

Computational Methods For Optimizing Manufacturing Technology Models And Techniques

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Modeling and Optimization in Manufacturing - Catalin I. Pruncu 2021-04-21

Discover the state-of-the-art in multiscale modeling and optimization in manufacturing

from two leading voices in the field Modeling and Optimization in Manufacturing delivers a comprehensive approach to various manufacturing processes and shows readers how multiscale modeling and optimization processes help improve upon them. The book elaborates on the foundations and applications of computational modeling and optimization processes, as well as recent developments in the field. It offers discussions of manufacturing processes, including forming, machining, casting, joining, coating, and additive manufacturing, and how computer simulations have influenced their development. Examples for each category of manufacturing are provided in the text, and industrial applications are described for the reader. The distinguished authors also provide an insightful perspective on likely future trends and developments in manufacturing modeling and optimization, including the use of large materials databases and

machine learning. Readers will also benefit from the inclusion of: A thorough introduction to the origins of manufacturing, the history of traditional and advanced manufacturing, and recent progress in manufacturing An exploration of advanced manufacturing and the environmental impact and significance of manufacturing Practical discussions of the economic importance of advanced manufacturing An examination of the sustainability of advanced manufacturing, and developing and future trends in manufacturing Perfect for materials scientists, mechanical engineers, and process engineers, Modeling and Optimization in Manufacturing will also earn a place in the libraries of engineering scientists in industries seeking a one-stop reference on multiscale modeling and optimization in manufacturing.

Manufacturing Techniques for Polymer Matrix Composites (PMCs) - Suresh G Advani
2012-07-18

Polymer matrix composites are used extensively across a wide range of industries, making the design and development of effective manufacturing processes of great importance. Manufacturing techniques for polymer matrix composites (PMCs) provides an authoritative review of the different technologies employed in the manufacture of this class of composite. Following an introduction to composites and manufacturing processes, part one reviews the manufacturing of short fiber and nanoparticle based polymer matrix composites, with injection and compression molding examined in depth. Thermoplastic processing is the focus of part two. Sheet forming, fabric thermostamping, filament winding and continuous fiber reinforced profiles are investigated. Part three reviews thermoset processing. A survey of resin transfer molding follows, including vacuum-assisted and compression resin transfer molding. The pultrusion

process is then considered, before the book concludes with an investigation into autoclave and out-of-autoclave curing processes in polymer matrix composites. With its distinguished editors and international team of expert contributors, Manufacturing techniques for polymer matrix composites (PMCs) is an essential guide for engineers and scientists working in the field of polymer matrix composites. Provides an authoritative review of the different technologies employed in the manufacture of polymer matrix composites Reviews the manufacturing of short fiber and nanoparticle-based polymer matrix composites, with injection and compression molding examined in depth Examines thermoplastic processing, sheet forming, fabric thermostamping, filament winding and continuous fiber reinforced profiles
Finite Element Method in Machining Processes - Angelos P. Markopoulos 2012-08-04
Finite Element Method in

Machining Processes provides a concise study on the way the Finite Element Method (FEM) is used in the case of manufacturing processes, primarily in machining. The basics of this kind of modeling are detailed to create a reference that will provide guidelines for those who start to study this method now, but also for scientists already involved in FEM and want to expand their research. A discussion on FEM, formulations, and techniques currently in use is followed up by machining case studies. Orthogonal cutting, oblique cutting, 3D simulations for turning and milling, grinding, and state-of-the-art topics such as high speed machining and micromachining are explained with relevant examples. This is all supported by a literature review and a reference list for further study. As FEM is a key method for researchers in the manufacturing and especially in the machining sector, Finite Element Method in Machining Processes is a key reference for students studying

manufacturing processes but also for industry professionals.

Advances in Material Forming and Joining - R.

Ganesh Narayanan 2015-04-24

This edited book contains extended research papers from AIMTDR 2014. This includes recent research work in the fields of friction stir welding, sheet forming, joining and forming, modeling and simulation, efficient prediction strategies, micro-manufacturing, sustainable and green manufacturing issues etc. This will prove useful to students, researchers and practitioners in the field of materials forming and manufacturing.

