

## Solution Of Soft Computing Book S Sivanandam

Soft Computing Techniques for Engineering Optimization CRC Press

The Proceedings of SocProS 2014 serves as an academic bonanza for scientists and researchers working in the field of Soft Computing. This book contains theoretical as well as practical aspects using fuzzy logic, neural networks, evolutionary algorithms, swarm intelligence algorithms, etc., with many applications under the umbrella of 'Soft Computing'. The book is 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. The different application areas covered in the Proceedings are: Image Processing, Cryptanalysis, Industrial Optimization, Supply Chain Management, Newly Proposed Nature Inspired Algorithms, Signal Processing, Problems related to Medical and Healthcare, Networking Optimization Problems, etc.

The course of Artificial Intelligence is taken by all engineering undergraduate and postgraduate students pursuing computer science. Apart from this, it is a popular elective in almost all other branches of engineering. It is also a field chosen for research by many doctoral students. This book has in-depth detail illustration of all the chapters of Artificial Intelligence (AI) with Soft Computing, covering the syllabus of WBUT, Gitam, JNTU, NIT and few different universities. During the course of teaching Artificial Intelligence, the author had found that no textbook covers both Artificial intelligence (AI) with intelligent systems (IS) and soft computing in a comprehensive manner. This book provides a comprehensive coverage of the fundamental concepts and techniques in Artificial Intelligence and Soft Computing with mathematical in depth explanation. The main emphasis is on the solution of real world problems using the latest AI techniques. During teaching artificial intelligence, author realized that the basic text books do not have an organized content according to the syllabus. In this book all the chapters are organized properly and contain a complete coverage. The sequence of the chapters has been set in a manner which would be very easy for the students to understand. The main importance of this book is on the solution of many real world problems. Each chapter contains multiple choice questions with answer and possible explanation. Also some important solutions and answers at the end as "Take a look to be more acquainted with." In addition, modern and current topic in AI for example Pattern Recognition, Data Clustering Algorithm, Genetic Algorithm with Data Clustering method, Swarm Intelligence, Tabu Search, Ant Colony Optimization are discussed in details. These concepts may motivate students to do projects. This book contains information about programming languages and the proper syntax with example is provided which may help students to practically apply this programming concepts. Mathematical explanation to understand the concept in detail about single & multi objective Genetic Algorithm, Neural Network, Fuzzy Logic is provided. The basic coverage of each and every chapter is mentioned before the chapter as "chapter utility." This book has been designed in such a manner so that it becomes very easy to understand the language and comprehend not only for computer science department student but also for non departmental student as well.

This carefully edited book covers a wide range of application areas of soft computing like optimization, data analysis and data mining, fault diagnosis, control as well as traffic and transportation systems. It contains 25 revised contributions from the 8th Online World Conferences on Soft Computing (WSC8). The collected papers show how the major soft computing techniques, fuzzy systems, neural networks and evolutionary algorithms and especially hybrid systems combining methods from these fields, lead to successful industrial applications. The reader will find an interesting, inspiring and wide variety of soft computing techniques and applications in this book.

Description: This book is going to be the first well organized book for soft computing, including all the three major constituents or aspect of soft computing (neural networks, fuzzy logic and evolutionary computation), and hopefully will be proved beneficial for both kind of people; those striving to gain knowledge and those striving to score grades. The book is comprised of each and every topic of soft computing is a vast field of artificial intelligence with very much exploration to real time problems, especially regarding the quench of decision making and automation in the leading AI industries. Key Features: Comprehensive coverage of various aspects of soft computing concepts. Artificial intelligence, Neuro computing, Fuzzy logic Evolutionary computation. Strictly in accordance for the syllabus covered under UG, PG, and Doctoral courses. (B.E. / B. Tech./ MCA/ M. Tech/ Research Scholars) Simple language, crystal clear approach, straight forward comprehensible presentation. The concepts are duly supported by several examples. Important question papers for every chapters. Table of contents: Chapter 1: Introduction to Neuro-computing Chapter 2: Training the Neural networks Chapter 3: The unsupervised networks Chapter 4: The fuzzy logic Chapter 5: The Evolutionary computation Chapter 6: Few Auxiliary algorithms

