![World Scientific — Connecting Great Minds]

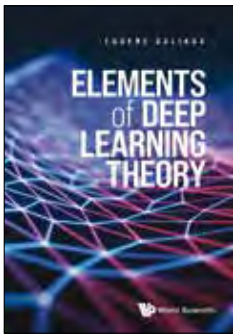# COMPUTER
SCIENCE

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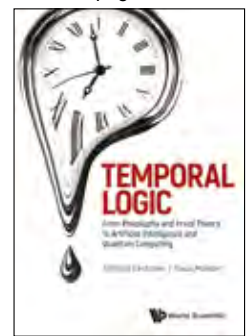
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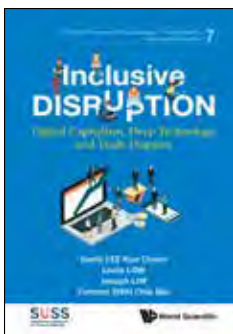**CHAOS, INFORMATION, AND THE FUTURE OF PHYSICS**
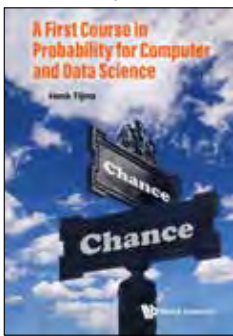
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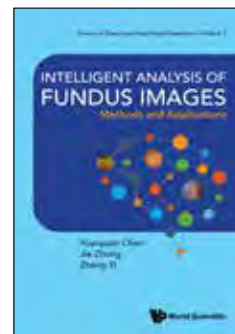
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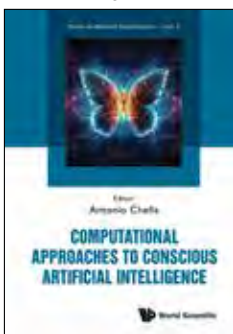Methods and Applications

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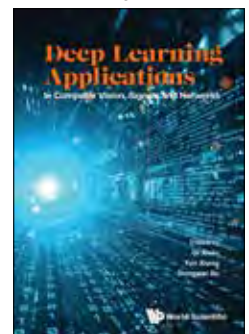*page **7***

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Artificial Intelligence / Fuzzy Logic

ELEMENTS OF DEEP LEARNING THEORY
by **Eugene Golikov** *(Ecole Polytechnique Fédérale de Lausanne, Switzerland)*

- Structured and easily digestible materials focusing on the theory of deep learning
- An accessible coverage of the majority of relevant topics in deep learning theory
- Detailed "base" examples for each and remarking current research direction
- Great facilitations for the self-learning of theory of deep learning for researchers and students

Readership: Graduate in computer science and mathematics interested in deep learning theory, researchers in deep learning.

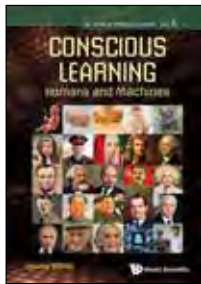| 200pp	May 2024	
978-981-127-126-7	**US$88**	**£75**
978-981-127-127-4(ebook)	**US$141**	**£125**

Series on Intelligence Science - Vol 5
CONSCIOUS LEARNING
Humans and Machines
by **Juyang Weng** *(Brain-Mind Institute, USA)*

The volume explains how human brains require and learn consciousness and why the new AI will overcome the current lack of conscious learning algorithms in AI. For human societies, it suggests how governments can make their taxpayers safer, more prosper and happier. For future AI, it calls for a thorough investigation in scientific infrastructures like government and private funding agencies, publication venues, professional societies and administrators that evaluate research. Why did a conscious learning algorithm not have a healthy environment to study? Why could rampant misconducts of data deletion in deep learning be allowed to grossly exaggerate AI performances for so long? The author's real-life accounts reveal deep reasons.

Readership: Researchers, professionals, academics, undergraduate and graduate students in AI and robotics.

