Fuzzy Algebra By Rajesh Kumar

Written and edited by a group of renowned specialists in the field, this outstanding new volume addresses primary computational techniques for developing new technologies in soft computing. It also highlights the security, privacy, artificial intelligence, and practical approaches needed by engineers and scientists in all fields of science and technology. It highlights the current research, which is intended to advance not only mathematics but all areas of science, research, and development, and where these disciplines intersect. As the book is focused on emerging concepts in machine learning and artificial intelligence algorithmic approaches and soft computing techniques, it is an invaluable tool for researchers, academicians, data scientists, and technology developers. The newest and most comprehensive volume in the area of mathematical methods for use in real-time engineering, this groundbreaking new work is a must-have for any engineer or scientist's library. Also useful as a textbook for the student, it is a valuable contribution to the advancement of the science, both a working handbook for the new hire or student, and a reference for the veteran engineer.

Introductory account of commutative algebra, aimed at students with a background in basic algebra.

This is the first book to present a detailed discussion of both classical and recent results on the popular Cahn–Hilliard equation and some of its variants. The focus is on mathematical analysis of Cahn–Hilliard models, with an emphasis on thermodynamically relevant logarithmic nonlinear terms, for which several questions are still open. Initially proposed in view of applications to materials science, the Cahn–Hilliard equation is now applied in many other areas, including image processing, biology, ecology, astronomy, and chemistry. In particular, the author addresses applications to image inpainting and tumor growth. Many chapters include open problems and directions for future research. The Cahn-Hilliard Equation: Recent Advances and Applications is intended for graduate students and researchers in applied mathematics, especially those interested in phase separation models and their generalizations and applications to other fields. Materials scientists also will find this text of interest.

This exciting new volume will provide a comprehensive overview of the applications of geoinformatics technology for engineers, scientists, and students to become more productive, more aware, and more responsive to global climate change issues and how to manage sustainable development of Earth's resources. Over the last few years, the stress on natural resources has increased enormously due to anthropogenic activities especially through urbanization and industrialization processes. Sustainable development while protecting the Earth's environment involves the best possible management of natural resources, subject to the availability of reliable, accurate and timely information on regional and global scales. There is an increasing demand for an interdisciplinary approach and sound knowledge on each specific resource, as well as on the ecological and socio-economic perspectives related to their use. Geoinformatics, including Remote Sensing (RS), Geographical Information System (GIS), and Global Positioning System (GPS), is a groundbreaking and advanced technology for acquiring information required for natural resource management and addressing the concerns related to sustainable development. It offers a powerful and proficient tool for mapping, monitoring, modeling, and management of natural resources. There is, however, a lack of studies in understanding the core science and research elements of geoinformatics, as well as larger issues of scaling to use geoinformatics in sustainable development and management practices of natural resources. There is also a fundamental gap between the theoretical concepts and the operational use of these advance techniques. Sustainable Development Practices Using Geoinformatics, written by well-known academicians, experts and researchers provides answers to these problems, offering the engineer, scientist, or student the most thorough, comprehensive, and practical coverage of this subject available today, a must-have for any library.

This book is the first to be devoted entirely to fuzzy abstract algebra. It presents an up-to-date version of fuzzy commutative algebra, and focuses on the connection between L-subgroups of a group, and L-subfields of a field. In particular, an up-to-date treatment of nonlinear systems of fuzzy intersection equations is given. Contents:L-Subsets and L-SubgroupsL-Subgroups of Abelian GroupsL-Subrings and L-IdealsL-SubmodulesL-SubfieldsStructure of L-Subrings and L-IdealsAlgebraic L-Varieties and Intersection EquationsL-SubspacesGalois Theory and Group L-Subalgebras Readership: Pure mathematicians. Keywords:Fuzzy Subsets;Fuzzy Subgroups;Fuzzy Subrings;Fuzzy Ideals;Fuzzy Submodules ;Fuzzy Subfields;Fuzzy Varieties;Fuzzy Subspaces;Fuzzy Galois Theory;Fuzzy Group SubalgebrasReviews: "The book is self-contained … This will serve as a nice reference book for researchers in the field. It may also be used as a good text for an advanced graduate course. There are a good number of exercises at the end of each chapter of the book." Mathematical Reviews