The book "Soft Computing Based Modeling in Intelligent Systems" contains the - tended works originally presented at the IEEE International Workshop SOFA 2005 and additional papers. SOFA, an acronym for SOFt computing and Applications, is an international wo- shop intended to advance the theory and applications of intelligent systems and soft computing. Lotfi Zadeh, the inventor of fuzzy logic, has suggested the term "Soft Computing." He created the Berkeley Initiative of Soft Computing (BISC) to connect researchers working in these new areas of AI. Professor Zadeh participated actively in our wo- shop. Soft Computing techniques are tolerant to imprecision, uncertainty and partial truth. Due to the large variety and complexity of the domain, the constituting methods of Soft Computing are not competing for a comprehensive ultimate solution. Instead they are complementing each other, for dedicated solutions adapted to each specific pr- lem. Hundreds of concrete applications are already available in many domains. Model based approaches offer a very challenging way to integrate a priori knowledge into procedures. Due to their flexibility, robustness, and easy interpretability, the soft c- puting applications will continue to have an exceptional role in our technologies. The applications of Soft Computing techniques in emerging research areas show its mat- ity and

usefulness. The IEEE International Workshop SOFA 2005 held Szeged-Hungary and Arad- Romania in 2005 has led to the publication of these two edited volumes. This volume contains Soft Computing methods and applications in modeling, optimisation and prediction.

The book presents a clear understanding of a new type of computation system, the Cellular Neural Network (CNN), which has been successfully applied to the solution of many heavy computation problems, mainly in the fields of image processing and complex partial differential equations. The text describes how CNN will improve the soft-computation toolbox, and examines the many applications of soft computing to complex systems.

Offers an introduction to soft computing, a family consisting of many members, namely Genetic Algorithms (GAs), Fuzzy Logic (FL), Neural Networks (NNs) and others. In this book, the working cycle of a GA is explained in detail. It discusses the mechanisms of some specialized Gas with examples.

This book presents the necessary and essential backgrounds of fuzzy set theory and linear programming, particularly a broad range of common Fuzzy Linear Programming (FLP) models and related, convenient solution techniques. These models and methods belong to three common classes of fuzzy linear programming, namely: (i) FLP problems in which all coefficients are fuzzy numbers, (ii) FLP problems in which the right-hand-side vectors and the decision variables are fuzzy numbers, and (iii) FLP problems in which the cost coefficients, the right-hand-side vectors and the decision variables are fuzzy numbers. The book essentially generalizes the well-known solution algorithms used in linear programming to the fuzzy environment. Accordingly, it can be used not only as a textbook, teaching material or reference book for undergraduate and graduate students in courses on applied mathematics, computer science, management science, industrial engineering, artificial intelligence, fuzzy information processes, and operations research, but can also serve as a reference book for researchers in these fields, especially those engaged in optimization and soft computing. For textbook purposes, it also includes simple and illustrative examples to help readers who are new to the field.

The Soft Computing techniques, which are based on the information processing of biological systems are now massively used in the area of pattern recognition, making prediction & planning, as well as acting on the environment. Ideally speaking, soft computing is not a subject of homogeneous concepts and techniques; rather, it is an amalgamation of distinct methods that confirms to its guiding principle. At present, the main aim of soft computing is to exploit the tolerance for imprecision and uncertainty to achieve tractability, robustness and low solutions cost. The principal constituents of soft computing techniques are probabilistic reasoning, fuzzy logic, neuro-computing, genetic algorithms, belief networks, chaotic systems, as well as learning theory. This book covers contributions from various authors to demonstrate the use of soft computing techniques in various applications of engineering.