200pp	Apr 2024	
978-981-126-439-9	**US$88**	**£75**
978-981-126-440-5(ebook)	**US$141**	**£125**

World Scientific Series on Future Computing Paradigms and Applications
DISTRIBUTED INTELLIGENT CIRCUITS AND SYSTEMS
by **Balwinder Raj** *(Dr B R Ambedkar National Institute of Technology, India)*, **Brij B Gupta** *(Asia University, Taiwan)*, **Shalendra Singh** *(Pranveer Singh Institute of Technology, India)* & **Monirujjaman Khan** *(North South University, Bangladesh)*
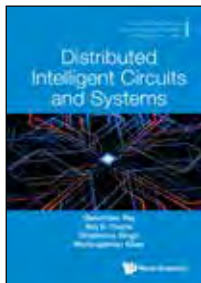
The main objective of this book is to provide insights into recent advances in distributed intelligent circuits, systems and their applications. Distributed intelligence is the key enabler for innovations in machine-to-machine communications. The innovations are directed towards keeping existing algorithms as the base and developing new intelligent systems by employing smart technologies. Artificial intelligence (AI) and, more specifically, deep learning (DL) are receiving significant attention in assisting doctors in the detection of disease patterns without much human intervention.

Readership: Graduate and post-graduate students, and researchers specialising in electronics engineering and computer engineering.

250pp	Nov 2023	
978-981-127-952-2	**US$98**	**£85**
978-981-127-953-9(ebook)	**US$157**	**£140**

TO HALT, OR NOT TO HALT? THAT IS THE QUESTION
by **Cristian S Calude** *(University of Auckland, New Zealand)*

Written in an informal and thought-provoking language, supported with suggestive illustrations and applications and almost free of arcane mathematics (formal arguments are relegated to a special part dedicated to the mathematically-oriented reader), the book will stimulate the curiosity of the reader interested in the consequences of the limits of computing and in various attempts to cope with them.

Readership: Undergraduate and graduate students, researchers and practitioners in the fields of computer science, mathematics, logic, philosophy, physics, and a large category of educated readers.

250pp	Jan 2025	
978-981-123-227-5	**US$98**	**£85**
978-981-123-228-2(ebook)	**US$157**	**£125**

Series on Deep Learning Neural Networks - Vol 2
ARTIFICIAL NEURAL NETWORKS
Methods and Applications in Fractional Order Systems
by **Susmita Mall** *(National Institute of Technology Rourkela, India)* & **Snehashish Chakraverty** *(National Institute of Technology Rourkela, India)*

This is the first book that uses Artificial Neural Networks (ANN) to solve fractional order systems. As a powerful data modeling tool, information is processed through neurons in parallel manner to solve a specific problem. Knowledge is acquired through learning and stored with inter neuron connections strength which are expressed by numerical values called weights. These weights are used to complete output signal values for new testing input signal value.

Readership: This book will be an essential source for students, scholars, practitioners, researchers and academicians in the assorted fields of engineering and sciences interested to model physical problems with ease through the use of ANN.

250pp	Dec 2024	
978-981-121-880-4	**US$98**	**£85**
978-981-121-881-1(ebook)	**US$157**	**£125**

DIFFERENTIAL GEOMETRICAL FOUNDATIONS OF INFORMATION GEOMETRY
Geometry of Statistical Manifolds and Divergences
by **Hiroshi Matsuzoe** *(Nagoya Institute of Technology, Japan)*

This monograph gives foundations of information geometry from the viewpoint of differential geometry. In information geometry, a statistical manifold structure is important, which is related to geometry of a pair of dual affine connections and an asymmetric distance called divergence. First, we summarize geometry of statistical manifolds. As applications, we explain statistical inferences and information criterions from the viewpoint of differential geometry.

We also summarize recent developments of information geometry. In particular, we study geometry of Bayesian statistics, and infinite dimensional information geometry, etc.

Readership: Graduate students, researchers and professionals in Geometry.

