



Hend Dawood

Theories of Interval Arithmetic

Mathematical Foundations and Applications



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Theories Of Interval Arithmetic Mathematical Foundations And Applications

Theo M. V. Janssen



Theories Of Interval Arithmetic Mathematical Foundations And Applications:

Theories of Interval Arithmetic Hend Dawood, 2011-10-07 Scientists are all the time in a struggle with uncertainty which is always a threat to a trustworthy scientific knowledge. A very simple and natural idea to defeat uncertainty is that of enclosing uncertain measured values in real closed intervals. On the basis of this idea, interval arithmetic is constructed. The idea of calculating with intervals is not completely new in mathematics; the concept has been known since Archimedes, who used guaranteed lower and upper bounds to compute his constant π . Interval arithmetic is now a broad field in which rigorous mathematics is associated with scientific computing. This connection makes it possible to solve uncertainty problems that cannot be efficiently solved by floating point arithmetic. Today, application areas of interval methods include electrical engineering, control theory, remote sensing, experimental and computational physics, chaotic systems, celestial mechanics, signal processing, computer graphics, robotics, and computer-assisted proofs. The purpose of this book is to be a concise but informative introduction to the theories of interval arithmetic as well as to some of their computational and scientific applications.

Editorial Reviews This new book by Hend Dawood is a fresh introduction to some of the basics of interval computation. It stops short of discussing the more complicated subdivision methods for converging to ranges of values; however, it provides a bit of perspective about complex interval arithmetic, constraint intervals, and modal intervals, and it does go into the design of hardware operations for interval arithmetic, which is something still to be done by computer manufacturers.

Ramon E Moore, The Founder of Interval Computations, Professor Emeritus of Computer and Information Science, Department of Mathematics, The Ohio State University, Columbus, U.S.A. A popular math-oriented introduction to interval computations and its applications. This short book contains an explanation of the need for interval computations, a brief history of interval computations, and main interval computation techniques. It also provides an impressive list of main practical applications of interval techniques.

Vladik Kreinovich, International Journal of Uncertainty, Fuzziness, and Knowledge-Based Systems, Professor of Computer Science, University of Texas at El Paso, El Paso, Texas, U.S.A. I am delighted to see one more Egyptian citizen re-entering the field of interval mathematics, invented in this very country thousands of years ago.

Marek W Gutowski, Institute of Physics, Polish Academy of Sciences, Warszawa, Poland *Mathematical Methods in Interdisciplinary Sciences* Sneathish Chakraverty, 2020-06-15 Brings mathematics to bear on your real world scientific problems.

Mathematical Methods in Interdisciplinary Sciences provides a practical and usable framework for bringing a mathematical approach to modelling real life scientific and technological problems. The collection of chapters Dr Sneathish Chakraverty has provided describes in detail how to bring mathematics, statistics, and computational methods to the fore to solve even the most stubborn problems involving the intersection of multiple fields of study. Graduate students, postgraduate students, researchers, and professors will all benefit significantly from the author's clear approach to applied mathematics. The book covers a wide range of interdisciplinary topics in which mathematics can be brought to bear on challenging problems.

requiring creative solutions Subjects include Structural static and vibration problems Heat conduction and diffusion problems Fluid dynamics problems The book also covers topics as diverse as soft computing and machine intelligence It concludes with examinations of various fields of application like infectious diseases autonomous car and monotone inclusion problems

Mathematics of Uncertainty Modeling in the Analysis of Engineering and Science Problems

Chakraverty, S.,2014-01-31 This book provides the reader with basic concepts for soft computing and other methods for various means of uncertainty in handling solutions analysis and applications Provided by publisher **10th International Conference on Theory and Application of Soft Computing, Computing with Words and Perceptions -**

ICSCCW-2019 Rafik A. Aliev,Janusz Kacprzyk,Witold Pedrycz,Mo Jamshidi,Mustafa B. Babanli,Fahreddin M.

Sadikoglu,2019-11-19 This book presents the proceedings of the 10th Conference on Theory and Applications of Soft Computing Computing with Words and Perceptions ICSCCW 2019 held in Prague Czech Republic on August 27 28 2019 It includes contributions from diverse areas of soft computing and computing with words such as uncertain computation decision making under imperfect information neuro fuzzy approaches deep learning natural language processing and others The topics of the papers include theory and applications of soft computing information granulation computing with words computing with perceptions image processing with soft computing probabilistic reasoning intelligent control machine learning fuzzy logic in data analytics and data mining evolutionary computing chaotic systems soft computing in business economics and finance fuzzy logic and soft computing in earth sciences fuzzy logic and soft computing in engineering fuzzy logic and soft computing in material sciences soft computing in medicine biomedical engineering and pharmaceutical sciences Showcasing new ideas in the field of theories of soft computing and computing with words and their applications in economics business industry education medicine earth sciences and other fields it promotes the development and implementation of these paradigms in various real world contexts This book is a useful guide for academics practitioners and graduates

Computational Science - ICCS 2018 Yong Shi,Haohuan Fu,Yingjie Tian,Valeria V. Krzhizhanovskaya,Michael

