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# Soft Computing

## Engineering Applications

edited by

Pradip Deb Nath and

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# Soft Computing In Financial Engineering

**Jibendu Kumar Mantri**



## **Soft Computing In Financial Engineering:**

Soft Computing in Financial Engineering Rita A. Ribeiro, Hans-Jürgen Zimmermann, Ronald R. Yager, 1999-01-22 The focus is on the application of soft computing to a new emerging discipline called financial engineering Financial engineering can be seen as a field emerging out of an attempt to address the issues of concern in finance with the tools and perspectives of engineering especially electrical and systems engineering The ability to measure almost all financial variables in quantifiable terms the strong emphasis on optimization and the centrality of time dependency provide for a strong overlap of those disciplines This all provides a synergistic effect and makes it possible to more effectively and efficiently deal with a variety of problems related to broadly perceived financial analyses

**Soft Computing Techniques and Applications in Financial Engineering** Tahseen Jilani, 2010-06 Soft Computing is an emerging approach which parallels the remarkable ability of the human brain to reason and learn in an environment of uncertainty and imprecision It is one of the most emerging consortiums of methodologies including artificial neural networks ANNs fuzzy logic FL etc They provide tractable robust and lower cost solutions to the complex and gigantic real world problems with the help of functional approximations and learning paradigms It can also handle linguistic uncertainties vagueness and imprecision involved in real life problems with reduced mathematical complexities Soft computing techniques have outperformed the conventional approaches with lesser complexity vagueness tuning requirements and higher level of robustness and tractability On the other hand most of the actuarial problems are stochastic in nature with soaring noises and variable volatilities resulting in signals that are complicated to handle with conventional modeling and forecasting techniques

Soft-Computing in Capital Market Jibendu Kumar Mantri, 2014-06-03 Computational Finance an exciting new cross disciplinary research area depends extensively on the tools and techniques of computer science statistics information systems and financial economics for educating the next generation of financial researchers analysts risk managers and financial information technology professionals This new discipline sometimes also referred to as Financial Engineering or Quantitative Finance needs professionals with extensive skills both in finance and mathematics along with specialization in computer science Soft Computing in Capital Market hopes to fulfill the need of applications of this offshoot of the technology by providing a diverse collection of cross disciplinary research This edited volume covers most of the recent advanced research and practical areas in computational finance starting from traditional fundamental analysis using algebraic and geometric tools to the logic of science to explore information from financial data without prejudice Utilizing various methods computational finance researchers aim to determine the financial risk with greater precision that certain financial instruments create In this line of interest twelve papers dealing with new techniques and or novel applications related to computational intelligence such as statistics econometrics neural network and various numerical algorithms are included in this volume

**Soft Computing in Economics and Finance** Ludmila Dymowa, 2011-01-21 Currently the methods of Soft Computing are successfully used for

risk analysis in budgeting e commerce development portfolio selection Black Scholes option pricing models corporate acquisition systems evaluating investments in advanced manufacturing technology interactive fuzzy interval reasoning for smart web shopping fuzzy scheduling and logistic An essential feature of economic and financial problems is that there are always at least two criteria to be taken into account profit maximization and risk minimization Therefore the economic and financial problems are multiple criteria ones In this book a new systematization of the problems of multiple criteria decision making is proposed which allows the author to reveal unsolved problems The solutions of them are presented as well and implemented to deal with some important real world problems such as investment project s evaluation tool steel material selection problem stock screening and fuzzy logistic It is well known that the best results in real world applications can be obtained using the synthesis of modern methods of soft computing Therefore the developed by the author new approach to building effective stock trading systems based on the synthesis of fuzzy logic and the Dempster Shafer theory seems to be a considerable contribution to the application of soft computing method in economics and finance An important problem of capital budgeting is the fuzzy evaluation of the Internal Rate of Return In this book this problem is solved using a new method which makes it possible to solve linear and nonlinear interval and fuzzy equations and systems of them The developed new method allows the author to obtain an effective solution of the Leontjev s input output problem in the interval setting

**Soft Computing for Problem Solving** Aruna Tiwari,Kapil Ahuja,Anupam Yadav,Jagdish Chand Bansal,Kusum Deep,Atulya K. Nagar,2021-10-13 This two volume book provides an insight into the 10th International Conference on Soft Computing for Problem Solving SocProS 2020 This international conference is a joint technical collaboration of Soft Computing Research Society and Indian Institute of Technology Indore The book presents the latest achievements and innovations in the interdisciplinary areas of soft computing It brings together the researchers engineers and practitioners to discuss thought provoking developments and challenges in order to select potential future directions It covers original research papers in the areas including but not limited to algorithms artificial immune system artificial neural network genetic algorithm genetic programming and particle swarm optimization and applications control systems data mining and clustering finance weather forecasting game theory business and forecasting applications The book will be beneficial for young as well as experienced researchers dealing across complex and intricate real world problems for which finding a solution by traditional methods is a difficult task

**Soft Computing Applications** Valentina Emilia Balas,Lakhmi C. Jain,Marius Mircea Balas,Dumitru Baleanu,2023-10-26 Soft computing techniques open significant opportunities in several areas such as industry medicine energy security transportation and education This book provides theory and applications development using soft computing techniques by organizing intelligent systems for many applications to the benefit of humanity The book comes from a multidisciplinary subject whose audience can come from different academic departments e g department of computer science and engineering department of medical imaging department of biomedical informatics department of

education sciences and so on where artificial intelligence and soft computing are of routine courses The book covers a range of audience from academicians practitioners researchers and students to stakeholders It can support graduate students and interns to develop a deep understanding of the latest paradigms in the soft computing techniques