Admittedly, the notion "intelligence or intelligent computing" has been around us for several decades, implicitly indicating any non-conventional methods of solving complex system problems such as expert systems and intelligent control techniques that mimic human skill and replace human operators for automation. Various kinds of intelligent methods have been suggested, phenomenological or ontological, and we have been witnessing quite successful applications. On the other hand, "Soft Computing Techniques" is the concept coined by Lotfi Zadeh, referring to "a set of approaches of computing which parallels the remarkable ability of the human mind to reason and learn in an environment of uncertainty, imprecision and partial truth." Such a notion is well contrasted with the conventional binary logic based hard computing and has been effectively utilized with the guiding principle of "exploiting the tolerance for uncertainty, imprecision and partial truth to achieve tractability, robustness and low solution cost." The soft computing techniques are often employed as the technical entities in a tool box with tools being FL, ANN, Rough Set, GA etc. Based on one's intuition and experience, an engineer can build and realize human-like systems by smartly mixing proper technical tools effectively and efficiently in a wide range of fields. For some time, the soft computing techniques are also referred to as intelligent computing tools.

Technology in today's world has continued to develop into multifaceted structures. The performance of computers, specifically, has significantly increased leading to various and complex problems regarding the dependability of these systems. Recently, solutions for these issues have been based on soft computing methods; however, there lacks a considerable amount of research on the applications of these techniques within system dependability. Soft Computing Methods for System Dependability is a collection of innovative research on the applications of these processing techniques for solving problems within the dependability of computer system performance. This book will feature comparative experiences shared by researchers regarding the development of these technological solutions. While highlighting topics including evolutionary computing, chaos theory, and artificial neural networks, this book is ideally designed for researchers, data scientists, computing engineers, industrialists, students, and academicians in the field of computer science.

This book is an introduction to some new fields in soft computing with its principal components of fuzzy logic, ANN and EA. The approach in this book is to provide an understanding of the soft computing field and to work through soft computing using examples. It also aims to integrate pseudo-code operational summaries and Matlab codes, to present computer simulation, to include real world applications and to highlight the distinctive work of human consciousness in machine.

Market\_Desc: · B. Tech (UG) students of CSE, IT, ECE · College Libraries · Research Scholars · Operational Research · Management Sector  
Special Features: Dr. S. N. Sivanandam has published 12 books · He has delivered around 150 special lectures of different specialization in Summer/Winter school and also in various Engineering colleges · He has guided and co guided 30 PhD research works and at present 9 PhD research scholars are working under him · The total number of technical publications in

International/National Journals/Conferences is around 700. He has also received Certificate of Merit 2005-2006 for his paper from The Institution of Engineers (India). He has chaired 7 International Conferences and 30 National Conferences. He is a member of various professional bodies like IE (India), ISTE, CSI, ACS and SSI. He is a technical advisor for various reputed industries and engineering institutions. His research areas include Modeling and Simulation, Neural Networks, Fuzzy Systems and Genetic Algorithm, Pattern Recognition, Multidimensional system analysis, Linear and Nonlinear control system, Signal and Image processing, Control System, Power system, Numerical methods, Parallel Computing, Data Mining and Database Security About The Book: This book is meant for a wide range of readers who wish to learn the basic concepts of soft computing. It can also be helpful for programmers, researchers and management experts who use soft computing techniques. The basic concepts of soft computing are dealt in detail with the relevant information and knowledge available for understanding the computing process. The various neural network concepts are explained with examples, highlighting the difference between various architectures. Fuzzy logic techniques have been clearly dealt with suitable examples. Genetic algorithm operators and the various classifications have been discussed in lucid manner, so that a beginner can understand the concepts with minimal effort.

Soft computing and nature-inspired computing both play a significant role in developing a better understanding to machine learning. When studied together, they can offer new perspectives on the learning process of machines. The Handbook of Research on Soft Computing and Nature-Inspired Algorithms is an essential source for the latest scholarly research on applications of nature-inspired computing and soft computational systems. Featuring comprehensive coverage on a range of topics and perspectives such as swarm intelligence, speech recognition, and electromagnetic problem solving, this publication is ideally designed for students, researchers, scholars, professionals, and practitioners seeking current research on the advanced workings of intelligence in computing systems.

