:** Neural networks are used to model the "volatility factor" in the term-structure of Eurodollar futures. The "volatility factor" is the third principle component which represents a flexing of the yield curve on a portfolio of short, medium and long maturity contracts which has been immunised against parallel shifts and rotations. This component is shown to be mean-reverting and it is linked to volatility amongst other factors. The neural network model estimates variations in this component which are then used as signals to reset the portfolio. **With**: CitiBank.

In his former position as senior Research Fellow at University College London he led teams in many projects.

PUBLICATIONS

books and special issues

[1] Refenes A-P. N., and White H. (ed), "Neural Networks and Financial Economics", Journal of Forecasting, special issue, Vol. 17, 5-6., (1998).

[2] Refenes A-P. N., Burgess A. N. and Moody J., (1998) “Decision Technologies for Computational Finance”, Proc. Computational Finance 1997, Kluwer Academic, ISBN Hardback: 0 7923 8308 7; ISBN Paperback 0 7923 8309 5

[3] Refenes A-P. N., Abu-Mostafa Y., Moody J., and Weigend A. (ed), "Neural Networks in Financial Engineering", World Scientific, Singapore, (1996), ISBN 981-02-2480x.

[4] Refenes A.-P N. (ed), "Neural Networks in the Capital Markets", Wiley & Sons, Chichester, (1995), ISBN 0-471-94364-9.

[5] Weigend A, Abu-Mostafa Y. and Refenes A-P. N., (ed), "Decision Technologies for Financial Engineering", World Scientific, Singapore, (1997), ISBN 981-02-3123-7.

[6] Zapranis A. D. and Refenes A-P. N., “Principles of Model Identification, Selection and Adequacy: with Applications in Financial Econometrics”, (1999), Springer-Verlag, ISBN1-85233-139-9.

[7] Refenes A.-P. N. (ed) “Quantitative Methods in Finance”, Typothito-George Dardanos, ISBN 960-402-173-7, Athens (2004)

journals

[8] Skintzi V. D. and Refenes A-P. N. “Implied Correlation Index: A new measure of Diversification”, Journal of Futures Markets, Submitted August 2003, Accepted March (2004) [**0.31**].

[9] Skintzi V. D., Skiadopoulos G, and Refenes A-P. N. “The effect of misestimating correlation on Valua-At-Risk”, The Journal of Risk Finance, 73(1),Submitted July 2003, Accepted February (2004).

[10] Skintzi V. D. and Refenes A-P. N., "Volality spillovers and dynamic correlation in European Bond Markets”,Journal of International Financial Markets, Institutions & Money, Vol 16, No. 1, February 2006 [**0.5**].

[11] Carapeto M., Holt W., and Refenes A-P. N. “On model complexity and selection”, Journal of Statistical Computation and Simulation, 73(1), pp. 45-47, (2003) [**0.75**].

[12] Refenes A-P. N. and Holt W. “Forecasting Volatility with Neural Regression: a contribution to model adequacy”, IEEE Trans. On Neural Networks, Vol 12, No.4, 850-865, (July 2001)[**2.2**].

[13] Refenes A-P. N., and Zapranis A. D. "Neural Model Identification, Variable Selection and Model Adequacy", Journal of Forecasting, Vol. 18, 299-332, (1999) [**0.55]**.

[14] Refenes A-P. N., Burgess A. N., and Bentz Y., "Neural Networks in Financial Engineering: a study in Methodology", IEEE Trans on Neural Networks, Vol. 8, No. 6, pp. 1222-1267, November 1997 [**2.20]**.

[15] Refenes A-P. N., Bentz Y. Bunn W. D., Burgess A. N. and Zapranis A. D, "Backpropagation with Discounted Least Squares and its Application to Financial Time Series Modelling", Neurocomputing, Vol. 14, no. 2, pp. 123-138 (Feb. 1997) [**0.79]**.

[16] Refenes A-P. N., Gonzales Miranda F. and Burgess A. N., "Intraday Volatility Forecasting Using Neural Networks. A Comparative Study with Regression Models", IJCIO (accepted 1996, to appear 1996) Vol. 1:2, pp. 1-56 [**0.34]**.