**Data Analytics and Management in Data Intensive Domains** Alexander Elizarov, Boris Novikov, Sergey Stupnikov, 2020-07-13 This book constitutes the post conference proceedings of the 21st International Conference on Data Analytics and Management in Data Intensive Domains DAMDID RCDL 2019 held in Kazan Russia in October 2019 The 11 revised full papers presented together with four invited papers were carefully reviewed and selected from 52 submissions The papers are organized in the following topical sections advanced data analysis methods data infrastructures and integrated information systems models ontologies and applications data analysis in astronomy information extraction from text distributed computing data science for education

Real Life Applications of Soft Computing Anupam Shukla, Ritu Tiwari, Rahul Kala, 2010-05-21 Rapid advancements in the application of soft computing tools and techniques have proven valuable in the development of highly scalable systems and resulted in brilliant applications including those in biometric identification interactive voice response systems and data mining Although many resources on the subject adequately cover the theoretical

*Rough Sets and Current Trends in Computing* Wojciech Ziarko, Yiyu Yao, 2003-06-29 This book constitutes the thoroughly refereed post proceedings of the Second International Conference on Rough Sets and Current Trends in Computing RSCTC 2000 held in Banff Canada in October 2000 The 80 revised papers presented together with an introduction and three keynote presentations have gone through two rounds of reviewing and revision The papers are organized in topical sections on granular computing rough sets and systems fuzzy sets and systems rough sets and data mining nonclassical logics and reasoning pattern recognition and image processing neural networks and genetic algorithms and current trends in computing

*Artificial intelligence and soft computing* M. H. Hamza, 1999

**Proceedings of the IASTED International Conference, Artificial Intelligence and Soft Computing, July 27 to August 1 1997, Banff, Canada** M. H. Hamza, International Association of Science and Technology for Development, 1997

*Smart Engineering System Design* Cihan H. Dagli, 2003 The newest volume in this series presents refereed papers in the following categories and their applications in the engineering domain Neural Networks Complex Networks Evolutionary Programming Data Mining Fuzzy Logic Adaptive Control Pattern Recognition Smart Engineering System Design These papers are intended to provide a forum for researchers in the field to exchange ideas on smart engineering system design

**Medical Data Mining and Knowledge Discovery** Krzysztof J. Cios, 2001-01-12 Modern medicine generates almost daily huge amounts of heterogeneous data For example medical data may contain SPECT images signals like ECG clinical information like temperature cholesterol levels etc as well as the physician's interpretation Those who deal with such data understand that there is a widening gap between data collection and data comprehension Computerized techniques are needed to help humans address this problem This volume is devoted

to the relatively young and growing field of medical data mining and knowledge discovery As more and more medical procedures employ imaging as a preferred diagnostic tool there is a need to develop methods for efficient mining in databases of images Other significant features are security and confidentiality concerns Moreover the physician s interpretation of images signals or other technical data is written in unstructured English which is very difficult to mine This book addresses all these specific features *Proceedings of the IASTED International Conference, Artificial Intelligence and Soft Computing, May 27-30, 1998, Cancun, Mexico* International Association of Science and Technology for Development,1998 **Kybernetika** ,2002 Annual Meeting of the North American Fuzzy Information Processing Society--NAFIPS. North American Fuzzy Information Processing Society. Annual Meeting,2005 *Discovering the World with Fuzzy Logic* Vilém Novák,2000-10-18 The book presents the state of the art of the mathematics in fuzzy logic and some related topics as seen by prominent researchers in this area It covers the most important areas such as the structure of truth values consequence operation fuzzy relations functional representation extensions to other areas of logic as well as some critical expositions on the essence of membership degrees or fuzzy measures and t norms The book contains many new results which are published for the first time **Computing with Words in Information/Intelligent Systems 2** Lotfi Asker Zadeh,1999-07-16 The volume is the first one in the world literature which is a comprehensive up to date account on computing with words a new direction in broadly perceived intelligent systems proposed and advocated by Professor Zadeh the founder of fuzzy sets theory and fuzzy logic Computing with words may form a basis of a computational theory of perception inspired by a remarkable human ability to perform a wide variety of tasks on the basis of vague and imprecise information expressed in natural language In Part 2 applications in a wide array of fields are presented which use the paradigm of computing with words exemplified by reasoning data analysis data mining machine learning risk analyses reliability and quality control decision making optimization and control databases medical diagnosis business analyses traffic management power system planning military applications etc **Scheduling Under Fuzziness** Roman Slowiński,2000 This volume prepared by Roman Slowinski and Maciej Hapke is welcome because it is representative of the current state of the art in fuzzy set based scheduling Its publication proves that some operational research scientists start to consider fuzzy sets seriously as a bridge for a reconciliation between mathematical modeling and human scheduling practice A difficulty for the reader of the fuzzy set scheduling literature is to understand the precise role of fuzzy sets in the various published papers More often than not the meaning of fuzzy sets remain unclear or must be guessed from the context of the problem A major contribution of this volume is to try and clarify this issue through a suitable ordering of the papers telling apart those where fuzzy sets is mainly a matter of representing preference and those where the problem is one of scheduling under uncertainty Taken from the foreword by Didier Dubois and Henry Prade *KES'2000: Fourth International Conference on Knowledge-Based Intelligent Information Engineering Systems & Allied Technologies* R. J. Howlett,2000

## **Soft Computing In Financial Engineering** Book Review: Unveiling the Magic of Language

In a digital era where connections and knowledge reign supreme, the enchanting power of language has become much more apparent than ever. Its ability to stir emotions, provoke thought, and instigate transformation is truly remarkable. This extraordinary book, aptly titled "**Soft Computing In Financial Engineering**," published by a very acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we will delve into the book's central themes, evaluate its unique writing style, and assess its overall influence on its readership.

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