Soft computing techniques are no longer limited to the arena of computer science. The discipline has an exponentially growing demand in other branches of science and engineering and even into health and social science. This book contains theory and applications of soft computing in engineering, health, and social and applied sciences. Different soft computing techniques such as artificial neural networks, fuzzy systems, evolutionary algorithms and hybrid systems are discussed. It also contains important chapters in machine learning and clustering. This book presents a survey of the existing knowledge and also the current state of art development through original new contributions from the researchers. This book may be used as a one-stop reference book for a broad range of readers worldwide interested in soft computing. In each chapter, the preliminaries have been presented first and then the advanced discussion takes place. Learners and researchers from a wide variety of backgrounds will find several useful tools and techniques to develop their soft computing skills. This book is meant for graduate students, faculty and researchers willing to expand their knowledge in any branch of soft computing. The readers of this book will require minimum prerequisites of undergraduate studies in computation and mathematics.

A critical part of ensuring that systems are advancing alongside technology without complications is problem solving. Practical applications of problem-solving theories can model conflict and cooperation and aid in creating solutions to real-world problems. Soft-Computing-Based Nonlinear Control Systems Design is a critical scholarly publication that examines the practical applications of control theory and its applications in problem solving to fields including economics, environmental management, and financial modelling. Featuring a wide range of topics, such as fuzzy logic, nature-inspired algorithms, and cloud computing, this book is geared toward academicians, researchers, and students seeking relevant research on control theory and its practical applications.

Proper analysis of image and multimedia data requires efficient extraction and segmentation techniques. Among the many computational intelligence approaches, the soft computing paradigm is best equipped with several tools and techniques that incorporate intelligent concepts and principles. This book is dedicated to object extraction, image segmentation, and edge detection using soft computing techniques with extensive real-life application to image and multimedia data. The authors start with a comprehensive tutorial on the basics of brain structure and learning, and then the key soft computing techniques, including evolutionary computation, neural networks, fuzzy sets and fuzzy logic, and rough sets. They then present seven chapters that detail the application of representative techniques to complex image processing tasks such as image recognition, lighting control, target tracking, object extraction, and edge detection. These chapters follow a structured approach with detailed explanations of the problems, solutions, results, and conclusions. This is both a standalone textbook for graduates in computer science, electrical engineering, system science, and information technology, and a reference for researchers and engineers engaged with pattern recognition, image processing, and soft computing.

This book offers a comprehensive overview of cutting-edge approaches for decision-making in hierarchical organizations. It presents soft-computing-based techniques, including fuzzy sets, neural networks, genetic algorithms and particle swarm optimization, and shows how these approaches can be effectively used to deal with problems typical of this kind of organization. After introducing the main classical approaches applied to multiple-level programming, the book describes a set of soft-computing techniques, demonstrating their advantages in providing more efficient solutions to hierarchical decision-making problems compared to the classical methods. Based on the book Fuzzy and Multi-Level Decision Making (Springer, 2001) by Lee E.S and Shih, H., this second edition has been expanded to include the most recent findings and methods and a broader spectrum of soft computing approaches. All the algorithms are presented in detail, together with a wealth of practical examples and solutions to real-world problems, providing students, researchers and professionals with a timely, practice-oriented reference guide to the area of interactive fuzzy decision making, multi-level programming and hierarchical optimization.