[17] Kolias C. and Refenes A-P. N. “Modelling the Effects of Defence Spending Reductions Using Neural Networks: Evidence from Greece”, Journal of Peace Economics and Public Policy, vol. 3. no. 2, pp. 1-12, (1996) .

[18] Refenes A-P. N., 'Neural Networks in Investement Management: Testing Strategies & Performance Metrics', Neural Computing & Applications (revised Sept. 1994, accepted May 1995) [**0.40]**.

[19] Burgess A. N., and Refenes A-P. N. “Modelling Nonlinear Moving Average Processes using Neural Networks with Error Feedback: An application to implied volatility Forecasting”, Signal Processing, Vol. 74 , (1), 89-99 Apr 1999, [**0.70**].

[20] Refenes A-P. N., Kollias C., and Zapranis A. N., "External Security Determinants of Greek Military Expenditure: An Empirical Investigation Using Neural Networks", Journal of Defence Economics, vol. 6. pp. 27-41 (1995) [**0.87**].

[21] Refenes A-P. N., Francis G., and Zapranis A. D., "Stock Performance Modeling Using Neural Networks: A Comparative Study with Regression Models", Neural Networks Vol. 7, No. 2, pp 375-388 (1994), [**1.66]**.

[22] Refenes A-P. N., "Neural Networks: forecasting Breakthrough or just a passing fad", International Journal of Forecasting", 10(1994) 43-46, [**0.75]**.

[23] Refenes A-P. N., and Azema-Barac M., "Neural Network Applications in Financial Asset Management", Neural Computing & Applications, Vol. 2., no. 1, pp. 13-39. (1994), [**0.40**].

[24] Refenes A-P. N., *et al* "Currency Exchange rate prediction and Neural Network Design Strategies", Neural computing & Applications, Vol 1, no. 1., (1993), [**0.40**].

[25] Tuv E., & Refenes A-P. N., "Removal of Catastrophic Noise in Hetero-associative Training Samples", Microprocessing and Microprogramming vol 38., pp. 697-704. (1993), [**0.26**].

[26] Refenes A-P. N., "N-Expression Implementations for Integrated Symbolic and Numeric Processing", North-Holland Future Generation Computer Systems vol. 3, no. 3, pp.161 - 187, (Sept. 1987), [**0.55**].

[27] Refenes A-P. N, "Message-passing via Singly Buffered-channels: an Efficient and Flexible Communications Control mechanism", The Euromicro Journal, North-Holland, vol. 30, no. 1-5, (Aug. 1990), pp. 645-653, [**0.26**].

[28] Refenes A-P. N., "Parallelism in Knowledge Based Machines", The Knowledge Engineering Review, Vol. 4 no.1, pp. 53-71 (1989), [**2.18**].

[29] Refenes A-P. N., & Alippi C., "Histological Image Understanding by Error Backpropagation", Microprocessing and Microprogramming, North-Holland, vol. 32, (1991) pp .437-446, [**0.26**].

[30] Treleaven P.C. and Refenes A-P. N., "Fifth Generation and VLSI Architectures", North-Holland FGCS, vol. 1, no. 6, pp. 387-396, (Dec 1985), [**0.55**].

[31] Eberbach E., McCabe S. C., and Refenes A-P. N., "PARLE: a language for expressing parallelism and integrating symbolic and numeric processing", The Euromicro Journal, North-Holland, vol. 27, no. 1-5, (Sept. 1989), pp. 207-214, [**0.26**].

[32] Refenes A-P. N, Eberbach E., and McCabe S. C., "PARLE: a Target Language for Integrated Symbolic & Numeric Processing", LEC NOTES COMP SC 366: 181-189 1989 [**0.4**].

[33] Treleaven P. C., Refenes A-P. N, and Lees K. J., "Computer Architecturs for Artficial Intelligence", LEC NOTES COMP SC 272: 416-492 1987 [**0.4**].

