

2012 IEEE Conference on Computational Intelligence for Financial Engineering & Economics

(CIFE_r 2012)

**New York City, New York, USA
29 – 30 March 2012**



**IEEE Catalog Number: CFP12CIF-PRT
ISBN: 978-1-4673-1802-0**

Table of contents

TUTORIALS

Financial and Economic Data management using Semantic Web technologies	1
---	----------

Xian Li

Stressed Value-at-Risk	2
-------------------------------------	----------

Jan Dash

1A: FUZZY DECISION MODELS IN FINANCIAL ENGINEERING – I

A Multi-Covariate Semi-Parametric Conditional Volatility Model Using Probabilistic Fuzzy Systems	3
---	----------

Rui Jorge Almeida, Nalan Basturk, Uzay Kaymak and Viorel Milea

A Mean-Reverting Strategy based on Fuzzy Transform Residuals.....	11
--	-----------

Luigi Troiano and Pravesh Kriplani

Modeling principles in fuzzy time series forecasting.....	18
--	-----------

Okan Duru and Shigeru Yoshida

Linguistic Decision Making with Probabilistic Information and Induced Aggregation Operators	25
--	-----------

José M. Merigó and Montserrat Casanovas

1B: ADVANCED ALGORITHMIC TRADING – I

The Use of Neural Networks for Modeling Nonlinear Mean Reversion: Measuring Efficiency and Integration in ADR Markets	32
--	-----------

Eugenio Suarez, Farzan Aminian and Mehran Aminian

A Learning Adaptive Bollinger Band System.....	40
---	-----------

Matthew Butler and Dimitar Kazakov

Complex Stock Trading Strategy Based on Particle Swarm Optimization	48
--	-----------

Fei Wang, Philip L.H. Yu and David W. Cheung

Limit Order Placement Across Multiple Exchanges.....	54
---	-----------

Raymond Yim and Andrew Brzezinski

2A: ASSET PRICING / PRICING OF STRUCTURED SECURITIES

A New Approach to Asset Pricing with Rational Agents Behaving Strategically	62
--	-----------

Alain Bretto and Joël Priolon

Bio-Inspired Optimization of Fuzzy Cognitive Maps for their Use as a Means in the Pricing of Complex Assets	69
--	-----------

Lars Krueger, Ralf Salomon and Peter Heydebreck

A Multi-Phase, Flexible, and Accurate Lattice for Pricing Complex Derivatives with Multiple Market Variables.....	77
<i>Chuan-Ju Wang, Tian-Shyr Dai and Yuh-Dauh Lyuu</i>	
Pricing Discrete Asian Barrier Options on Lattices.....	85
<i>William W.Y. Hsu, Cheng-Yu Lu, Ming-Yang Kao, Jan-Ming Ho and Yuh-Dauh Lyuu</i>	
Improving Non-parametric Option Pricing during the Financial Crisis	93
<i>Dragan Kukolj, Nikola Gradojevic and Camillo Lento</i>	
Closed-Form Mortgage Pricing Formula with Outstanding Principal as Prepayment Value	100
<i>Yi-Cheng Tsai, Zheng-Hui Chen, Jan-Ming Ho, Ming-Yang Kao, Szu-Lang Liao and Chin-Laung Lei</i>	
2B: FUZZY DECISION MODELS IN FINANCIAL ENGINEERING – II	
Exponential Length of Intervals for Fuzzy Time Series Forecasting	107
<i>Emrah Bulut, Okan Duru and Shigeru Yoshida</i>	
Decision Making in Complex Environments with Generalized Aggregation Operators	113
<i>José M. Merigó</i>	
MIMO Evolving Functional Fuzzy Models for Interest Rate Forecasting.....	120
<i>Leandro Maciel, Fernando Gomide and Rosangela Ballini</i>	
Group Decision Making in fuzzy environment.....	128
<i>Mahima Gupta</i>	
3A: ADVANCED ALGORITHMIC TRADING- II	
Behavior Based Learning in Identifying High Frequency Trading Strategies	133
<i>Steve Yang, Mark Paddrik, Roy Hayes, Andrew Todd, Andrei Kirilenko, Peter Beling and William Scherer</i>	
Hierarchical Temporal Memory-Based Algorithmic Trading of Financial Markets	141
<i>Patrick Gabrielsson, Rikard König and Ulf Johansson</i>	
Robust Stock Trading Using Fuzzy Decision Trees.....	149
<i>Carlo Noel Ochotorena, Cecille Adrienne Yap and Elmer Dadios</i>	
3B: RISK MANAGEMENT	
Optimal Selection of Simulated Years of Catastrophe Activity for Improved Efficiency in Insurance Risk Management.....	157
<i>Guillermo Franco</i>	
Event-Based Historical Value-at-Risk.....	164
<i>Frederik Hogenboom, Michael De Winter, Milan Jansen, Alexander Hogenboom, Flavius Frasinca and Uzay Kaymak</i>	
Online Estimation of Stochastic Volatility for Asset Returns	171
<i>Ivette Luna and Rosangela Ballini</i>	
Liquidity Risk Spillover: Evidence from cross-country analysis.....	178
<i>William Cheung and Siu Lo</i>	

3C: BEHAVIORAL ANALYSIS AND DECISION SUPPORT – I

Intermarket Divergence, a method for generating robust signals for a wide range of markets	185
<i>Murray Ruggiero Jr</i>	
A Study on the Reversal Mechanism for Large Stock Price Declines Using Artificial Markets.....	192
<i>Isao Yagi, Takano Mizuta and Kiyoshi Izumi</i>	
A New Approach to Risk Management Using Soft Information.....	199
<i>Ronald Yager and Rachel Yager</i>	
A Comparison of Feed-forward and Recurrent Neural Networks in Time Series Forecasting	206
<i>Danko Brezak, Tomislav Bacek, Dubravko Majetic, Josip Kasac and Branko Novakovic</i>	