350pp	Sep 2024	
978-981-4618-76-2	**US$130**	**£108**
978-981-4618-77-9(ebook)	**US$208**	**£165**

STATISTICAL MACHINE LEARNING WITH APPLICATIONS IN FINANCE

by **Gordon Ritter** (Columbia University, USA & New York University, USA & Baruch College, USA)

This unique compendium develops a general approach to building models of economic and financial processes, with a focus on statistical learning techniques that scale to large data sets. It introduces the key elements of a parametric statistical model: likelihood, prior, and posterior, and show how to use them to make predictions.

Readership: Professionals, academics, researchers, and graduate students in artificial intelligence/machine learning, neural networks, pattern recognition, and machine perception/computer vision.

480pp	Apr 2024
978-981-123-233-6	US$128 £115
978-981-123-234-3(ebook)	US$205 £165

THE PRACTICAL PHILOSOPHY OF AI-ASSISTANTS

An Engineering-Humanities Conversation
by **Suman Gupta** (The Open University, UK) & **Peter H Tu** (General Electric Research, USA)

The book is written in an accessible manner as much to inform and debate as to entertain: engineering descriptions are expressed to be accessible to a humanities researcher, and philosophical or social concepts are similarly rendered amenable to reading by engineers.

Readership: Established researchers in a wide range of disciplines: engineering, cognitive sciences, evolutionary processes, systems theory, linguistics and communication, philosophy, text and discourse analysis, social sciences and cultural studies. University students, undergraduate level and above, in the above-named disciplines. AI policy makers general readers who have kept an eye on such technologies.

200pp	Sep 2023
978-1-80061-421-5(pbk)	US$38 £35
978-1-80061-415-4	US$88 £75
978-1-80061-416-1(ebook)	US$141 £125

REDEFINING TRAFFIC

How AI Leads the Change
by **Guanghui Zhao** (Guizhou University of Finance and Economics, China)

Advances in Artificial intelligence (AI) have redefined research and development in many areas, particularly in the direction of engineering research, application of machine learning, and the use of deep learning in many aspects of engineering research.

This book looks at the impact of AI and how it has transformed transportation in the form of Smart Traffic Management Systems in a world of unmanned systems and autonomous machines. The book explores the problems faced in air, sea and land transport and traffic. It looks into Unmanned Aerial Vehicles (UAVs), autonomous and remotely-operated ships, intelligent port management systems, and modern urban railway systems.

Redefining Traffic is a reference book for researchers, engineers, and technical personnel specializing in intelligent traffic, artificial intelligence, big data, and the Internet of Things (IoT). It can also be used as a study guide for advanced undergraduates interested in AI, vehicle engineering, automation, and computing.

Readership: Researchers, engineers, and technical personnel specialising in intelligent traffic, artificial intelligence, big data, and the Internet of things industry.

250pp	Jul 2023
978-981-124-974-7	US$88 £75
978-981-124-975-4(ebook)	US$141 £115
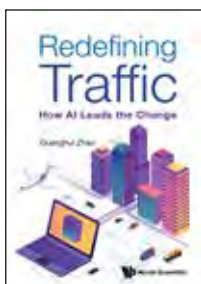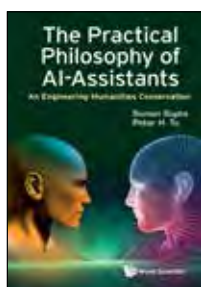
## A FIRST COURSE IN PROBABILITY FOR COMPUTER AND DATA SCIENCE

by **Henk Tijms** (Vrije University, The Netherlands)

In this undergraduate text, the author has distilled the core of probabilistic ideas and methods for computer and data science. The book emphasizes probabilistic and computational thinking rather than theorems and proofs. It provides insights and motivates the students by telling them why probability works and how to apply it.

Readership: Undergraduate students in computer and data science, business analytics, and operations research. Data scientists working at companies.

220pp	Jul 2023
978-981-127-204-2(pbk)	US$48 £40
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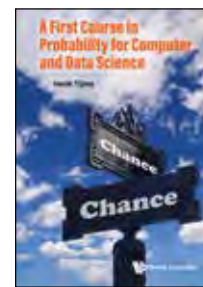
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"A fascinating tour through the history of science and the sometimes irrational behavior of supposedly rational scientists, by three people who write well and understand what they are writing about."