Handbook of Research on Modern Optimization Algorithms and Applications in Engineering and Economics -

Vasant, Pandian 2016-03-08

Modern optimization approaches have attracted many research scientists, decision makers and practicing researchers in recent years as powerful intelligent computational techniques for solving several complex real-

world problems. The Handbook of Research on Modern Optimization Algorithms and Applications in Engineering and Economics highlights the latest research innovations and applications of algorithms designed for optimization applications within the fields of engineering, IT, and economics. Focusing on a variety of methods and systems as well as practical examples, this book is a significant resource for graduate-level students, decision makers, and researchers in both public and private sectors who are seeking research-based methods for modeling uncertain real-world problems.

Nontraditional Machining Processes - J. Paulo Davim
2013-06-14

Nontraditional machining employs processes that remove material by various methods involving thermal, electrical, chemical and mechanical energy or even combinations of these. *Nontraditional Machining Processes* covers recent research and

development in techniques and processes which focus on achieving high accuracies and good surface finishes, parts machined without burrs or residual stresses especially with materials that cannot be machined by conventional methods. With applications to the automotive, aircraft and mould and die industries, *Nontraditional Machining Processes* explores different aspects and processes through dedicated chapters. The seven chapters explore recent research into a range of topics including laser assisted manufacturing, abrasive water jet milling and hybrid processes. Students and researchers will find the practical examples and new processes useful for both reference and for developing further processes. Industry professionals and materials engineers will also find *Nontraditional Machining Processes* to be a source of ideas and processes for development and industrial application.

Advanced Numerical

Simulations in Mechanical Engineering - Kumar, Ashwani
2017-12-01

Recent developments in information processing systems have driven the advancement of numerical simulations in engineering. New models and simulations enable better solutions for problem-solving and overall process improvement. Advanced Numerical Simulations in Mechanical Engineering is a pivotal reference source for the latest research findings on advanced modelling and simulation method adopted in mechanical and mechatronics engineering. Featuring extensive coverage on relevant areas such as fuzzy logic controllers, finite element analysis, and analytical models, this publication is an ideal resource for students, professional engineers, and researchers interested in the application of numerical simulations in mechanical engineering.

[Mathematical Concepts and Applications in Mechanical Engineering and Mechatronics](#)

- Ram, Mangey 2016-10-25

The application of mathematical concepts has proven to be beneficial within a number of different industries. In particular, these concepts have created significant developments in the engineering field.

Mathematical Concepts and Applications in Mechanical Engineering and Mechatronics is an authoritative reference source for the latest scholarly research on the use of applied mathematics to enhance the current trends and productivity in mechanical engineering. Highlighting theoretical foundations, real-world cases, and future directions, this book is ideally designed for researchers, practitioners, professionals, and students of mechatronics and mechanical engineering.

Engineering Creative Design in Robotics and

Mechatronics - Habib, Maki
K. 2013-06-30

While technologies continue to advance in different directions, there still holds a constant evolution of interdisciplinary

development. Robotics and mechatronics is a successful fusion of disciplines into a unified framework that enhances the design of products and manufacturing processes. Engineering Creative Design in Robotics and Mechatronics captures the latest research developments in the subject field of robotics and mechatronics and provides relevant theoretical knowledge in this field. Providing interdisciplinary development approaches, this reference source prepares students, scientists, and professional engineers with the latest research development to enhance their skills of innovative design capabilities.

Encyclopedia of Chemical Processing - Sunggyu Lee
2006

Supplying nearly 350 expertly-written articles on technologies that can maximize and enhance the research and production phases of current and emerging chemical manufacturing practices and techniques, this second edition provides gold standard articles

on the methods, practices, products, and standards recently influencing the chemical industries. New material includes: design of key unit operations involved with chemical processes; design, unit operation, and integration of reactors and separation systems; process system peripherals such as pumps, valves, and controllers; analytical techniques and equipment; current industry practices; and pilot plant design and scale-up criteria.

Soft Computing Techniques and Applications in

Mechanical Engineering -

Ram, Mangey 2017-12-29

The evolution of soft computing applications has offered a multitude of methodologies and techniques that are useful in facilitating new ways to address practical and real scenarios in a variety of fields. In particular, these concepts have created significant developments in the engineering field. Soft Computing Techniques and Applications in Mechanical Engineering is a pivotal

reference source for the latest research findings on a comprehensive range of soft computing techniques applied in various fields of mechanical engineering. Featuring extensive coverage on relevant areas such as thermodynamics, fuzzy computing, and computational intelligence, this publication is an ideal resource for students, engineers, research scientists, and academicians involved in soft computing techniques and applications in mechanical engineering areas.