The author studies the Smarandache Fuzzy Algebra, which, like its predecessor Fuzzy Algebra, arose from the need to define structures that were more compatible with the real world where the grey areas mattered, not only black or white.In any human field, a Smarandache n-structure on a set S means a weak structure {w(0)} on S such that there exists a chain of proper subsets P(n-1) in P(n-2) in?in P(2) in P(1) in S whose corresponding structures verify the chain {w(n-1)} includes {w(n-2)} includes? includes {w(2)} includes {w(1)} includes {w(0)}, where 'includes' signifies 'strictly stronger' (i.e., structure satisfying more axioms).This book is referring to a Smarandache 2-algebraic structure (two levels only of structures in algebra) on a set S, i.e. a weak structure {w(0)} on S such that there exists a proper subset P of S, which is embedded with a stronger structure {w(1)}. Properties of Smarandache fuzzy semigroups, groupoids, loops, bigroupoids, biloops, non-associative rings, birings, vector spaces, semirings, semivector spaces, non-associative semirings, bisemirings, near-rings, non-associative near-ring, and binear-rings are presented in the second part of this book together with examples, solved and unsolved problems, and theorems. Also, applications of Smarandache groupoids, near-rings, and semirings in automaton theory, in error correcting codes, and in the

construction of S-sub-biautomaton can be found in the last chapter.

This book constitutes the refereed proceedings of the International Conference on Mathematical Modelling and Scientific Intelligence, ICMMSC 2012, Gandhigram, Tamil Nadu, India, in March 2012. The 62 revised full papers presented were carefully reviewed and selected from 332 submissions. The papers are organized in two topical sections on mathematical modelling and on scientific computation.

Advanced Computing, Networking and Informatics are three distinct and mutually exclusive disciplines of knowledge with no apparent sharing/overlap among them. However, their convergence is observed in many real world applications, including cyber-security, internet banking, healthcare, sensor networks, cognitive radio, pervasive computing amidst many others. This two volume proceedings explore the combined use of Advanced Computing and Informatics in the next generation wireless networks and security, signal and image processing, ontology and human-computer interfaces (HCI). The two volumes together include 132 scholarly articles, which have been accepted for presentation from over 550 submissions in the Third International Conference on Advanced Computing, Networking and Informatics, 2015, held in Bhubaneswar, India during June 23–25, 2015.

