

Optimization And Related Fields Proceedings Of The G Stampacchia International School Of Mathematic

This book describes the state-of-the-art in ontology-driven information systems (ODIS) and gives a complete perspective on the problems, solutions and open research questions in this field. The book covers four broad areas: foundations of ODIS, ontological engineering, ODIS architectures, and ODIS applications. It will trigger innovative thought processes and open up significant new domains in ODIS research.

Considered one of the most innovative research directions, computational intelligence (CI) embraces techniques that use global search optimization, machine learning, approximate reasoning, and connectionist systems to develop efficient, robust, and easy-to-use solutions amidst multiple decision variables, complex constraints, and tumultuous environments. CI techniques involve a combination of learning, adaptation, and evolution used for intelligent applications. Computational Intelligence Paradigms for Optimization Problems Using MATLAB®/ Simulink® explores the performance of CI in terms of knowledge representation, adaptability, optimality, and processing speed for different real-world optimization problems. Focusing on the practical implementation of CI techniques, this book: Discusses the role of CI paradigms in engineering applications such as unit commitment and economic load dispatch, harmonic reduction, load frequency control and automatic voltage regulation, job shop scheduling, multidepot vehicle routing, and digital image watermarking Explains the impact of CI on power systems, control systems, industrial automation, and image processing through the above-mentioned applications Shows how to apply CI algorithms to constraint-based optimization problems using MATLAB® m-files and Simulink® models Includes experimental analyses and results of test systems Computational Intelligence Paradigms for Optimization Problems Using MATLAB®/ Simulink® provides a valuable reference for industry professionals and advanced undergraduate, postgraduate, and research students.

This volume contains detailed, worked-out notes of six main courses given at the Saint-Flour Summer Schools from 1985 to 1987.

The 6th meeting sponsored by IFIP Working Group 7.5, on reliability and optimization of structural systems, took place in September 1994 in Assisi, Italy. This book contains the papers presented at the working conference including topics such as reliability of special structures, fatigue, failure modes and time-variant systems reliability.

Discretization Methods and Structural Optimization – Procedures and Applications

Intelligent Computing & Optimization

Lecture Notes in Mathematics

Proceedings of the International Field Exploration and Development Conference 2018

Optimization Methods Applied to Power Systems

Select Proceedings of RAM 2021

Volume 2

This proceedings is the result of the increasing interest in the development and application of grid generation techniques in computational fluid dynamics (CFD) and related fields. The use of these techniques, formerly restricted to research and specialist organizations, is becoming more widespread due to significant advances in hardware and software technology. This conference series was started in 1986 to serve as an internationally acknowledged forum for researchers in the - at the time - novel and emerging field of grid generation techniques applied to CFD. In addition to a 20-page color section, this edition contains papers covering a wide spectrum of methods and techniques, both theoretical and applied, contributing to the scientific advance of this field.

In recent years, the Finite Element Methods FEM were more and more employed in development and design departments as very fast working tools in order to determine stresses, deformations, eigenfrequencies etc. for all kinds of constructions under complex loading conditions. Meanwhile, very effective software systems have been developed by various research teams although some mathematical problems (e. g. convergence) have not been solved satisfactorily yet. In order to make further advances and to find a common language between mathematicians and mechanics the "Society for Applied Mathematics and Mechanics" (GAMM) agreed on the foundation of a special Committee: "Discretization Methods in Solid Mechanics" focussing on the following problems: - Structuring of various methods (displacement functions, hybrid and mixed approaches, etc. >, - Survey of approach functions (Lagrange-/Hermite-polynominals, Spline-functions), - Description of singularities, - Convergence and stability, - Practical and theoretical optimality to all mentioned issues (single and interacting). One of the basic aims of the GAMM-Committee is the interdisciplinary cooperation between mechanics, mathematicians, and users which shall be intensified. Thus, on September 22, 1985 the committee decided to hold a seminar on "Structural Optimization" in order to allow an exchange of experiences and thoughts between the experts of finite element methods and those of structural optimization. A GAMM-seminar entitled "Discretization Methods and Structural Optimization - Procedures and Applications" was hold on October 5-7, 1988 at the Unversity of Siegen.