Computational Modeling, Optimization and Manufacturing Simulation of Advanced Engineering Materials - Pablo Andrés Muñoz-Rojas 2016-06-20

This volume presents recent research work focused in the development of adequate theoretical and numerical formulations to describe the behavior of advanced engineering materials. Particular emphasis is devoted to applications in the fields of biological tissues, phase changing and porous materials,

polymers and to micro/nano scale modeling. Sensitivity analysis, gradient and non-gradient based optimization procedures are involved in many of the chapters, aiming at the solution of constitutive inverse problems and parameter identification. All these relevant topics are exposed by experienced international and inter institutional research teams resulting in a high level compilation. The book is a valuable research reference for scientists, senior undergraduate and graduate students, as well as for engineers acting in the area of computational material modeling.

Integrative Production Technology - Christian Brecher 2017-01-09

This contributed volume contains the research results of the Cluster of Excellence "Integrative Production Technology for High-Wage Countries", funded by the German Research Society (DFG). The approach to the topic is genuinely

interdisciplinary, covering insights from fields such as engineering, material sciences, economics and social sciences. The book contains coherent deterministic models for integrative product creation chains as well as harmonized cybernetic models of production systems. The content is structured into five sections: Integrative Production Technology, Individualized Production, Virtual Production Systems, Integrated Technologies, Self-Optimizing Production Systems and Collaboration Productivity. The target audience primarily comprises research experts and practitioners in the field of production engineering, but the book may also be beneficial for graduate students.

Computational Methods for Application in Industry 4.0 -

Nikolaos E. Karkalos
2018-05-21

This book presents computational and statistical methods used by intelligent systems within the concept of Industry 4.0. The methods

include among others evolution-based and swarm intelligence-based methods. Each method is explained in its fundamental aspects, while some notable bibliography is provided for further reading. This book describes each methods' principles and compares them. It is intended for researchers who are new in computational and statistical methods but also to experienced users.

Stochastic Modeling and Optimization of Manufacturing Systems and Supply Chains - J.

George Shanthikumar
2012-12-06

This volume originates from two workshops, both focusing on themes that are reflected in the title of the volume. The first workshop took place at Eindhoven University of Technology, April 24-26, 2001, on the occasion of the University granting a doctorate honoris causa to Professor John A. Buzacott. The second workshop was held on June 15, 2002 at Cornell University (preceding the annual INFORMS/MSOM Confer

ence), honoring John's retirement and his lifetime contributions. Each of the two workshops consisted of about a dozen technical presentations. The objective of the volume, however, is not to simply publish the proceedings of the two workshops. Rather, our objective is to put together a select set of articles, each organized into a well-written chapter, focusing on a timely topic. Collected into a single volume, these chapters aim to serve as a useful reference for researchers and practitioners alike, and also as reading materials for graduate courses or seminars.

Computational Methods for Optimizing Manufacturing Technology: Models and Techniques - Davim, J. Paulo 2012-02-29

"This book contains the latest research developments in manufacturing technology and its optimization, and demonstrates the fundamentals of new computational approaches and the range of their potential application"-- Provided by publisher.

Feasibility and Infeasibility in Optimization: - John W.

Chinneck 2007-10-25
Written by a world leader in the field and aimed at researchers in applied and engineering sciences, this brilliant text has as its main goal imparting an understanding of the methods so that practitioners can make immediate use of existing algorithms and software, and so that researchers can extend the state of the art and find new applications. It includes algorithms on seeking feasibility and analyzing infeasibility, as well as describing new and surprising applications.

Predictive Theoretical and Computational Approaches for Additive Manufacturing - National Academies of Sciences, Engineering, and Medicine 2016-12-21
Additive manufacturing (AM) methods have great potential for promoting transformative research in many fields across the vast spectrum of engineering and materials science. AM is one of the

leading forms of advanced manufacturing which enables direct computer-aided design (CAD) to part production without part-specific tooling. In October 2015 the National Academies of Sciences, Engineering, and Medicine convened a workshop of experts from diverse communities to examine predictive theoretical and computational approaches for various AM technologies. While experimental workshops in AM have been held in the past, this workshop uniquely focused on theoretical and computational approaches and involved areas such as simulation-based engineering and science, integrated computational materials engineering, mechanics, materials science, manufacturing processes, and other specialized areas. This publication summarizes the presentations and discussions from the workshop.