This unique volume presents the scientific achievements, significant discoveries and pioneering contributions of various academicians, industrialist and research scholars. The book is an essential source of reference and provides a comprehensive overview of the author's work in the field of mathematics, statistics and computer science. Contents:Databased Intrinsic Weights of Indicators of Multi-Indicator Systems and Performance Measures of Multivariate Rankings of Systemic Objects (G P Patil & S W Joshi)Statistical Aspects of SuDoKu-Based Experimental Designs (Jyotirmoy Sarkar & Bikas K Sinha)Multi Criteria Decision Making Model for Optimal Selection of Recovery Facility Location and Collection Routes for a Sustainable Reverse Logistics Network under Fuzzy Environment (J D Darbari, V Agarwal & P C Jha)Optimal allocation of SKU and Safety Stock in Supply Chain System Network (K Gandhi, K Goyal, A Jha & J D Darbari)Bi-Objective Optimization Model for Fault-Tolerant Embedded Systems Under Build-Or-Buy Strategy Incorporating Recovery Block Scheme (R Kaur, S Arora, P C Jha & S Madan)Study of a Problem of Annular Cylinder Under Two-Temperature Thermoelasticity with Thermal Relaxation Parameters (Santwana Mukhopadhyay & Roushan Kumar)Multi-Criteria Advertisement Allocation Model of Multiple Advertisers on a Television Network (G Kaur, S Aggarwal & P C Jha)Computation of Maximum Likelihood Estimates in Three Parameter Weibull for Censored Data (Sanjeeva Kumar Jha)On Statistical Quality Control Techniques Based on Ranked Set Sampling (Md Sarwar Alamand, Arun Kumar Sinha & Rahbar Ali)Approximate Solution for Nonlinear Oscillator with Cubic and Quintic Nonlinearities (Jitendra Singh)Fuzzy DEA Cross-Efficiency Model for Ranking and Performance Evaluation Using Ideal and Anti-Ideal Decision Making Units (Seema Gupta, K N Rajeshwari & P C Jha)Poverty Analysis Using Scan Statistic Methods (Arun Kumar Sinha & Mukesh Kumar)Joint Performance Evaluation Data Envelopment Analysis Problem: An Interactive Approach (Riju Chaudhary, Pankaj Kumar Garg & P C Jha)Stochastic Modeling of a Repairable System Under Different Weather Conditions (S C Malik)Estimation of Risk Surfaces and Identification of District Boundaries for Tuberculosis in North-Eastern Indian States (Sanjeeva Kumar Jha & Ningthoukhongjam Vikimchandra Singh)Optimal Advertisement Allocation for Product Promotion on Television Channels (A Kaul, S Aggarwal, P C Jha & A Gupta)Fitting Linear Regressions: Development and Scope (Pranesh Kumar & J N Singh)The Impact of Family Planning on Fertility in Jharkhand State (Dilip Kumar)Spatial Analysis of AFP Surveillance Strategy for Polio Eradication in India (Pankaj Srivastava & Arun Kumar Sinha)On the Stochastic Modeling and Analysis of Bloom Caster System of Continuous Casting Shop Area of an Integrated Steel Plant (S K Singh)A Generalized Exponential-Lindley Distribution (A Mishra & Binod Kumar Sah)On Estimating the Urban Populations Using Minimum Information (Arun Kumar Sinha, Vijay Kumar & Ravi B P Verma)Fitting of Some Statistical Distributions of Daily Precipitation Data on North West India (NWI) Regions (Ranjan Kumar Sahoo)On Systematic Sampling Strategies for a Varying Sample Size (K B Panda)Estimation of Measurement Variance Under Two-Stage Sampling: Estimation of Population Mean (Pulakesh Maiti)The Interior-Point Revolution in Mathematical Programming and its Place in Applied Mathematics (J N Singh)Combined Exponential Type Estimators of Population Mean in Stratified Random Sampling (R Pandey, K Yadav & N S Thakur)An Analytical Study on Fractional Fokker-Planck Equation by Homotopy Analysis Transform Method (Jitendra Singh & Rajeev Kumar)L-Primitive Words in Submonoids of a Free Monoid (Shubh Narayan Singh & K V Krishna)Comparison of the Performance of Ranked Set Sampling with the Linear Regression Estimation (Rahbar Ali & Arun Kumar Sinha)Optimal Selection of Logistics Operating Channels for a Sustainable Reverse Supply Chain (Vernika Agarwal, Jyoti Dhingra Darbari & P C Jha)Reliability Measures of a Parallel-Unit System with Arbitrary Distributions of Random Variables (Jitender Kumar, M S Kadyan & S C Malik)Adoption and Evolution of FOSS: Key Factors in the Development of the Apache Web Server (Ranjan Kumar, Subhash Kumar & Sukanta Deb)Android/Tizen Based Artificial Intelligence Techniques for Prognosis and Diagnosis of Electrical Machines (K V Satya Bharath, Sheikh Suhail Muhammad & Priya Ranjan)Performance Analysis of Quality of Service for Different Service Classes in WiMAX Network (Jokhu Lal & Neeraj Tyagi)A Review of Application of Artificial Neural Network in Ground Water Modeling (Neeta Kumari, Gopal Pathak & Om Prakash)Density Based Outlier Detection (DBOD) in Data Mining: A Novel Approach (Govind Kumar Jha, Neeraj Kumar, Prabhat Ranjan & K G Sharma)Enhanced Velocity BPSO and Convergence Analysis on Dimensionality Reduction (Shikha Agarwal, R Rajesh & Prabhat Ranjan)Modification of the Android Operating System to Predict the Human Body Temperature Using Capacitive Touch (Shubhnkar Upadhyay, Avadhesh Singh, Kumar Abhishek & M P Singh)Context-Aware Based Clustering in Wireless Sensor Networks — A Survey (Santu Paul, M P Singh, J P Singh & Prabhat Kumar)Speech Emotion Recognition Using Vowel Onset and Offset Points (Manish Kumar & Jainath Yadav)A Novel Algorithm for Magic Squares (Govind Kumar Jha, Neeraj Kumar, Prabhat Ranjan & A P Shakya)A Note on Intelligent Street Light System (J Satheesh Kumar & C G Sreekaviya)An Overview of Test Case Optimization Using Meta-Heuristic Approach (Sushant Kumar, Prabhat Ranjan & R Rajesh)Smart City Traffic Management and Surveillance System for Indian Scenario (Tarun Kumar, Rohit Kumar Sachan & Dharmender Singh Kushwaha)Improving Attribute Inference Attack Using Link Prediction in Online Social Networks (Ashish Kumar & N C Rathore)A Dynamic Model on Computer Virus (Upendra Kumar)State of the Art In-Service Condition Monitoring Techniques of Rotary Machines (Krishna Kant Agrawal, Shekhar Verma & G N Pandey)Image Segmentation: A survey (K M Pooja & R Rajesh)Empirical Reliability Modeling of Transaction Oriented Autonomic Grid Service (Dharmendra Prasad Mahato & Ravi Shankar Singh)Performance Degradation of Language Identification System in Noisy Environment (Randheer Bagi & Jainath Yadav)Analysis of Software Fault Detection and Correction Processes with Log-Logistic Testing-Effort (Md Zafar Imam, Ishrat Jahan Ara & N Ahmad)Skewness Removal of LEACH Protocol for Wireless Sensor Networks (Vishal Gupta & M N Doja)A Novel Approach