Advances in Soft Computing contains the most recent developments in the field of soft computing in engineering design and manufacture. The book comprises a selection of papers that were first presented in June 1998 at the 3rd On-line World Conference on Soft Computing in Engineering Design and Manufacturing. Amongst these are four invited papers by World-renowned researchers in the field. Soft computing is a collection of methodologies which aim to exploit tolerance for imprecision, uncertainty and partial truth to achieve tractability, robustness and low solution cost. The area of applications of soft computing is extensive. Principally the constituents of soft computing are: fuzzy computing, neuro-computing, genetic computing and probabilistic computing. The topics in this book are well focused on engineering design and manufacturing. This broad collection of 43 research papers, has been arranged into nine parts by the editors. These include: Design Support Systems, Intelligent Control, Data Mining and New Topics in EA basics. The papers on evolutionary design and optimisation are of particular interest. Innovative techniques are explored and the reader is introduced to new, highly advanced research results. The editors present a unique collection of papers that provide a comprehensive overview of current developments in soft computing research around the world.

This book presents a collection of mathematical models that deals with the real scenario in the industries. The primary objective of this book is to explore various effective methods for inventory control and management using soft computing techniques. Inventory control and management is a very tedious task faced by all the organizations in any sector of the economy. It makes decisions for policies, activities, and procedures in order to make sure that the right amount of each item is held in stock at any time. Many industries suffer from indiscipline while ordering and production mismatch. It is essential to provide best ordering policy to control such kind of mismatch in the industries. All the mathematical model solutions are provided with the help of various soft computing optimization techniques to determine optimal ordering policy. This book is beneficial for practitioners, educators, and researchers. It is also helpful for retailers/managers for improving business functions and making more accurate and realistic decisions. .

This book explores the concept of artificial intelligence based on knowledge-based algorithms. Given the current hardware and software technologies and artificial intelligence theories, we can think of how efficient to provide a solution, how best to implement a model and how successful to achieve it. This edition provides readers with the most recent progress and novel solutions in artificial intelligence. This book aims at presenting the research results and solutions of applications in relevance with artificial intelligence technologies. We propose to researchers and practitioners some methods to advance the intelligent systems and apply artificial intelligence to specific or general purpose. This book consists of 13 contributions that feature fuzzy (r, s)-minimal pre- and  $\alpha$ -open sets, handling big cooccurrence matrices, Xie-Beni-type fuzzy cluster validation, fuzzy c-regression models, combination of genetic algorithm and ant colony optimization, building expert system, fuzzy logic and neural network, individual role adaptation for team sports, application of polynomial neural networks, recursive neuro-fuzzy algorithm for water management, application of interactive genetic algorithm, and Artificial Neural Network (ANN) model. This edition is published in original, peer reviewed contributions covering from initial design to final prototypes and verification.

Risk is a crucial element in virtually all problems people in diverse areas face in their activities. It is impossible to find adequate models and solutions without taking it into account. Due to uncertainty and complexity in those problems, traditional "hard" tools and techniques may be insufficient for their formulation and solution. This is the first book in the literature that shows how soft computing methods (fuzzy logic, neural networks, genetic algorithms, etc.) can be employed to deal with various problems related to risk analysis, evaluation and management in various fields of technology, environment and finance.

Optimization techniques have developed into a modern-day solution for real-world problems in various industries. As a way to improve performance and handle issues of uncertainty, optimization research becomes a topic of special interest across disciplines. Problem Solving and Uncertainty Modeling through Optimization and Soft Computing Applications presents the latest research trends and developments in the area of applied optimization methodologies and soft computing techniques for solving complex problems. Taking a multi-disciplinary approach, this critical publication is an essential reference source for engineers, managers, researchers, and post-graduate students. 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.

This book illustrates the impact of soft computing techniques on software engineering research and practices dealing with a range of novel methods reshaping the software development process. Specifically, it is shown how Software Engineering tasks such as reuse-oriented classification (e.g. components' repositories), software diagnostic (e.g. bug detection and correction), effort prediction (e.g. project costs and time estimation), planning (e.g. project scheduling) and others can be appropriately handled by means of soft computing techniques. The book is a valuable reference for practitioners as well as an updated resource of ongoing interdisciplinary research in Soft Computing in Software Engineering.