4X: BEHAVIORAL ANALYSIS AND DECISION SUPPORT – II

Modeling the Term Structure of Government Bond Yields with a Differential Evolution Algorithm.....	212
<i>Leandro Maciel, Fernando Gomide and Rosangela Ballini</i>	
Three decision making levels in portfolio management	220
<i>Sarunas Raudys and Aistis Raudys</i>	
The Development of a Reliable Real-time Valuation Service for Financial Derivatives.....	228
<i>Hsin-Tsung Peng, Chi-Fang Chang, Szu-Lang Liao, Ming-Yang Kao, Feipei Lai and Jan-Ming Ho</i>	
A New Solution Method for Customer Grading Problem With Multi-factor Constraint	236
<i>Jie Yang and Yimin Chen</i>	

4Y: AGENT BASED COMPUTATIONAL ECONOMICS

An Agent-based Modeling Approach to Study Price Impact	241
<i>Wei Cui and Anthony Brabazon</i>	
Testing Implications of the Adaptive Market Hypothesis via Computational Intelligence.....	249
<i>Matthew Butler and Dimitar Kazakov</i>	
An Agent Based Model of the E-Mini S&P 500: Applied to Flash Crash Analysis.....	257
<i>Mark Paddrik, Roy Hayes, Andrew Todd, Steve Yang, Peter Beling and William Scherer</i>	
Continuous Variable Based Bayesian Network Structure Learning from Financial Factors.....	265
<i>Jianjun Yang, Zitian Wang, Bingwu Liu and Shaohua Tan</i>	

4Z: ENERGY MARKETS

A Self-Organizing Neural Fuzzy System to Forecast the Price of Ecopetrol Shares.....	271
<i>Jose Alejandro Avellaneda Gonzalez, Cynthia María Ochoa Rey and Juan Carlos Figueroa García</i>	
Financing for Rural Electrification.....	277
<i>Najib Altawell</i>	

5X: PORTFOLIO OPTIMIZATION

Rebalancing A Two-Asset Markowitz Portfolio: A Fundamental Analysis.....	285
<i>Sujit Das and Mukul Goyal</i>	
Risk-adjusted portfolio optimisation using a parallel multi-objective optimization algorithm	293
<i>Phil Maguire, Donal O' Sullivan and Philippe Moser</i>	
Discrete-Time Log-Optimal Portfolio Rebalancing: A Scalable Efficient Algorithm.....	301
<i>Sujit Das and Mukul Goyal</i>	
Comparative Results of Heuristics for Portfolio Selection Problem.....	308
<i>Aderemi Adewumi and Annalisa Moodley</i>	
Analytical Factor Stochastic Volatility Modeling for Portfolio Allocation	314
<i>Nikolay Nikolaev and Evgueni Smirnov</i>	

5Y: BUSINESS INTELLIGENCE AND KNOWLEDGE MANAGEMENT

On behavior of Malaysian equities through Fractal analysis.....	322
<i>Farhad Pourkalbassi, Alireza Bahiraie and Aishah Hamzah</i>	
Fuzzy linguistic summaries: where are we, where can we go?	329
<i>Bernadette Bouchon-Meunier and Gilles Moyse</i>	
Parallelization of Artificial Neural Network Training Algorithms: A Financial Forecasting Application.	337
<i>Augusto Casas</i>	
A Pattern Recognition Approach to Automated XBRL Extraction	343
<i>Hassan Alam, Aman Kumar, Cheryl Lee and Yuliya Tarnikova</i>	
Volatility Forecast in FX Markets using Evolutionary Computing and Heuristic Technique.....	351
<i>V L Raju Chinthalapati</i>	
Knowledge-guided Genetic Algorithm for Financial Forecasting	359
<i>Jie Du and Roy Rada</i>	

5Z: ADVANCED ALGORITHMIC TRADING- III

A Semi-Naive Bayes Model to Forecast the Probability Distribution of Excess Returns in the U.S. Stock Market	367
<i>Reza Khosravani</i>	
Stock Trading System Based on Portfolio Beta and Evolutionary Algorithms	372
<i>Yan Chen</i>	
Order Aggressiveness of Option Market: Evidence from the 2008 Credit Crisis	380
<i>William Cheung and Conrad Cheng</i>	

POSTER SESSION

An analytic environment for systemic risk- Risk modeling support for financial policy makers.....	385
<i>Charles Worrell</i>	

Input Output Table Updating based on Agent-Responses Equilibrium Model.....	390
<i>Wei Duan, Zhaoguang Hu, Yuhui Zhou and Xiao Xiao</i>	
Incorporating Statistical Distribution in Loss and Gain Functions in CVaR Robust Mean-variance Portfolios	394
<i>Mahnaz Mantegipour</i>	
Common Data and Controlling General Ledger Paradigm of Banking Data Services	399
<i>Josef Langmayer and Pavel Pešout</i>	
Solving the Winner Determination Problem by a Distributed Genetic Algorithm Approach	405
<i>Terje Kristensen and Mauricio Rojas</i>	
Comparison of data classification methods for predictive ranking of banks exposed to risk of failure.....	413
<i>Charles Worrell</i>	
Forecasting of Return of Stocks Portfolio Based in Fuzzy c-Means Algorithm and Fuzzy Transform	419
<i>Renato Aguiar</i>	
FX trading: an empirical study	424
<i>Gerda Cabej, Manfred Gilli, Jonela Lula and Enrico Schumann</i>	
An Integrated System Approach For Cash Management System Internal Control.....	431
<i>Kuan Chen and Carin Chuang</i>	