Industrial Engineering: Concepts, Methodologies, Tools, and Applications - Management Association, Information Resources

2012-08-31

Industrial engineering affects all levels of society, with innovations in manufacturing and other forms of engineering oftentimes spawning cultural or educational shifts along with new technologies. *Industrial Engineering: Concepts, Methodologies, Tools, and Applications* serves as a vital compendium of research, detailing the latest research, theories, and case studies on industrial engineering.

Bringing together contributions from authors around the world, this three-volume collection represents the most sophisticated research and developments from the field of industrial engineering and will prove a valuable resource for researchers, academics, and practitioners alike.

Physical and Numerical Simulation of Materials Processing - Ji Tai Niu

2008-04-08

This specialist work comprises 249 peer-reviewed papers on the [Physical and Numerical Simulation of Materials Processing](#).

Robotics, Automation, and Control in Industrial and Service Settings - Luo,

Zongwei 2015-09-10

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Soft Computing - Mangey Ram
2020-08-24

Without mathematics no science would survive. This especially applies to the engineering sciences which highly depend on the applications of mathematics and mathematical tools such as optimization techniques, finite element methods, differential equations, fluid dynamics, mathematical modelling, and simulation. Neither optimization in engineering, nor the performance of safety-

critical system and system security; nor high assurance software architecture and design would be possible without the development of mathematical applications. De Gruyter Series on the Applications of Mathematics in Engineering and Information Sciences (AMEIS) focusses on the latest applications of engineering and information technology that are possible only with the use of mathematical methods. By identifying the gaps in knowledge of engineering applications the AMEIS series fosters the international interchange between the sciences and keeps the reader informed about the latest developments.

Computational Methods and Production Engineering - J

Paulo Davim 2017-05-25

Computational Methods and Production Engineering: Research and Development is an original book publishing refereed, high quality articles with a special emphasis on research and development in production engineering and

production organization for modern industry. Innovation and the relationship between computational methods and production engineering are presented. Contents include: Finite Element method (FEM) modeling/simulation; Artificial neural networks (ANNs); Genetic algorithms; Evolutionary computation; Fuzzy logic; neuro-fuzzy systems; Particle swarm optimization (PSO); Tabu search and simulation annealing; and optimization techniques for complex systems. As computational methods currently have several applications, including modeling manufacturing processes, monitoring and control, parameters optimization and computer-aided process planning, this book is an ideal resource for practitioners. Presents cutting-edge computational methods for production engineering Explores the relationship between applied computational methods and production engineering Presents new innovations in the field Edited

by a key researcher in the field
Data-Driven Optimization of Manufacturing Processes - Kalita, Kanak 2020-12-25
All machining process are dependent on a number of inherent process parameters. It is of the utmost importance to find suitable combinations to all the process parameters so that the desired output response is optimized. While doing so may be nearly impossible or too expensive by carrying out experiments at all possible combinations, it may be done quickly and efficiently by using computational intelligence techniques. Due to the versatile nature of computational intelligence techniques, they can be used at different phases of the machining process design and optimization process. While powerful machine-learning methods like gene expression programming (GEP), artificial neural network (ANN), support vector regression (SVM), and more can be used at an early phase of the design and optimization process to act as predictive models for the

actual experiments, other metaheuristics-based methods like cuckoo search, ant colony optimization, particle swarm optimization, and others can be used to optimize these predictive models to find the optimal process parameter combination. These machining and optimization processes are the future of manufacturing. Data-Driven Optimization of Manufacturing Processes contains the latest research on the application of state-of-the-art computational intelligence techniques from both predictive modeling and optimization viewpoint in both soft computing approaches and machining processes. The chapters provide solutions applicable to machining or manufacturing process problems and for optimizing the problems involved in other areas of mechanical, civil, and electrical engineering, making it a valuable reference tool. This book is addressed to engineers, scientists, practitioners, stakeholders, researchers, academicians, and students interested in the

potential of recently developed powerful computational intelligence techniques towards improving the performance of machining processes.