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Professor emeritus, Princeton University
Nobel Prize in Physics (2019)

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418pp	Oct 2023
978-1-80061-360-7(pbk)	US$38 £35
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by **William Seaman** (Duke University, USA), **Otto E Rössler** (University of Tübingen, Germany) & **Mark Burgin** (University of California, Los Angeles, USA)

- The discussed topics provide a fruitful perspective for the future development of physics and related areas
- In an accessible form, the book presents a broad landscape of science and scientific community

Readership: Researchers and general public in information studies, including Philosophy, Physical Chemistry, Artificial Intelligence, Theoretical Computer Science, Bioinformatics, Neural Networks, Mathematical Physics, Mathematical Modelling, Mathematical Biology, Neuroscience, Nonlinear Science, Chaos & Dynamical Systems, Theoretical Physics.

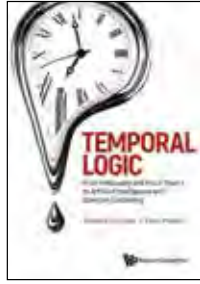|	
316pp	Jul 2023
978-981-127-136-6	US$118 £105
978-981-127-137-3(ebook)	US$189 £165
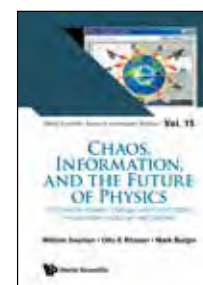
TEMPORAL LOGIC
From Philosophy and Proof Theory to Artificial Intelligence and Quantum Computing
by **Stefania Centrone** *(Technical University of Munich, Germany)* & **Klaus Mainzer** *(Technical University of Munich, Germany)*

The book culminates in an outlook on trendsetting applications of temporal logics in future technologies such as artificial intelligence and quantum technology. However, it will not be sufficient, as in traditional temporal logic, to start from the everyday understanding of time. Since the 20th century, physics has fundamentally changed the modern understanding of time, which now also determines technology. In temporal logic, we are only just beginning to grasp these differences in proof theory which needs interdisciplinary cooperation of proof theory, computer science, physics, technology, and philosophy.

Readership: Researchers and students of mathematical logic and foundations, theoretical computer science, and philosophy. The level is graduate with introductions on the undergraduate level. The book can be used for courses on temporal logic in mathematical logic as well as in computer science. It is also of general interest for the general reader in philosophy, social science (e.g., security issues), and history of science.

160pp	Jun 2023	
978-981-126-853-3	US$68	£60
978-981-126-854-0(ebook)	US$109	£95

Singapore University of Social Sciences - World Scientific Future Economy Series - Vol 7
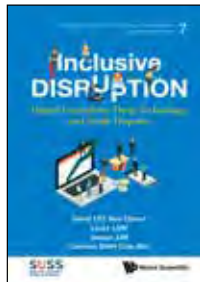## INCLUSIVE DISRUPTION
Digital Capitalism, Deep Technology and Trade Disputes
by **David Kuo Chuen Lee***)*, **Linda Low**, **Joseph Lim** & **Carmen Chia Mei Shih** *(Singapore University of Social Sciences, Singapore)*

The book also gathers the views of key opinion leaders and cutting-edge practitioners who are at the forefront of fintech development. Therefore, it not only presents useful insights about financial technology but also represents an invaluable source of knowledge for readers who are interested in fintech.

Readership: Upper-division undergraduates, graduate students, and professionals working in financial institutions and on financial technology worldwide.

250pp	Oct 2023	
978-981-126-557-0(pbk)	US$48	£40
978-981-126-483-2	US$98	£85
978-981-123-046-2(ebook)	US$157	£140

THE FUTURE OF TECHNOLOGY IN MEDICINE
From Cyborgs to Curing Paralysis
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In this book, the authors discuss these technological advancements of healthcare in 14 comprehensive chapters specifically designed to be read and understood by any individual interested in learning more about technology in medicine.