for Fast Handoff in WLAN (Mithilesh Patel, Bhavna Singh, Sonam Gupta, Anurag Jajoo & Pavan Kumar Mishra)Facial Expression Recognition Using Histogram of Oriented Gradients (Jyoti Kumari & R Rajesh)Cloud Computing: Comparative Study Own Server vs Cloud Server (Surendra Kumar Singh)Mobile and GIS Framework for Plantations and Nursery (E-Plantations) (Shailesh Kumar Shrivastava & S K Mahendran)Internet Traffic Classification: A Survey (Gargi Srivastava, M P Singh, Prabhat Kumar & J P Singh)Comprehensive Study of Search Engine (Sarowar Kumar, Kumar Abhishek, Abhay Kumar & M P Singh)A Survey on Social Networks: Issues and Attacks (Anubha Maurya & M P Singh)Reduced Rule for Banknote Genuinity (Chhotu Kumar & Anil Kumar Dudyala)A Study on Medical Diagnosis Based on Inter Valued Fuzzy Cluster Analysis (Bhagwan Sahay Meena & Sharmila Bhattacharjee) Readership: Undergraduate students, graduate students and researchers in mathematics, computer science and statistics.

This book is an excellent starting point for any curriculum in fuzzy systems fields such as computer science, mathematics, business/economics and engineering. It covers the basics leading to: fuzzy clustering, fuzzy pattern recognition, fuzzy database, fuzzy image processing, soft computing, fuzzy applications in operations research, fuzzy decision making, fuzzy rule based systems, fuzzy systems modeling, fuzzy mathematics. It is not a book designed for researchers - it is where you really learn the "basics" needed for any of the above-mentioned applications. It includes many figures and problem sets at the end of sections.