Harold Lees,Jack Dongarra,Peter M. A. Sloot,2018-06-12 The three volume set LNCS 10860 10861 and 10862 constitutes the proceedings of the 18th International Conference on Computational Science ICCS 2018 held in Wuxi China in June 2018 The total of 155 full and 66 short papers presented in this book set was carefully reviewed and selected from 404 submissions The papers were organized in topical sections named Part I ICCS Main Track Part II Track of Advances in High Performance Computational Earth Sciences Applications and Frameworks Track of Agent Based Simulations Adaptive Algorithms and Solvers Track of Applications of Matrix Methods in Artificial Intelligence and Machine Learning Track of Architecture Languages Compilation and Hardware Support for Emerging ManYcore Systems Track of Biomedical and Bioinformatics Challenges for Computer Science Track of Computational Finance and Business Intelligence Track of Computational Optimization Modelling and Simulation Track of Data Modeling and Computation in IoT and Smart Systems Track of Data

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and Project Management — Best Practices in Selected Industries Kenneth David Strang, Narasimha Rao

Vajjhala, 2025-03-06 This book examines the latest best practices in international program and project management offering invaluable insights across various industries Edited by renowned experts this book brings together a diverse range of case studies and research from leading scholars and practitioners worldwide From a detailed macro environmental analysis of contemporary project management to exploring the complexities of AI project management each chapter highlights critical strategies tools and methodologies needed to tackle today's evolving challenges in program and project management Topics such as ISO standards ISO 21502 project management body of knowledge PMBOK risk management in high complexity environments stakeholder management and agile business intelligence projects are discussed through practical case studies from industries ranging from fintech and biopharmaceuticals to public administration This book is an essential resource for project managers researchers and industry professionals seeking to enhance their understanding of global project management dynamics and apply cutting edge approaches across sectors Chapter 7 is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com *Facets of Uncertainties and Applications* Mihir K.

Chakraborty, Andrzej Skowron, Manoranjan Maiti, Samarjit Kar, 2015-05-11 Since the emergence of the formal concept of probability theory in the seventeenth century uncertainty has been perceived solely in terms of probability theory However this apparently unique link between uncertainty and probability theory has come under investigation a few decades back Uncertainties are nowadays accepted to be of various kinds Uncertainty in general could refer to different sense like not certainly known questionable problematic vague not definite or determined ambiguous liable to change not reliable In Indian languages particularly in Sanskrit based languages there are other higher levels of uncertainties It has been shown that several mathematical concepts such as the theory of fuzzy sets theory of rough sets evidence theory possibility theory theory of complex systems and complex network theory of fuzzy measures and uncertainty theory can also successfully model uncertainty **Hard and Soft Computing for Artificial Intelligence, Multimedia and Security** Shin-ya

Kobayashi, Andrzej Piegat, Jerzy Pejaś, Imed El Fray, Janusz Kacprzyk, 2016-10-19 This book gathers the proceedings of the 20th International Conference on Advanced Computer Systems 2016 held in Międzyzdroje Poland on October 19-21 2016 Addressing topics that include artificial intelligence AI software technologies multimedia systems IT security and design of information systems the main purpose of the conference and the book is to create an opportunity to exchange significant insights on this area between science and business In particular this expertise concerns the use of hard and soft computational methods for artificial intelligence image and data processing and finally the design of information and security

systems The book contains a collection of carefully selected peer reviewed papers combining high quality original unpublished research case studies and implementation experiences

Foundations and Applications of Montague Grammar Theo M. V. Janssen,1986 **Mathematical Reviews** ,2005 Foundations and Applications of Montague Grammar: Philosophy, framework, computer science Theo M. V. Janssen,1986 **University of Colorado at Denver Catalog** University of Colorado at Denver,2002 **Design Theory and Methodology, DTM '92** Dean Taylor,Larry A. Stauffer,1992 **Reviews in Numerical Analysis, 1980-86** ,1987 These five volumes bring together a wealth of bibliographic information in the area of numerical analysis Containing over 17 600 reviews of articles books and conference proceedings these volumes represent all the numerical analysis entries that appeared in Mathematical Reviews between 1980 and 1986 Author and key indexes appear at the end of volume 5 *Proceedings of the First International Conference on Industrial and Applied Mathematics (ICIAM 87)* Adriaan Herman Pieter van der Burgh,Robert M. M. Mattheij,1987

Mathematical Signal Analysis Patrick J. Oonincx,2000 *Integrating Technology Into Computer Science Education* Lillian N. Cassel,Mats Daniels,1997 **Computer Mathematics, Series II** Geoffrey Knight,1969 General numerical and symbolic analysis Elementary algebra Calculus Difference differential and integral equations Abstracts mathematics Probability and statistics Optimization mathematical programming operations research Mathematical communication theory information theory Mathematical systems and control theory Mathematical logic and switching theory automata

Telecommunication Journal ,1976 Methods, Concepts and Ideas in Mathematics A. F. Monna,1986

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