Readership: Interested lay public, medical, life sciences and engineering students.

300pp	Jun 2023	
978-981-127-641-5(pbk)	US$48	£40
978-981-127-432-9	US$98	£85
978-981-127-433-6(ebook)	US$157	£140

Series on Deep Learning Neural Networks - Vol 1
INTELLIGENT ANALYSIS OF FUNDUS IMAGES
Methods and Applications
by **Yuanyuan Chen** *(Sichuan University, China)*, **Jie Zhong** *(University of Electronic Science and Technology of China, China)* & **Zhang Yi** *(Sichuan University, China)*

This comprehensive compendium designs deep neural network models and systems for intelligent analysis of fundus imaging. In response to several blinding fundus diseases such as Retinopathy of Prematurity (ROP), Diabetic Retinopathy (DR) and Macular Edema (ME), different image acquisition devices and fundus image analysis tasks are elaborated.

This useful reference text provides theoretical and experimental reference basis for AI researchers, system engineers of intelligent medicine and ophthalmologists.

Readership: Researchers, professionals, academics and graduate students in neural networks and machine learning.

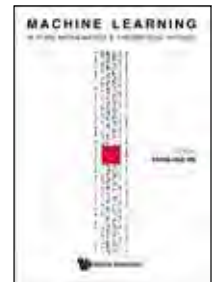| 220pp	Jul 2023	
978-981-127-036-9	US$88	£75
978-981-127-037-6(ebook)	US$141	£125

MACHINE LEARNING IN PURE MATHEMATICS AND THEORETICAL PHYSICS
edited by **Yang-Hui He** *(London Institute for Mathematical Sciences, UK & University of Oxford, UK & City, University of London, UK & Nankai University, China)*

- First book on machine learning linking various aspects of pure mathematics and mathematical structures
- Collected contribution of reviews and original research papers from some of the experts who have made this new direction — of AI meeting maths and theoretical physics — possible in the last 5 years

Readership: Researchers in mathematics, theoretical physics, and machine learning, interested in their interactions. Students curious about how AI can help with research in mathematics.

| 368pp	Jul 2023	
978-1-80061-369-0	US$118	£105
978-1-80061-370-6(ebook)	US$189	£165

Series on Machine Consciousness - Vol 5
COMPUTATIONAL APPROACHES TO CONSCIOUS ARTIFICIAL INTELLIGENCE
edited by **Antonio Chella** *(University of Palermo, Italy & ICAR-CNR Palermo, Italy)*

This edited volume consists of 10 chapters highlighting the prospects of machine consciousness and studying the subject from different perspectives. The issues are wide-ranging and include topics such as the metaverse, a computational approach to pain and suffering, universal cognitive intelligence, intentional action, the categorisation of conscious machine, and more. The volume is designed as a reference guide for researchers, practitioners, and students interested in the intersection of AI and consciousness.

Readership: Researchers, practitioners, students, informed readers interested in the intersection of Artificial Intelligence and Consciousness.

260pp	Aug 2023	
978-981-127-666-8	US$98	£85
978-981-127-667-5(ebook)	US$157	£140
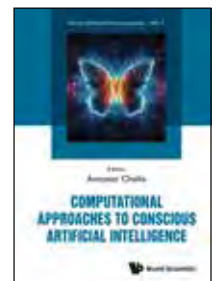
INTRODUCTION TO DATA SCIENCE

by **Gaoyan Ou** *(Beijing Institute of Big Data Research, China)*, **Zhanxing Zhu** *(Peking University, China)*, **Bin Dong** *(Peking University, China)* & **Weinan E** *(Beijing Institute of Big Data Research, China)*

Translated by: **Binyang Li**, **Shumin Shi**

The book systematically introduces the basic contents of data science, including data preprocessing and basic methods of data analysis, handling special problems (e.g. text analysis), deep learning, and distributed systems.

In addition to systematically introducing the basic content of data science from a theoretical point of view, the book also provides a large number of data analysis practice cases.