Volume 9 of the series presents 38 technical papers covering a wide range of environmental issues, including Bioremediation, Chemical Oxidation, Heavy Metals, MTBE, Phytoremediation, Radiation, Regulatory and Legal issues, Remediation, Risk Based Cleanup and Site Assessment. Contributing authors are drawn from across the spectrum of interest: government agencies, academic institutions, the consulting community and industrial companies.

Analog CMOS integrated circuits are in widespread use for communications, entertainment, multimedia, biomedical, and many other applications that interface with the physical world. Although analog CMOS design is greatly complicated by the design choices of drain current, channel width, and channel length

present for every MOS device in a circuit, these design choices afford significant opportunities for optimizing circuit performance. This book addresses tradeoffs and optimization of device and circuit performance for selections of the drain current, inversion coefficient, and channel length, where channel width is implicitly considered. The inversion coefficient is used as a technology independent measure of MOS inversion that permits design freely in weak, moderate, and strong inversion. This book details the significant performance tradeoffs available in analog CMOS design and guides the designer towards optimum design by describing: An interpretation of MOS modeling for the analog designer, motivated by the EKV MOS model, using tabulated hand expressions and figures that give performance and tradeoffs for the design choices of drain current, inversion coefficient, and channel length; performance includes effective gate-source bias and drain-source saturation voltages, transconductance efficiency, transconductance distortion, normalized drain-source conductance, capacitances, gain and bandwidth measures, thermal and flicker noise, mismatch, and gate and drain leakage current Measured data that validates the inclusion of important small-geometry effects like velocity saturation, vertical-field mobility reduction, drain-induced barrier lowering, and inversion-level increases in gate-referred, flicker noise voltage In-depth treatment of moderate inversion, which offers low bias compliance voltages, high transconductance efficiency, and good immunity to velocity saturation effects for circuits designed in modern, low-voltage processes Fabricated design examples that include operational transconductance amplifiers optimized for various tradeoffs in DC and AC performance, and micropower, low-noise preamplifiers optimized for minimum thermal and flicker noise A design spreadsheet, available at the book web site, that facilitates rapid, optimum design of MOS devices and circuits Tradeoffs and Optimization in Analog CMOS Design is the first book dedicated to this important topic. It will help practicing analog circuit designers and advanced students of electrical engineering build design intuition, rapidly optimize circuit performance during initial design, and minimize trial-and-error circuit simulations.

Computational Modeling: From Chemistry To Materials To Biology - Proceedings Of The 25th Solvay Conference On Chemistry

Advanced Engineering Optimization Through Intelligent Techniques

Proceedings of the G. Stampacchia International School of Mathematics, held at Erice, Sicily, September 17-30, 1984

Evolutionary Computation in Combinatorial Optimization

Proceedings of the sixth IFIP WG7.5 working conference on reliability and optimization of structural systems 1994

Engineering Optimization 2014

Proceedings of the Symposium on Battery Design and Optimization

This book gathers selected papers from the 8th International Field Exploration and Development Conference (IFEDC 2018) and addresses a broad range of topics, including: Reservoir Surveillance and Management, Reservoir Evaluation and Dynamic Description, Reservoir Production Stimulation and EOR, Ultra-Tight Reservoirs, Unconventional Oil and Gas Resources Technology, Oil and Gas Well Production Testing, and Geomechanics. In brief, the papers introduce readers to upstream technologies used in oil & gas development, the main principles of the process, and various related design technologies. The conference not only provided a platform to exchange experiences, but also promoted the advancement of scientific research in oil & gas exploration and production. The book is chiefly intended for industry experts, professors, researchers, senior engineers, and enterprise managers.