[34] Refenes A-P. N., Eberbach E., and Cotronis J., "Language Support for Concurrent Symbolic and Numeric Systems", The Euromicro Journal, (June 1989), [**0.26**].

[35] Balou A., and Refenes A-P. N, "Designing a parallel Object Oriented Compiler Target language", The Euromicro Journal, North-Holland, vol. 30, no. 1-5, (Aug. 1990), pp. 457-465, [**0.26**].

[36] Refenes A-P. N., and Balou A., "The Design and Implementation of VOOM: a parallel Virtual Object-Oriented machine", Microprocessing and Microprogramming, North-Holland, vol. 32, (1991) pp. 289-296, [**0.26]**.

[37] Refenes A-P. N., Bentz Y., and Burgess A. N., "Neural Networks in Investement Management", Journal of Finance and Communications, no. 8, April (1994), 95-101.

[38] Refenes A-P. N. “Neural Model Identification, Variable Selection & Model Adequacy”, Comment on Serrano-Cinca C., “Feedforward Neural Networks in the Classification of Financial Information”**,** European Journal of Finance, Vol. 3, No. 3, (1997), pp. 183-231. ISSN 1351-847X.

Conferences I

(full paper submission, three referees, rejection rates 70-75%)

[39] Burgess A-P.N. & Refenes A. N. "A Principled Approach to Neural Network Modelling of Financial Time Series", Proc. IEEE ICNN'95 Perth Australia, (Nov. 1995), ISBN 0-7803-1182-5.

[40] Refenes A-P. N., and Mitrelias C., "Network Pruning by Weight Variance", Proc. NIPS'93 Denver Colorado, in Cowan J., Tesauro G., and Alspector J., (ed), "Advances in Neural Information Processing", vol. 6, Morgan Kaufmann, San Francisco (1994).

[41] Refenes A-P. N., Zapranis A., and Azema-Barac M., "Stock Ranking: Neural networks Versus Multiple linear Regression", Proc. IEEE ICNN'93 San Francisco (March 28 - April s 1993).

[42] Refenes A-P. N. "Optimizing Connectionist Datasets with ConSTrainer:", Proc. 2nd IEEE Symposium on Parallel & Distributed Processing, IEEE Computer Society Press 2087, ISBN 0-8186-2087-TH0328-5/90/0000/0806, Dallas - Texas, (Dec. 9-13 1990).

[43] Refenes A-P. N., "CLS: An Adaptive Learning Procedure and Its Application to Time Series Forecasting", Proc. IJCNN-91, Singapore, (Nov. 1991).

[44] Refenes A-P. N., & Vithlani S. "Constructive Learning by Specialisation", Proc. ICANN-1991, Elsevier Science Publishers, (Noth Holand), ed Kohonen T.,(June 1991) pp. 923-929.

[45] Tuv E., & Refenes A-P. N., "Handling Malicous Vectors in Hetero-associative Data Samples", Proc. IJCNN '93, Nagoya Japan (1993).

[46] Balou A., & Refenes A-P. N., "VOOM: a parallel Virtual Object-Oriented machine", 2nd IEEE Symposium on Parallel & Distributed Processing, Dallas - Texas, IEEE Computer Society Press 2087, (Dec. 9 - 13 1990).

[47] Refenes A-P. N., et al "PARLE: A Parallel Target Language for Integrating Symbolic and Numeric Processing", Lecture Notes in Computer Science, Springer-Verlag, Vol 365, pp. 181-198, Proc. PARLE-89, Eidhoven, The Netherlands, June 12-16, 1989.

[48] Burgess A. N., Bunn D. W. and Refenes A-P. N. “Neural Networks with Error Feedback Terms for Financial Time Series Modelling”, Proc. SNN’97, May 21, 1997, Amsterdam.

[49] Refenes A-P. N. and Connor J. T., "Biasing Towards Integer Solutions ", in Amari S. *et al* (eds), Proc.ICONIPS-96, Springer, Singapore, (1996), pp. 681-689. ISBN 981-3083-03-4.

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