"This book investigates the advent of soft computing and its applications in database technologies"--Provided by publisher.

The book presents innovative scientific research works by academics, research scholars and students, presented at the 2017 International Conference on Energy, Materials and Information Technology at

Amity University Jharkhand, India. It includes contributions on system solutions based on soft computing techniques, and covers innovative soft computing techniques and tools with advanced applications. A major focus of the book is on presenting interdisciplinary problems and how they can be solved using information technology, together with innovative connections to other disciplines. It also includes papers on cloud computing and WSN-related real-time research.

This book covers the issues related to optimization of engineering and management problems using soft computing techniques with an industrial outlook. It covers a broad area related to real life complex decision making problems using a heuristics approach. It also explores a wide perspective and future directions in industrial engineering research on a global platform/scenario. The book highlights the concept of optimization, presents various soft computing techniques, offers sample problems, and discusses related software programs complete with illustrations. Features Explains the concept of optimization and relevance to soft computing techniques towards optimal solution in engineering and management Presents various soft computing techniques Offers problems and their optimization using various soft computing techniques Discusses related software programs, with illustrations Provides a step-by-step tutorial on how to handle relevant software for obtaining the optimal solution to various engineering problems

This book describes different mathematical modeling and soft computing techniques used to solve practical engineering problems. It gives an overview of the current state of soft computing techniques and describes the advantages and disadvantages of soft computing compared to traditional hard computing techniques. Through examples and case studies the editors demonstrate and describe how problems with inherent uncertainty can be addressed and eventually solved through the aid of numerical models and methods. The chapters address several applications and examples in bioengineering science, drug delivery, solving inventory issues, Industry 4.0, augmented reality and weather forecasting. Other examples include solving fuzzy-shortest-path problems by introducing a new distance and ranking functions. Because, in practice, problems arise with uncertain data and most of them cannot be solved exactly and easily, the main objective is to develop models that deliver solutions with the aid of numerical methods. This is the reason behind investigating soft numerical computing in dynamic systems. Having this in mind, the authors and editors have considered error of approximation and have discussed several common types of errors and their propagations. Moreover, they have explained the numerical methods, along with convergence and consistence properties and characteristics, as the main objectives behind this book involve considering, discussing and proving related theorems within the setting of soft computing. This book examines dynamic models, and how time is fundamental to the structure of the model and data as well as the understanding of how a process unfolds • Discusses mathematical modeling with soft computing and the implementations of uncertain mathematical models • Examines how uncertain dynamic systems models include uncertain state, uncertain state space and uncertain state's transition functions • Assists readers to become familiar with many soft numerical methods to simulate the solution function's behavior This book is intended for system specialists who are interested in dynamic systems that operate at different time scales. The book can be used by engineering students, researchers and professionals in control and finite element fields as well as all engineering, applied mathematics, economics and computer science interested in dynamic and uncertain systems. Ali Ahmadian is a Senior Lecturer at the Institute of IR 4.0, The National University of Malaysia. Soheil Salahshour is an associate professor at Bahcesehir University.

This is a comprehensive textbook on fundamentals of methodologies and practices in soft computing domain for students of undergraduate and postgraduate engineering and allied courses who have opted for this course. Experts on the subject have deftly explained the concepts with help of examples and pseudo algorithms for various methods. Since computational intelligence and machine intelligence are backbone and foundation for smart systems, soft computing provides basis for building such systems. This book will equip readers to provide soft computing techniques with low cost and reasonably good solutions to hard problems.