Dynamic Reconfigurable Architectures and Transparent Optimization Techniques presents a detailed study on new techniques to cope with the aforementioned limitations. First, characteristics of reconfigurable systems are discussed in details, and a large number of case studies is shown. Then, a detailed analysis of several benchmarks demonstrates that such architectures need to attack a diverse range of applications with very different behaviours, besides supporting code compatibility. This requires the use of dynamic optimization techniques, such as Binary Translation and Trace reuse. Finally, works that combine both reconfigurable systems and dynamic techniques are discussed and a quantitative analysis of one them, the DIM architecture, is presented.

This book of Springer Nature is another proof of Springers outstanding and greatness on the lively interface of Smart Optimization, Computational Science, Human Intelligence and Machine Learning! It is a Master Piece of what our community of Academics and Experts can provide when an Interdisciplinary Approach of Joint, Mutual and Deep Learning is supported by Modern Mathematics and Experience of the World-Leader Springer Nature! Fourth edition of International Conference on Intelligent Computing and Optimization took place at December 30-31, 2021, via ZOOM. Objective was to celebrate Compassion and Wisdom with researchers, scholars, experts and investigators in Intelligent Computing and Optimization worldwide, to share knowledge, experience, innovation marvelous opportunity for discourse and mutuality by novel research, invention and creativity. This proceedings book of ICO2021 is published by Springer Nature Quality Label of Excellence. .

This volume contains 18 invited papers by members and guests of the former Sonderforschungsbereich in Bonn (SFB 72) who, over the years, collaborated on the research group "Solution of PDE's and Calculus of Variations". The emphasis is on existence and regularity results, on special equations of mathematical physics and on scattering theory. For Young Scientists From Academia and Industry August 28th - 30th, 2019 University of Kassel, Germany Sensors and Instrumentation, Aircraft/Aerospace, Energy Harvesting & Dynamic Environments Testing, Volume 7 Partial Differential Equations and Calculus of Variations

6th International Conference, ICIRA 2013, Busan, South Korea, September 25-28, 2013, Proceedings, Part I Optimization and Inverse Problems in Electromagnetism

Encyclopedia of Optimization

The Quadratic Unconstrained Binary Optimization Problem

The quadratic binary optimization problem (QUBO) is a versatile combinatorial optimization model with a variety of applications and rich theoretical properties. Application areas of the model include finance, cluster analysis, traffic management, machine scheduling, VLSI physical design, physics, quantum computing, engineering, and medicine. In addition, various mathematical optimization models can be reformulated as a QUBO, including the resource constrained assignment problem, set partitioning problem, maximum cut problem, quadratic assignment problem, the bipartite unconstrained binary optimization problem, among others. This book presents a systematic development of theory, algorithms, and applications of QUBO. It offers a comprehensive treatment of QUBO from various viewpoints, including a historical introduction along with an in-depth discussion of applications modelling, complexity and polynomially solvable special cases, exact and heuristic algorithms, analysis of approximation algorithms, metaheuristics, polyhedral structure, probabilistic analysis, persistencies, and related topics. Available software for solving QUBO is also introduced, including public domain, commercial, as well as quantum computing based codes.

This book highlights new and original contributions on Graph Theory and Combinatorial Optimization both from the theoretical point of view and from applications in all fields. The book chapters describe models and methods based on graphs, structural properties, discrete optimization, network optimization, mixed-integer programming, heuristics, meta-heuristics, math-heuristics, and exact methods as well as applications. The book collects selected contributions from the CTW2020 international conference (18th Cologne-Twente Workshop on Graphs and Combinatorial Optimization), held online on September 14-16, 2020. The conference was organized by IASI-CNR with the contribution of University of Roma Tre, University Roma Tor Vergata, and CNRS-LIX and with the support of AIRO. It is addressed to researchers, PhD students, and practitioners in the fields of Graph Theory, Discrete Mathematics, Combinatorial Optimization, and Operations Research.