Process Planning Optimization in Reconfigurable

Manufacturing Systems -

Farayi Musharavati 2010-09

To date, reconfigurable manufacturing systems (RMSs) are among the most effective manufacturing styles that can offer manufacturers an alternative way of facing up to the challenges of continual changes in production requirements within the global, competitive and dynamic manufacturing environments. However, availability of optimal process plans that are suitable for reconfigurable manufacturing is one of the key enablers - yet to be fully unlocked - for realizing the full benefits of true RMSs. To unlock the process planning key and advance the state of art of reconfigurable manufacturing in the manufacturing industry, a number of questions need to be

answered: (i) what decision making models and (ii) what computational techniques, can be applied to provide optimal manufacturing process planning solutions that are suitable for logical reconfiguration in manufacturing systems? To answer these questions, you must understand how to model reconfigurable manufacturing activities in an optimization perspective. You must also understand how to develop and select appropriate optimization techniques for solving process planning problems in manufacturing systems. To this end, *Process Planning Optimization in Reconfigurable Manufacturing Systems* covers: the design and operation of RMSs, optimal process planning modelling for reconfigurable manufacturing and the design and implementation of heuristic algorithm design techniques. The author explores how to: model optimization problems, select suitable optimization techniques, develop optimization algorithms,

comparatively analyze the performance of candidate metaheuristics and how to investigate the effects of optimal process planning solutions on operating levels in manufacturing systems. This book delineates five alternative heuristic algorithm design techniques based on simulated annealing, genetic algorithms and the boltzmann machine that are tasked to solve manufacturing process planning optimization problems in RMSs. After reading this book, you will understand: how a reconfigurable manufacturing system works, the different types of manufacturing optimization problems associated with reconfigurable manufacturing, as well as the conventional and intelligent techniques that are suitable for solving process planning optimization problems. You will also be able to develop and implement effective optimization procedures and algorithms for a wide spectrum of optimization problems in design and reconfigurable

manufacturing."

Design and Optimization of Mechanical Engineering

Products - Kumar, K.

2018-02-02

The success of any product sold to consumers is based, largely, on the longevity of the product. This concept can be extended by various methods of improvement including optimizing the initial creation structures which can lead to a more desired product and extend the product's time on the market. *Design and Optimization of Mechanical Engineering Products* is an essential research source that explores the structure and processes used in creating goods and the methods by which these goods are improved in order to continue competitiveness in the consumer market. Featuring coverage on a broad range of topics including modeling and simulation, new product development, and multi-criteria decision making, this publication is targeted toward students, practitioners, researchers, engineers, and

academicians.

Hybrid Modeling and Optimization of

Manufacturing - Ramón Quiza

2012-02-16

Artificial intelligence (AI) techniques and the finite element method (FEM) are both powerful computing tools, which are extensively used for modeling and optimizing manufacturing processes. The combination of these tools has resulted in a new flexible and robust approach as several recent studies have shown.

This book aims to review the work already done in this field as well as to expose the new possibilities and foreseen trends. The book is expected to be useful for postgraduate students and researchers, working in the area of modeling and optimization of manufacturing processes.

Advanced Modeling and Optimization of Manufacturing Processes -

R. Venkata Rao 2010-12-01

Advanced Modeling and Optimization of Manufacturing Processes presents a comprehensive review of the

latest international research and development trends in the modeling and optimization of manufacturing processes, with a focus on machining. It uses examples of various manufacturing processes to demonstrate advanced modeling and optimization techniques. Both basic and advanced concepts are presented for various manufacturing processes, mathematical models, traditional and non-traditional optimization techniques, and real case studies. The results of the application of the proposed methods are also covered and the book highlights the most useful modeling and optimization strategies for achieving best process performance. In addition to covering the advanced modeling, optimization and environmental aspects of machining processes, *Advanced Modeling and Optimization of Manufacturing Processes* also covers the latest technological advances, including rapid prototyping and tooling, micromachining, and

nano-finishing. *Advanced Modeling and Optimization of Manufacturing Processes* is written for designers and manufacturing engineers who are responsible for the technical aspects of product realization, as it presents new models and optimization techniques to make their work easier, more efficient, and more effective. It is also a useful text for practitioners, researchers, and advanced students in mechanical, industrial, and manufacturing engineering.