This book plays a significant role in improvising human life to a great extent. The new applications of soft computing can be regarded as an emerging field in computer science, automatic control engineering, medicine, biology application, natural environmental engineering, and pattern recognition. Now, the exemplar model for soft computing is human brain. The use of various techniques of soft computing is nowadays successfully implemented in many domestic, commercial, and industrial applications due to the low-cost and very high-performance digital processors and also the decline price of the memory chips. This is the main reason behind the wider expansion of soft computing techniques and its application areas. These computing methods also play a significant role in the design and optimization in diverse engineering disciplines. With the influence and the development of the Internet of things (IoT) concept, the need for using soft computing techniques has become more significant than ever. In general, soft computing methods are closely similar to biological processes than traditional techniques, which are mostly based on formal logical systems, such as sentential logic and predicate logic, or rely heavily on computer-aided numerical analysis. Soft computing techniques are anticipated to complement each other. The aim of these techniques is to accept imprecision, uncertainties, and approximations to get a rapid solution. However, recent advancements in representation soft computing algorithms (fuzzy logic, evolutionary computation, machine learning, and probabilistic reasoning) generate a more intelligent and robust system providing a human interpretable, low-cost, approximate solution. Soft computing-based algorithms have demonstrated great performance to a variety of areas including multimedia retrieval, fault tolerance, system modelling, network architecture, Web semantics, big data analytics, time series, biomedical and health informatics, etc. Soft computing approaches such as genetic programming (GP), support vector machine–firefly algorithm (SVM-FFA), artificial neural network (ANN), and support vector machine–wavelet (SVM-Wavelet) have emerged as powerful computational models. These have also shown significant success in dealing with massive data analysis for large number of applications. All the researchers and practitioners will be highly benefited those who are working in field of computer engineering, medicine, biology application, signal processing, and mechanical engineering. This book is a good collection of state-of-the-art approaches for soft computing-based applications to various engineering fields. It is very beneficial for the new researchers and practitioners working in the field to quickly know the best performing methods. They would be able to compare different approaches and can carry forward their research in the most important area of research which has direct impact on betterment of the human life and health. This book is very useful because there is no book in the market which provides a good collection of state-of-the-art methods of soft computing-based models for multimedia retrieval, fault tolerance, system modelling, network architecture, Web semantics, big data analytics, time series, and biomedical and health informatics.

This book contains recent theoretical innovations and a comprehensive collection of industrial applications in the emerging field of Soft Computing. Soft computing is a new form of artificial intelligence and it consists of four core methodologies: Fuzzy Computing, Neuro Computing, Evolutionary Computation, and Probabilistic Computing. These individual techniques are clearly complementary or synergistic rather than competitive. Therefore, it is a common practice to combine two or three methodologies when solving complex problems. Also the systematic fusion of soft computing and hard computing is a highly potential alternative to be considered. Soft computing methodologies are suitable for various real-world applications, because the available information and system knowledge are often imprecise, un certain, or partially even incorrect. To handle such demanding conditions and obtain the required robustness with pure hard computing would typically be either very difficult or expensive. This book is a unique collection of technical articles

providing a thorough overview of the state-of-the-art theory and industrial applications. The core articles on evolutionary computation, fuzzy computing, and neuro computing are of particular interest to researchers and practicing engineers.

This two-volume book presents outcomes of the 7th International Conference on Soft Computing for Problem Solving, SocProS 2017. This conference is a joint technical collaboration between the Soft Computing Research Society, Liverpool Hope University (UK), the Indian Institute of Technology Roorkee, the South Asian University New Delhi and the National Institute of Technology Silchar, and brings together researchers, engineers and practitioners to discuss thought-provoking developments and challenges in order to select potential future directions. The book presents the latest advances and innovations in the interdisciplinary areas of soft computing, including original research papers in the areas including, but not limited to, algorithms (artificial immune systems, artificial neural networks, genetic algorithms, genetic programming, and particle swarm optimization) and applications (control systems, data mining and clustering, finance, weather forecasting, game theory, business and forecasting applications). It is a valuable resource for both young and experienced researchers dealing with complex and intricate real-world problems for which finding a solution by traditional methods is a difficult task.