The 2020 International Conference on Uncertainty Quantification & Optimization gathered together internationally renowned researchers in the fields of optimization and uncertainty quantification. The resulting proceedings cover all related aspects of computational uncertainty management and optimization, with particular emphasis on aerospace engineering problems. The book contributions are organized under four major themes: Applications of Uncertainty in Aerospace & Engineering Imprecise Probability, Theory and Applications Robust and Reliability-Based Design Optimisation in Aerospace Engineering Uncertainty Quantification, Identification and Calibration in Aerospace Models This proceedings volume is useful across disciplines, as it brings the expertise of theoretical and application researchers together in a unified framework.

This book deals with central simple Lie algebras over arbitrary fields of characteristic zero. It aims to give constructions of the algebras and their finite-dimensional modules in terms that are rational with respect to the given ground field. All isotropic algebras with non-reduced relative root systems are treated, along with classical anisotropic algebras. The latter are treated by what seems to be a novel device, namely by studying certain modules for isotropic classical algebras in which they are embedded. In this development, symmetric powers of central simple associative algebras, along with generalized even Clifford algebras of involutorial algebras, play central roles. Considerable attention is given to exceptional algebras. The pace is that of a rather expansive research monograph. The reader who has at hand a standard introductory text on Lie algebras, such as Jacobson or Humphreys, should be in a position to understand the results. More technical matters arise in some of the detailed arguments. The book is intended for researchers and students of algebraic Lie theory, as well as for other researchers who are seeking explicit realizations of algebras or modules. It will probably be more useful as a resource to be dipped into, than as a text to be worked straight through.

Proceedings of the Sixteenth International Conference on Management Science and Engineering Management – Volume 2

Data Analysis and Optimization for Engineering and Computing Problems

Dynamic Reconfigurable Architectures and Transparent Optimization Techniques

Optimization Theory, Decision Making, and Operations Research Applications

Select Proceedings of AEOTIT 2018

Nature Inspired Cooperative Strategies for Optimization (NICSO 2007)

EngOpt 2018 Proceedings of the 6th International Conference on Engineering Optimization

This book presents the selected proceedings of 2nd International Conference on Recent Advances in Manufacturing (RAM 2021). The book provides insights to current research trends and opportunities in modelling and optimization of manufacturing processes and systems. The topics covered include modelling analysis, computing and simulation, traditional and non-traditional optimization techniques, surface coating methods, additive manufacturing processes, CAD/CAM, robotics and automation, welding and joining processes, supply chain management and CAE and reverse engineering. This book will be a good reference for beginners, researchers and professionals interested in modelling and optimization related to manufacturing engineering and related fields.

This book presents the proceedings of The EAI International Conference on Computer Science: Applications in Engineering and Health Services (COMPSE 2019). The conference highlighted the latest research innovations and applications of algorithms designed for optimization applications within the fields of Science, Computer Science, Engineering, Information Technology, Management, Finance and Economics and Health Systems. Focusing on a variety of methods and systems as well as practical examples, this conference is a significant resource for post graduate-level students, decision makers, and researchers in both public and private sectors who are seeking research-based methods for modelling uncertain and unpredictable real-world problems.

These proceedings consist of 30 selected research papers based on results presented at the 10th Balkan Conference & 1st International Symposium on Operational Research (BALCOR 2011) held in Thessaloniki, Greece, September 22-24, 2011. BALCOR is an established biennial conference attended by a large number of faculty, researchers and students from the Balkan countries but also from other European and Mediterranean countries as well.

Over the past decade, the BALCOR conference has facilitated the exchange of scientific and technical information on the subject of Operations Research and related fields such as Mathematical Programming, Game Theory, Multiple Criteria Decision Analysis, Information Systems, Data Mining and more, in order to promote international scientific cooperation. The carefully selected and refereed papers present important recent developments and modern applications and will serve as excellent reference for students, researchers and practitioners in these disciplines. ?