[Techniques, Tools and Methodologies Applied to Quality Assurance in Manufacturing](#) - Jorge Luis García Alcaraz 2021-05-18

This book presents a collection of real cases from industrial practices that production system and quality managers implement to ensure a high quality as well as a low cost in products. This book is divided in sections that are focused on:

- The quality and philosophies implemented to production systems; starting from the product design as well as from

the supply system. · The principal statistical techniques applied to the quality assurance (statistical quality control, analysis of tests and failure, quality function deployment, accelerated life tests, among others), the process of gathering information, its validation, its reliability process, and techniques for data analysis. · The techniques applied to the integration of human resources in the process of quality assurance, such as managers and operators' participation, training, and training processes. · Use of information and communications technologies, software, and programs implemented to guarantee the quality of the products in the production systems. ISO standards and policies that are used for quality management and monitoring.

Handbook of Research on Manufacturing Process Modeling and Optimization Strategies - Das, Raja
2017-03-10

Recent improvements in

business process strategies have allowed more opportunities to attain greater developmental performances. This has led to higher success in day-to-day production and overall competitive advantage. The Handbook of Research on Manufacturing Process Modeling and Optimization Strategies is a pivotal reference source for the latest research on the various manufacturing methodologies and highlights the best optimization approaches to achieve boosted process performance. Featuring extensive coverage on relevant areas such as genetic algorithms, fuzzy set theory, and soft computing techniques, this publication is an ideal resource for researchers, practitioners, academicians, designers, manufacturing engineers, and institutions involved in design and manufacturing projects.

Advances in Computational Methods in Manufacturing - R. Ganesh Narayanan
2019-10-17

This volume presents a

selection of papers from the 2nd International Conference on Computational Methods in Manufacturing (ICMM 2019). The papers cover the recent advances in computational methods for simulating various manufacturing processes like machining, laser welding, laser bending, strip rolling, surface characterization and measurement. Articles in this volume discuss both the development of new methods and the application and efficacy of existing computational methods in manufacturing sector. This volume will be of interest to researchers in both industry and academia working on computational methods in manufacturing.

Evolutionary Computing in Advanced Manufacturing -

Manoj Tiwari 2011-07-05

This cutting-edge book covers emerging, evolutionary and nature inspired optimization techniques in the field of advanced manufacturing. The complexity of real life advanced manufacturing problems often cannot be solved by traditional

engineering or computational methods. Hence, in recent years researchers and practitioners have proposed and developed new strands of advanced, intelligent techniques and methodologies. Evolutionary computing approaches are introduced in the context of a wide range of manufacturing activities, and through the examination of practical problems and their solutions, readers will gain confidence to apply these powerful computing solutions. The initial chapters introduce and discuss the well established evolutionary algorithm, to help readers to understand the basic building blocks and steps required to successfully implement their own solutions to real life advanced manufacturing problems. In the later chapters, modified and improved versions of evolutionary algorithms are discussed. The book concludes with appendices which provide general descriptions of several evolutionary algorithms.

Handbook of Research on

Holistic Optimization Techniques in the Hospitality, Tourism, and Travel Industry - Vasant,

Pandian 2016-10-31

The application of holistic optimization methods in the tourism, travel, and hospitality industry has improved customer service and business strategies within the field. By utilizing new technologies and optimization techniques, it is becoming easier to troubleshoot problematic areas within the travel industry. The Handbook of Research on Holistic Optimization Techniques in the Hospitality, Tourism, and Travel Industry features innovative technologies being utilized in the management of hotels and tourist attractions.

Highlighting empirical research on the optimization of the travel and hospitality industry through the use of algorithms and information technology, this book is a critical reference source for managers, decision makers, executives, tourists, agents, researchers, economists, and

hotel staff members.

Nanofluid Technologies and Thermal Convection Techniques - Chand, Ramesh 2017-01-10

Emerging developments in nanofluid research have enhanced its range of various industrial applications. When implemented effectively, the use of such fluids offer numerous benefits, particularly in cooling processes. Nanofluid Technologies and Thermal Convection Techniques is a pivotal source of information for theoretical perspectives and investigations on the thermal instability of nanofluids and its various effects. Highlighting relevant studies relating to stationary, double diffusive, and oscillatory convection, this book is ideally designed for professionals, researchers, and practitioners seeking material on the industrial usage of nanofluid technologies.