Here comes the Best Seller! Since its first edition in 2012, Fast Track Objective Arithmetic has been great architect for building and enhancing Aptitude skills in lakhs of aspirant across the country. The first book of its kind has all the necessary elements required to master the concepts of Arithmetic through Level Graded Exercises, namely Base Level & Higher Skill Level. Comprehensively covering the syllabus of almost all competitive examinations like, RBI, SBI, IBPS PO, SSC, LIC, CDS, UPSC, Management and all other Entrance Recruitment and Aptitude Test, the books has perfect compilation of Basic Concepts & Short Tricks to solve different types of Arithmetical problems. Unlike before, this completely revised 2018 edition promises to be more beneficial than the older ones. With up to date coverage of all exam questions, new types of questions and tricks, the thoroughly checked error free edition will ensure Complete Command over the subject and help you succeed in the examinations.

Contributors to current issue (listed in papers' order): Ibrahim Yasser, Abeer Twakol, A. A. Abd El-Khalek, A. A. Salama, Ahmed Sharaf Al-Din, Issam Abu Al-Qasim, Rafif Alhabib, Magdy Badran, Remya P. B, Francina Shalini, Masoud Ghods, Zahra Rostami, A. Sahaya Sudha, Luiz Flavio Autran Monteiro Gomes, K.R. Vijayalakshmi, Prakasam Muralikrishna, Surya Manokaran, Nidhi Singh, Avishek Chakraborty, Soma Bose Biswas, Malini Majumdar, Rakhal Das, Binod Chandra Tripathy, Nidhi Singh, Avishek Chakraborty, Nilabhra Paul, Deepshikha Sarma, Akash Singh, Uttam Kumar Bera, Fatimah M. Mohammed, Sarah W. Raheem, Muhammad Riaz, Florentin Smarandache, Faruk Karaaslan, Masooma Raza Hashmi, Iqra Nawaz, Kousik Das, Sovan Samanta, Kajal De, Xavier Encarnacion, Nivetha Martin, I. Pradeepa, N. Ramila Gandhi, P. Pandiammal, Aiman Muzaffar, Md Tabrez Nafis, Shahab Saquib Sohail, Abhijit Saha, Jhulaneswar Baidya, Debjit Dutta, Irfan Deli, Said Broumi, Mohsin Khalid, Neha Andaleeb Khalid, Md. Hanif Page, Qays Hatem Imran, Shilpi Pal, S. Satham Hussain, Saeid Jafari, N. Durga, Hanieh Shambayati, Mohsen Shafiei Nikabadi, Seyed Mohammad, Ali Khatami Firouzabadi, Mohammad Rahmanimanesh, Mujahid Abbas, Ghulam Murtaza, K. Porselvi, B. Elavarasan, Y. B. Jun, Chinnadurai V, Sindhu M P, K.Radhika, K. Arun Prakash, Malayalan Lathamaheswari, Ruipu Tan, Deivanayagampillai Nagarajan, Talea Mohamed, Assia Bakali, Nivetha Martin, R. Dhavaseelan, Ali Hussein Mahmood Al-Obaidi, Suman Das, Surapati Pramanik, Madad Khan, Muhammad Zeeshan, Saima Anis, Abdul Sami Awan, M. Sarwar Sindhu, Tabasam Rashid, Agha Kashif, Rajesh Kumar Saini, Atul Sangal, Manisha.

The book focuses on soft computing and its applications to solve real-world problems in different domains, ranging from medicine and health care, to supply chain management, image processing and cryptanalysis. It includes high-quality papers presented at the International Conference on Soft Computing: Theories and Applications (SoCTA 2018), organized by Dr. B. R. Ambedkar National Institute of Technology, Jalandhar, Punjab, India. Offering significant insights into soft computing for teachers and researchers alike, the book inspires more researchers to work in the field of soft computing.

The Mathematical Combinatorics (International Book Series) is a fully refereed international book series with ISBN number on each issue, sponsored by the MADIS of Chinese Academy of Sciences, sponsored by the MADIS of Chinese Academy of Sciences and published in USA quarterly comprising 110-160 pages approx. per volume, which publishes original research papers and survey articles in all aspects of Smarandachemulti-spaces, Smarandache geometries, mathematical combinatorics, non-euclidean geometry and topology and their applications to other sciences.

Scientia Magna international book series are published in one or two volumes per year with more than 100 pages and over 1,000 copies.