This book constitutes the thoroughly refereed post-conference proceedings of 18th International Workshop on Power and Timing Modeling, Optimization and Simulation, PATMOS 2008, featuring Integrated Circuit and System Design, held in Lisbon, Portugal during September 10-12, 2008. The 31 revised full papers and 10 revised poster papers presented together with 3 invited talks and 4 papers from a special session on reconfigurable architectures were carefully reviewed and selected from numerous submissions. The papers are organized in topical sections on low-leakage and subthreshold circuits, low-power methods and models, arithmetic and memories, variability and statistical timing, synchronization and interconnect, power supplies and switching noise, low-power circuits; reconfigurable architectures, circuits and methods, power and delay modeling, as well as power optimizations addressing reconfigurable architectures.

Proceedings of the Third International Conference on Numerical Grid Generation in Computational Fluid Dynamics and Related Fields, Barcelona, Spain, 3-7 June 1991

Reliability and Optimization of Structural Systems

Tradeoffs and Optimization in Analog CMOS Design

Ecole D'ete De Probabilites De Saint-flour Xv-xvii, 1985-87/ Probability Summer School in Saint-flour Xv-xvii, 1985-87

Advances in Uncertainty Quantification and Optimization Under Uncertainty with Aerospace Applications

Ontologies

This book constitutes the refereed proceedings of the 22nd European Conference on Evolutionary Computation in Combinatorial Optimization, EvoCOP 2022, held as part of Evo*2022, in Madrid, Spain, during April 20-21, 2022, co-located with the Evo*2022, EvoMUSART, EvoApplications, and EuroGP. The 13 revised full papers presented in this book were carefully reviewed and selected from 28 submissions. They present recent theoretical and experimental advances in combinatorial optimization, evolutionary algorithms, and related research fields.

This conference book contains papers presented at the 8th GACM Colloquium on Computational Mechanics for Young Scientists, Academia and Industry. The conference was held from August 28th - 30th, 2019 in Kassel, hosted by the Institute of Mechanical Dynamics of the department for civil and environmental engineering and by the chair of Engineering Mechanics / Continuum Mechanics of the department for mechanical engineering of the University of Kassel. The aim of the conference is, to bring together young scientists who are engaged in academic and industrial research on Computational Mechanics and Computer Methods in Applied Sciences, a platform to present and discuss recent results from research efforts and industrial applications. In more than 150 presentations, young scientists, current scientific developments and advances in engineering practice in this field are presented and discussed. The contributions of the young researchers are supplemented by a poster session and plenary talks from four senior scientists from academia and industry as well as from the GACM Best PhD Award winners 2017 and 2018.

The papers in this volume focus on the following topics: design optimization and inverse problems, numerical optimization techniques, efficient analysis and reanalysis techniques, sensitivity analysis and industrial applications. The conference EngOpt brings together engineers, applied mathematicians and computer scientists working on research, development and practical applications of optimization methods in all engineering disciplines and applied sciences.

This two volumes set LNAI 8102 and LNAI 8103 constitutes the refereed proceedings of the 6th International Conference on Intelligent Robotics and Applications, ICIRA 2013, held in Busan, South Korea, in September 2013. The 147 revised full papers presented were carefully reviewed and selected from 184 submissions. The papers discuss various topics from intelligent robotics, automatic control, mechatronics with particular emphasis on technical challenges associated with varied applications such as biomedical applications, industrial automation, surveillance and sustainable mobility.

Numerical Grid Generation in Computational Fluid Dynamics and Related Fields

Proceedings of the 4th International Conference on Intelligent Computing and Optimization 2021 (ICO2021)

22nd European Conference, EvoCOP 2022, Held as Part of EvoStar 2022, Madrid, Spain, April 20-22, 2022, Proceedings of the 4th International Conference on Intelligent Computing and Optimization 2021 (ICO2021)

Optimization and Decision Science

Automatic Acceleration of Software Execution

Theory, Algorithms, and Applications

Contaminated Soils, Sediments and Water:

The goal of the Encyclopedia of Optimization is to introduce the reader to a complete set of topics that show the spectrum of research, the richness of ideas, and the breadth of applications that has come from this field. The second edition builds on the success of the former edition with more than 150 completely new entries, designed to ensure that the reference addresses recent areas where optimization theories and techniques have advanced. Particularly heavy attention resulted in health science and transportation, with entries such as "Algorithms for Genomics", "Optimization and Radiotherapy Treatment Design", and "Crew Scheduling".