Advances in Data Mining. Applications and Theoretical Aspects - Petra Perner 2018-07-04

This volume constitutes the

proceedings of the 18th Industrial Conference on Advances in Data Mining, ICDM 2018, held in New York, NY, USA, in July 2018. The 24 regular papers presented in this book were carefully reviewed and selected from 146 submissions. The topics range from theoretical aspects of data mining to applications of data mining, such as in multimedia data, in marketing, in medicine and agriculture, and in process control, industry, and society.

Experiments and Simulations in Advanced Manufacturing - Panagiotis Kyratsis 2021-04-29

This book presents the latest advances in manufacturing from both the experimental and simulation point of view. It covers most aspects of manufacturing engineering, i.e. theoretical, analytical, computational and experimental studies. Experimental studies on manufacturing processes require funds, time and expensive facilities, while numerical simulations and

mathematical models can improve the efficiency of using the research results. It also provides high level of prediction accuracy and the basis for novel research directions.

Handbook of Research on Advances and Applications in Refrigeration Systems and Technologies - Gaspar, Pedro Dinis 2015-08-28

In recent years, the sustainability and safety of perishable foods has become a major consumer concern, and refrigeration systems play an important role in the processing, distribution, and storage of such foods. To improve the efficiency of food preservation technologies, it is necessary to explore new technological and scientific advances both in materials and processes. The Handbook of Research on Advances and Applications in Refrigeration Systems and Technologies gathers state-of-the-art research related to thermal performance and energy-efficiency. Covering a diverse array of subjects—from the

challenges of surface-area frost-formation on evaporators to the carbon footprint of refrigerant chemicals—this publication provides a broad insight into the optimization of cold-supply chains and serves as an essential reference text for undergraduate students, practicing engineers, researchers, educators, and policymakers.

Numerical and Analytical Solutions for Solving Nonlinear Equations in Heat Transfer

- Ganji, Davood Domiri 2017-07-26

Engineering applications offer benefits and opportunities across a range of different industries and fields. By developing effective methods of analysis, results and solutions are produced with higher accuracy. Numerical and Analytical Solutions for Solving Nonlinear Equations in Heat Transfer is an innovative source of academic research on the optimized techniques for analyzing heat transfer equations and the application of these methods across various fields. Highlighting

pertinent topics such as the differential transformation method, industrial applications, and the homotopy perturbation method, this book is ideally designed for engineers, researchers, graduate students, professionals, and academics interested in applying new mathematical techniques in engineering sciences.

Socio-Technical Decision Support in Air Navigation Systems: Emerging Research and Opportunities

- Shmelova, Tetiana 2018-01-12

The integration of technology into the aviation system planning has allowed for more stable, yet increasingly complex, models that enable better analysis techniques and new approaches to decision-making. These modern advances ensure higher productivity in addressing various planning problems. Socio-Technical Decision Support in Air Navigation Systems: Emerging Research and Opportunities is a critical scholarly resource that contains a systematic analysis

of formalized factors affecting socio-technical systems operators and how these factors influence decision-making process of professional and non-professional activities in air navigation systems.

Featuring coverage on a broad range of topics, such as dimensional modeling, applications of decision support systems, and semantic analysis, this book is geared towards academicians, future pilots, aviation dispatchers, engineers, managers, and students.

Optimization of Manufacturing Processes -

Kapil Gupta 2019-06-25

This book provides a detailed understanding of optimization methods as they are implemented in a variety of manufacturing, fabrication and machining processes. It covers

the implementation of statistical methods, multi-criteria decision making methods and evolutionary techniques for single and multi-objective optimization to improve quality, productivity, and sustainability in manufacturing. It reports on the theoretical aspects, special features, recent research and latest development in the field. Optimization of Manufacturing Processes is a valuable source of information for researchers and practitioners, as it fills the gap where no dedicated book is available on intelligent manufacturing/modeling and optimization in manufacturing. Readers will develop an understanding of the implementation of statistical and evolutionary techniques for modeling and optimization in manufacturing.