Readership: Undergraduate and graduate students, researchers.

500pp	Oct 2023	
978-981-126-389-7	US$148	£130
978-981-126-390-3(ebook)	US$237	£210

World Scientific Lecture Notes in Economics and Policy - Vol 17

THE SCIENCE OF MISTAKES
Lecture Notes on Economic Data Engineering
by **Andrew Caplin** *(New York University, USA)*

These lectures introduce an interdisciplinary science of mistakes to cut the Gordian knot. The key building blocks are model constructs drawn from the economic tradition, methods of measurement drawn from the psychometric tradition, and analytic methods drawn from economic theory.

Readership: For economists, psychologists, and data scientists interested in a common analytic framework for understanding mistakes. The book is suitable for advanced undergraduates, graduate students, and researchers in economics, psychology and data science.

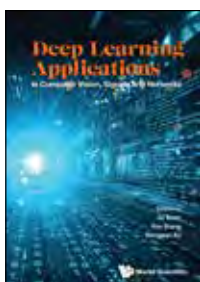| 250pp	Jun 2023	
978-981-126-238-8	US$88	£70
978-981-126-239-5(ebook)	US$141	£110

DEEP LEARNING APPLICATIONS
In Computer Vision, Signals and Networks
edited by **Qi Xuan** *(Zhejiang University of Technology, China)*, **Yun Xiang** *(Zhejiang University of Technology, China)* & **Dongwei Xu** *(Zhejiang University of Technology, China)*

This book proposes various deep learning models featuring how deep learning algorithms have been applied and used in real-life settings. The complexity of real-world scenarios and constraints imposed by the environment, together with budgetary and resource limitations, have posed great challenges to engineers and developers alike, to come up with solutions to meet these demands. This book presents case studies undertaken by its contributors to overcome these problems. These studies can be used as references for designers when applying deep learning in solving real-world problems in the areas of vision, signals, and networks.

Readership: Researchers working in computer vision, signals, networks, machine learning, and deep learning.

308pp	May 2023	
978-981-126-690-4	US$108	£95
978-981-126-691-1(ebook)	US$173	£150

ARTIFICIAL INTELLIGENCE FOR SCIENCE
A Deep Learning Revolution
edited by **Alok Choudhary** *(Northwestern University, USA)*, **Geoffrey Fox** *(University of Virginia, USA)* & **Tony Hey** *(Rutherford Appleton Laboratory, UK)*

This unique collection introduces AI, Machine Learning (ML), and deep neural network technologies leading to scientific discovery from the datasets generated both by supercomputer simulation and by modern experimental facilities.

Readership: Researchers, professionals, academics, and graduate students in AI/machine learning, neural networks, data science, and science and engineering.

804pp	Apr 2023	
978-981-126-566-2	US$188	£165
978-981-126-567-9(ebook)	US$301	£265

SOCIALLY RESPONSIBLE AI
Theories and Practices
by **Lu Cheng** *(University of Illinois at Chicago, USA)* & **Huan Liu** *(Arizona State University, USA)*

This book introduces a unified perspective of Socially Responsible AI to help bridge conceptual AI principles to responsible AI practice. It begins with an interdisciplinary definition of socially responsible AI and the AI responsibility pyramid. Existing efforts seeking to materialize the mainstream responsible AI principles are then presented. The book also discusses how to leverage advanced AI techniques to address the challenging societal issues through Protecting, Informing, and Preventing, and concludes with open problems and challenges.

Readership: Undergraduate & graduate students in AI, Machine Learning, Data Science, and Computer Science courses, and AI researchers, AI technologists, researchers, and practitioners from other disciplines who would like to contribute to making AI socially responsible with their expertise.

| 196pp	Jun 2023	
978-981-126-662-1	US$78	£70
978-981-126-663-8(ebook)	US$125	£110

PRACTICAL BIOINFORMATICS FOR BEGINNERS
From Raw Sequence Analysis to Machine Learning Applications
edited by **Lloyd Low** *(University of Adelaide, Australia)* & **Martti Tammi** *(Tanalink Sdn Bhd, Malaysia)*

"This book contains a series of tutorials for a biologist who wants to learn to analyze large-scale sequence data. It covers the basics, as well as more advanced methods. It is a very practical guide with useful examples and it will provide a way for researchers to build a foundation in bioinformatic sequence analysis. I will recommend it to my group members."