From 12 to 14 September 2002, the Academy of Humanities and Economics (AHE) hosted the workshop "Optimization and Inverse Problems in Electromagnetism". After this bi-annual event, a large number of papers were assembled and combined in this book. During the workshop recent developments and applications in optimization and inverse

methodologies for electromagnetic fields were discussed. The contributions selected for the present volume cover a wide spectrum of inverse and optimal electromagnetic methodologies, ranging from theoretical to practical applications. A number of new optimal and inverse methodologies were proposed. There are contributions related to dedicated software. **Optimization and Inverse Problems in Electromagnetism** consists of three thematic chapters, covering: -General papers (survey of specific aspects of optimization and inverse problems in electromagnetism), -Methodologies, -Industrial Applications. The book can be useful to students of electrical and electronics engineering, computer science, applied mathematics (PhD level) and to researchers interested in the topic.

Optimization and Related Fields Proceedings of the G. Stampacchia International School of Mathematics, held at Erice, Sicily, September 17-30, 1984
Springer Evolutionary Computation in Combinatorial Optimization 22nd European Conference, EvoCOP 2022, Held as Part of EvoStar 2022, Madrid, Spain, April 20-22, 2022, Proceedings Springer Nature

This book comprises select peer-reviewed papers presented at the International Conference on Advanced Engineering Optimization Through Intelligent Techniques (AEOTIT) 2018. The book combines contributions from academics and industry professionals, and covers advanced optimization techniques across all major engineering disciplines like mechanical, manufacturing, civil, automobile, electrical, chemical, computer and electronics engineering. Different optimization techniques and algorithms such as genetic algorithm (GA), differential evolution (DE), simulated annealing (SA), particle swarm optimization (PSO), artificial bee colony (ABC) algorithm, artificial immune algorithm (AIA), teaching-learning-based optimization (TLBO) algorithm and many other latest meta-heuristic techniques and their applications are discussed. This book will serve as a valuable reference for students, researchers and practitioners and help them in solving a wide range of optimization problems.

CTW2020 Proceedings

Proceedings of the 1st International Symposium and 10th Balkan Conference on Operational Research

Proceedings of the 3rd EAI International Conference on Computer Science and Engineering and Health Services

ODS, Virtual Conference, November 19, 2020

Optimization and Related Fields

Proceedings of the Southern Forest Economics Workshop on Evaluating Even and All-aged Timber Management Options for Southern Forest Lands

Computational Intelligence Paradigms for Optimization Problems Using MATLAB®/SIMULINK®

This book covers many hot topics, including theoretical and practical research in many areas such as dynamic analysis, machine learning, supply chain management, operations management, environmental management, uncertainty, and health and hygiene. It showcases advanced management concepts and innovative ideas. The 16th International Conference on Management Science and Engineering Management (2022 ICMSEM) will be held in Ankara, Turkey during August 3-6, 2022. ICMSEM has always been committed to promoting innovation management science (M-S) and engineering management (EM) academic research and development. The book provides researchers and practitioners in the field of Management Science and Engineering Management (MSEM) with the latest, cutting-edge thinking and research in the field. It will appeal to readers interested in these fields, especially those looking for new ideas and research directions.

This book presents an interesting sample of the latest advances in optimization techniques applied to electrical power engineering. It covers a variety of topics from various fields, ranging from classical optimization such as Linear and Nonlinear Programming and Integer and Mixed-Integer Programming to the most modern methods based on bio-inspired metaheuristics. The featured papers invite readers to delve further into emerging optimization techniques and their real application to case studies such as conventional and renewable energy generation, distributed generation, transport and distribution of electrical energy, electrical machines and power electronics, network optimization, intelligent systems, advances in electric mobility, etc.

Optimization methodologies are fundamental instruments to tackle the complexity of today's engineering processes.