Soft computing refers to a collection of computational techniques which study, model and analyse complex phenomena. As many textile engineering problems are inherently complex in nature, soft computing techniques have often provided optimum solutions to these cases. Although soft computing has several facets, it mainly revolves around three techniques; artificial neural networks, fuzzy logic and genetic algorithms. The book is divided into five parts, covering the entire process of textile production, from fibre manufacture to garment engineering. These include soft computing techniques in yarn manufacture and modelling, fabric and garment manufacture, textile properties and applications and textile quality evaluation. Covers the entire process of textile production, from fibre manufacture to garment engineering including artificial neural networks, fuzzy logic and genetic algorithms. Examines soft computing techniques in yarn manufacture and modelling, fabric and garment manufacture. Specifically reviews soft computing in relation to textile properties and applications featuring garment modelling and sewing machines.

Soft computing encompasses various computational methodologies, which, unlike conventional algorithms, are tolerant of imprecision, uncertainty, and partial truth. Soft computing technologies offer adaptability as a characteristic feature and thus permit the tracking of a problem through a changing environment. Besides some recent developments in areas like rough sets and probabilistic networks, fuzzy logic, evolutionary algorithms, and artificial neural networks are core ingredients of soft computing, which are all bio-inspired and can easily be combined synergetically. This book presents a well-balanced integration of fuzzy logic, evolutionary computing, and neural information processing. The three constituents are introduced to the reader systematically and brought together in differentiated combinations step by step. The text was developed from courses given by the authors and offers numerous illustrations as

"This publication presents a series of practical applications of different Soft Computing techniques to real-world problems, showing the enormous potential of these techniques in solving problems"--Provided by publisher.

We describe in this book, new methods and applications of hybrid intelligent systems using soft computing techniques. Soft Computing (SC) consists of several intelligent computing paradigms, including fuzzy logic, neural networks, and evolutionary algorithms, which can be used to produce powerful hybrid intelligent systems. The book is organized in five main parts, which contain a group of papers around a similar subject. The first part consists of papers with the main theme of intelligent control, which are basically papers that use hybrid systems to solve particular problems of control. The second part contains papers with the main theme of pattern recognition, which are basically papers using soft computing techniques for achieving pattern recognition in different applications. The third part contains papers with the themes of intelligent agents and social systems, which are papers that apply the ideas of agents and social behavior to solve real-world problems. The fourth part contains papers that deal with the hardware implementation of intelligent systems for solving particular problems. The fifth part contains papers that deal with modeling, simulation and optimization for real-world applications.

Market\_Desc: · B. Tech (UG) students of CSE, IT, ECE · College Libraries · Research Scholars · Operational Research · Management Sector  
Special Features: · Detailed explanation of soft computing concepts. · Study on various artificial neural network architecture. · Description on fuzzy logic techniques. · Introduction to genetic algorithm and its types for solving optimization problems. · Numerous artificial neural network, fuzzy logic and genetic algorithm problems. · Implementation of soft computing techniques using C and C++. · Simulated solutions for soft computing concepts using MATLAB package. · Application case studies on soft computing techniques on emerging fields. · Various hybrid soft computing techniques.  
New in this edition · Certain topics have been added such as: · Fundamentals of Genetic Algorithms · Genetic Modeling · Integration of Neural Networks, Fuzzy Logic, and Genetic Algorithms · A new chapter Hybrid Soft Computing Techniques has been added bringing the advantages of combining individual techniques. · 5 Sample Question Papers have been added at the end of the book. Accompanying CD contains · Power point presentations · Source Codes for Soft Computing Techniques in C · MATLAB Source Code Programs  
About The Book: In this book the basic concepts of soft computing are dealt in detail with the relevant information and knowledge available for understanding the computing process. The various neural network concepts are explained with examples, highlighting the difference between various architectures. Fuzzy logic techniques have been clearly dealt with suitable examples. Genetic algorithm operators and the various classifications have been discussed in lucid manner, so that a beginner can understand the concepts with minimal effort. The book can be used as a handbook as well as a guide for students of all engineering disciplines, soft computing research scholars, management sector, operational research area, computer applications and for various professionals who work in this area.

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