Björn Andersson
**Department of Cell & Molecular Biology, Karolinska Institutet**

Readership: It is an excellent hands-on material for teachers and lecturers who conduct courses in bioinformatics and as a reference material for professionals. The chapters are written to be standalone recipes making it suitable for students who wish to self-learn selected topics such as how to apply machine learning to study genomic features. It is a necessary companion for undergraduates, graduate students, researchers and anyone interested in the exponentially growing field of bioinformatics.

268pp	Feb 2023	
978-981-125-898-5	US$98	£80
978-981-125-899-2(ebook)	US$157	£125
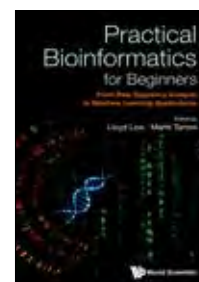
OPTICAL SPECTROSCOPY AND IMAGING FOR CANCER DIAGNOSTICS
Fundamentals, Progress, and Challenges
edited by **Noureddine Melikechi**
*(University of Massachusetts Lowell, USA)*
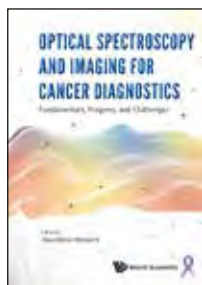
This is an interdisciplinary book that presents the applications of novel laser spectroscopy and imaging techniques for the detection of cancers recently developed by some of the world's most renown researchers. The book consists of three parts and a total of 16 chapters. Each chapter is written by leading experts who are actively seeking to develop novel spectroscopic and analytical methods for cancer detection and diagnosis.

Readership: Graduate students and researchers in cancer screening and diagnostics, laser spectroscopy, laser imaging, machine learning, biophotonics and biomedical sciences.

560pp	Feb 2023	
978-981-125-895-4	US$168	£135
978-981-125-896-1(ebook)	US$269	£215

ARTIFICIAL INTELLIGENCE IN RADIATION ONCOLOGY
edited by **Seong K Mun** *(Virginia Tech, USA)* & **Sonja Dieterich** *(University of California, Davis, USA)*
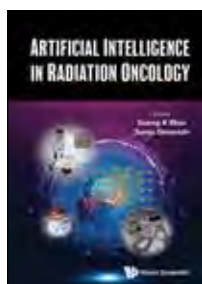
This book offers an array of AI scientific concepts, and AI technology tools with selected examples of current applications to serve as a one-stop AI resource for the radiation oncology community. The clinical adoption, beyond research, will require ethical considerations and a framework for an overall assessment of AI as a set of powerful tools.

30 renowned experts contributed to sixteen chapters organized into six sections: Define the Future, Strategy, AI Tools, AI Applications, and Assessment and Outcomes. The future is defined from a clinical and a technical perspective and the strategy discusses lessons learned from radiology experience in AI and the role of open access data to enhance the performance of AI tools. The AI tools include radiomics, segmentation, knowledge representation, and natural language processing. The AI applications discuss knowledge-based treatment planning and automation, AI-based treatment planning, prediction of radiotherapy toxicity, radiomics in cancer prognostication and treatment response, and the use of AI for mitigation of error propagation.

Readership: Medical physicists, biomedical engineers, AI developers and engineers, radiation oncologists, hospital managers in radiation oncology departments, medical technology enthusiasts.