Lotfi Zadeh introduced the notion of a fuzzy subset of a set in 1965. Ris seminal paper has opened up new insights and applications in a wide range of scientific fields. Azriel Rosenfeld used the notion of a fuzzy subset to put forth cornerstone papers in several areas of mathematics, among other discplines. Rosenfeld is the father of fuzzy abstract algebra. Kuroki is re sponsible for much of fuzzy ideal theory of semigroups. Others who worked on fuzzy semigroup theory, such as Xie, are mentioned in the bibliogra phy. The purpose of this book is to present an up to date account of fuzzy subsemigroups and fuzzy ideals of a semigroup. We concentrate mainly on theoretical aspects, but we do include applications. The applications are in the areas of fuzzy coding theory, fuzzy finite state machines, and fuzzy languages. An extensive account of fuzzy automata and fuzzy languages is given in [100]. Consequently, we only consider results in these areas that have not appeared in [100] and that pertain to semigroups. In Chapter 1, we review some basic results on fuzzy subsets, semigroups, codes, finite state machines, and languages. The purpose of this chapter is to present basic results that are needed in the remainder of the book. In Chapter 2, we introduce certain fuzzy ideals of a semigroup, namely, fuzzy two-sided ideals, fuzzy bi-ideals, fuzzy interior ideals, fuzzy quasi ideals, and fuzzy generalized bi-ideals.

This book constitutes the refereed proceedings of the International Conference on Advances in Information Technology and Mobile Communication, AIM 2011, held at Nagpur,

India, in April 2011. The 31 revised full papers presented together with 27 short papers and 34 poster papers were carefully reviewed and selected from 313 submissions. The papers cover all current issues in theory, practices, and applications of Information Technology, Computer and Mobile Communication Technology and related topics.

This book provides a timely overview of fuzzy graph theory, laying the foundation for future applications in a broad range of areas. It introduces readers to fundamental theories, such as Craine's work on fuzzy interval graphs, fuzzy analogs of Marczewski's theorem, and the Gilmore and Hoffman characterization. It also introduces them to the Fulkerson and Gross characterization and Menger's theorem, the applications of which will be discussed in a forthcoming book by the same authors. This book also discusses in detail important concepts such as connectivity, distance and saturation in fuzzy graphs. Thanks to the good balance between the basics of fuzzy graph theory and new findings obtained by the authors, the book offers an excellent reference guide for advanced undergraduate and graduate students in mathematics, engineering and computer science, and an inspiring read for all researchers interested in new developments in fuzzy logic and applied mathematics.

This book presents an up-to-date account of research in important topics of fuzzy group theory. It concentrates on the theoretical aspects of fuzzy subgroups of a group. It includes applications to abstract recognition problems and to coding theory. The book begins with basic properties of fuzzy subgroups. Fuzzy subgroups of Hamiltonian, solvable, P-Hall, and nilpotent groups are discussed. Construction of free fuzzy subgroups is determined. Numerical invariants of fuzzy subgroups of Abelian groups are developed. The problem in group theory of obtaining conditions under which a group can be expressed as a direct product of its normal subgroups is considered. Methods for deriving fuzzy theorems from crisp ones are presented and the embedding of lattices of fuzzy subgroups into lattices of crisp groups is discussed as well as deriving membership functions from similarity relations. The material presented makes this book a good reference for graduate students and researchers working in fuzzy group theory.

This volume presents a short guide to the extensive literature concerning semir ings along with a complete bibliography. The literature has been created over many years, in variety of languages, by authors representing different schools of mathematics and working in various related fields. In many instances the terminology used is not universal, which further compounds the difficulty of locating pertinent sources even in this age of the Internet and electronic dis semination of research results. So far there has been no single reference that could guide the interested scholar or student to the relevant publications. This book is an attempt to fill this gap. My interest in the theory of semirings began in the early sixties, when to gether with Bogdan W ~glorz I tried to investigate some algebraic aspects of compactifications of topological spaces, semirings of semicontinuous functions, and the general ideal theory for special semirings. (Unfortunately, local alge braists in Poland told me at that time that there was nothing interesting in investigating semiring theory because ring theory was still being developed). However, some time later we became aware of some similar investigations hav ing already been done. The theory of semirings has remained "my first love" ever since, and I have been interested in the results in this field that have been appearing in literature (even though I have not been active in this area myself).