Engineering Optimization 2014 is dedicated to optimization methods in engineering, and contains the papers presented at the 4th International Conference on Engineering Optimization (ENGOPT2014, Lisbon, Portugal, 8-11 September 2014). The book will be of interest to engineers, applied mathematicians, and computer scientists working on research, development and practical applications of optimization methods in engineering.

This constitutes the Proceedings of the 22nd IFIP TC7 Conference held in July 2005, in Torino, Italy, and dedicated to Camillo Possio, on the 60th anniversary of his death during the last air raid over Torino. The papers in this volume concern primarily stochastic and distributed systems, their control/optimization, and inverse problems. These proceedings also explore applications of optimization techniques and computational methods in fields such as medicine, biology and economics.

Systems, Control, Modeling and Optimization

Proceedings of a GAMM-Seminar October 5-7, 1988, Siegen, FRG

Management

Integrated Circuit and System Design. Power and Timing Modeling, Optimization and Simulation

Proceedings of the 22nd IFIP TC7 Conference held from July 18-22, 2005, in Turin, Italy

18th International Workshop, PATMOS 2008, Lisbon, Portugal, September 10-12, 2008, Revised Selected Papers

A Handbook of Principles, Concepts and Applications in Information Systems

Biological and natural processes have been a continuous source of inspiration for the sciences and engineering. For instance, the work of Wiener in cybernetics was influenced by feedback control processes observable in biological systems; McCulloch and Pitts description of the artificial neuron was instigated by biological observations of neural mechanisms; the idea of survival of the fittest inspired the field of evolutionary algorithms and similarly, artificial immune systems, ant colony optimisation, automated self-assembling programming, membrane computing, etc. also have their roots in natural phenomena. The second International Workshop on Nature Inspired Cooperative Strategies for Optimization (NICSO), was held in Acireale, Italy, during November 8-10, 2007. The aim for NICSO 2007 was to

provide a forum where the latest ideas and state of the art research related to cooperative strategies for problem solving arising from Nature could be discussed. The contributions collected in this book were strictly peer reviewed by at least three members of the international programme committee, to whom we are indebted for their support and assistance. The topics covered by the contributions include several well established nature inspired techniques like Genetic Algorithms, Ant Colonies, Artificial Immune Systems, Evolutionary Robotics, Evolvable Systems, Membrane Computing, Quantum Computing, Software Self Assembly, Swarm Intelligence, etc.

This book collects selected contributions from the international conference “ Optimization and Decision Science ” (ODS2020), which was held online on November 19, 2020, and organized by AIRO, the Italian Operations Research Society. The book offers new and original contributions on optimization, decisions science and prescriptive analytics from both a methodological and applied perspective, using models and methods based on continuous and discrete optimization, graph theory and network optimization, analytics, multiple criteria decision making, heuristics, metaheuristics, and exact methods. In addition to more theoretical contributions, the book chapters describe models and methods for addressing a wide diversity of real-world applications, spanning health, transportation, logistics, public sector, manufacturing, and emergency management. Although the book is aimed primarily at researchers and PhD students in the Operations Research community, the interdisciplinary content makes it interesting for practitioners facing complex decision-making problems in the afore-mentioned areas, as well as for scholars and researchers from other disciplines, including artificial intelligence, computer sciences, economics, mathematics, and engineering. Chaired by K Wüthrich (Nobel Laureate in Chemistry, 2002) and co-chaired by B Weckhuysen, this by-invitation-only conference has gathered 39 participants — who are leaders in the field of computational modeling and its applications in Chemistry, Material Sciences and Biology. Highlights of the Conference Proceedings are short, prepared statements by all the participants and the records of lively discussions on the current and future perspectives in the field of computational modeling, from chemistry to materials to biology.

Constructions of Lie Algebras and their Modules

Intelligent Robotics and Applications

Science in the Real World

Proceedings of the 2020 UQOP International Conference

Recent Advances in Manufacturing Modelling and Optimization

Proceedings of the 39th IMAC, A Conference and Exposition on Structural Dynamics 2021

Graphs and Combinatorial Optimization: from Theory to Applications