This handbook is organized under three major parts. The first part of this handbook deals with multimedia security for emerging applications. The chapters include basic concepts of multimedia tools and applications, biological and behavioral biometrics, effective multimedia encryption and secure watermarking techniques for emerging applications, an adaptive face identification approach for android mobile devices, and multimedia using chaotic and perceptual hashing function. The second part of this handbook focuses on multimedia processing for various potential applications. The chapter includes a detail survey of image processing based automated glaucoma detection techniques and role of de-noising, recent study of dictionary learning based image reconstruction techniques for analyzing the big medical data, brief introduction of quantum image processing and it applications, a segmentation-less efficient Alzheimer detection approach, object recognition, image enhancements and de-noising techniques for emerging applications, improved performance of image compression approach, and automated detection of eye related diseases using digital image processing. The third part of this handbook introduces multimedia applications. The chapter includes the extensive survey on the role of multimedia in medicine and multimedia forensics classification, a finger based authentication system for e-health security, analysis of recently developed deep learning techniques for emotion and activity recognition. Further, the book introduce a case study on change of ECG according to time for user identification, role of multimedia in big data, cloud computing, the Internet of things (IoT) and blockchain environment in detail for real life applications. This handbook targets researchers, policy makers, programmers and industry professionals in creating new knowledge for developing efficient techniques/framework for multimedia applications. Advanced level students studying computer science, specifically security and multimedia will find this book useful as a reference.

This two-volume set (CCIS 1045 and CCIS 1046) constitutes the refereed proceedings of the Third International Conference on Advances in Computing and Data Sciences, ICACDS 2019, held in Ghaziabad, India, in April 2019. The 112 full papers were carefully reviewed and selected from 621 submissions. The papers are centered around topics like advanced computing, data sciences, distributed systems organizing principles, development frameworks and environments, software verification and validation, computational complexity and cryptography, machine learning theory, database theory, probabilistic representations.

This book provides an overview of the current state of the art in wireless networks around the globe, focusing on utilizing the latest artificial intelligence and soft computing techniques to provide design frameworks for wireless networks. These techniques play a vital role in developing a more robust algorithm suitable for the dynamic and heterogeneous environment, making the network self-managed, self-operational, and self-configurational, and efficiently reducing uncertainties and imprecise information.

Scientia Magna is a peer-reviewed, open access journal that publishes original research articles in all areas of mathematics and mathematical sciences. However, papers related to Smarandache's problems will be highly preferred.

This monograph is a continuation of several themes presented in my previous books [146, 149]. In those volumes, I was concerned primarily with the properties of semirings. Here, the objects of investigation are sets of the form RA, where R is a semiring and A is a set having a certain structure. The problem is one of translating that structure to RA in some "natural" way. As such, it

tries to find a unified way of dealing with diverse topics in mathematics and theoretical com puter science as formal language theory, the theory of fuzzy algebraic structures, models of optimal control, and many others. Another special case is the creation of "idempotent analysis" and similar work in optimization theory. Unlike the case of the previous work, which rested on a fairly established mathematical foundation, the approach here is much more tentative and docimastic. This is an introduction to, not a definitative presentation of, an area of mathematics still very much in the making. The basic philosphical problem lurking in the background is one stated suc cinctly by Hahle and Sostak [185]: ". . . to what extent basic fields of mathematics like algebra and topology are dependent on the underlying set theory?" The conflicting definitions proposed by various researchers in search of a resolution to this conundrum show just how difficult this problem is to see in a proper light.

Neural signal processing is a specialized area of signal processing aimed at extracting information or decoding intent from neural signals recorded from the central or peripheral nervous system. This has significant applications in the areas of neuroscience and neural engineering. These applications are famously known in the area of brain–machine interfaces. This book presents recent advances in this flourishing field of neural signal processing with demonstrative applications.

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