392pp	Jan 2023	
978-981-126-353-8	US$148	£120
978-981-126-354-5(ebook)	US$237	£190

MACHINE LEARNING IN BIOINFORMATICS OF PROTEIN SEQUENCES
Algorithms, Databases and Resources for Modern Protein Bioinformatics
edited by **Lukasz Kurgan**
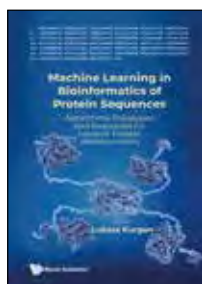
- Provides in-depth information across two impactful technology fields: machine learning and bioinformatics
- Focuses on cutting-edge topics including deep learning, intrinsic disorder and protein function prediction

Readership: Graduate students and researchers in computational biology, bioinformatics, structural biology and computer science areas.

380pp	Jan 2023	
978-981-125-857-2	US$138	£120
978-981-125-858-9(ebook)	US$221	£195

MACHINE LEARNING WITH PYTHON
Theory and Applications
by **G R Liu** *(University of Cincinnati, USA)*
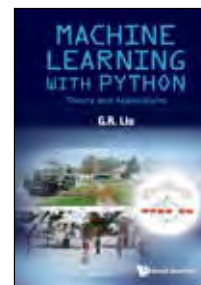
This compendium introduces the basic concepts, fundamental theories, essential computational techniques, codes, and applications related to ML models. With a strong foundation, one can comfortably learn related topics, methods, and algorithms. Most importantly, readers with strong fundamentals can even develop innovative and more effective machine models for his/her problems. The book is written to achieve this goal.

Readership: Researchers, professionals, academics, undergraduate and graduate students in AI and machine learning.

692pp	Dec 2022	
978-981-125-417-8	US$148	£120
978-981-125-418-5(ebook)	US$237	£190

Book Series in TechnoPhilosophies - Vol 1
EXISTENCE, ORIGIN AND WEIRD TECHNOLOGY
Exploring Humanity's Ultimate Questions
by **Pentti O Haikonen** *(University of Illinois at Springfield, USA)*
Illustrated by: **Pete Haikonen**

This book presents systematic novel views on questions surrounding the fast-moving advances in technology around us and their impact on our lives, and provides explanations and possible answers to these questions in an easy-to-read way. It also presents an explanation of consciousness and suggests a philosophical ultimate meaning for life

Readership: For the general reader in search for answers to questions pertaining to human existence, progress, and purpose.

252pp	Dec 2022	
978-981-126-072-8	US$48	£40
978-981-126-073-5(ebook)	US$98	£80

INTERNET OF EVERYTHING
Key Technologies, Practical Applications and Security of IoT
by **Hang Song** *(National University of Defence Technology, China)*

This book provides comprehensive coverage on the concepts, frameworks, and underpinning technologies in most aspects of the Internet of Things (IoT), and presents them as the foundation on which more advanced topics, such as 5G and mMTC/M2M, Edge/cloud computing and the modalities of Tactile IoT, Industrial IoT (IIoT)/Industry 4.0, Satellite IoT, and Digital Twins (DT), could be built upon.

Readership: The book focuses on bringing all IoT related technologies together, so that students, researchers, and practitioners could use this book as a reference guide in the course of their studies and product development process.

840pp	Dec 2022	
978-981-124-626-5	US$268	£235
978-981-124-627-2(ebook)	US$429	£345

World Scientific Series in Robotics and Intelligent Systems - Vol 29

WAVELETS IN SOFT COMPUTING

2nd Edition
by **Marc Thuillard** *(Belimo Automation AG, Switzerland)*

The comprehensive compendium furnishes a quick and efficient entry point to many multiresolution techniques and facilitates the transition from an idea into a real project. It focuses on methods combining several soft computing techniques (fuzzy logic, neural networks, genetic algorithms) in a multiresolution framework.

Readership: Researchers, professionals, academics and graduate students in fuzzy logic.

320pp	Oct 2022	
978-981-126-398-9	US$108	£95
978-981-126-399-6(ebook)	US$173	£150

Digital Transformation: Accelerating Organizational Intelligence - Vol 1

DIGITAL TRANSFORMATION FOR THE UNIVERSITY OF THE FUTURE

edited by **Jay Liebowitz** *(Seton Hall University, USA)*

With the COVID-19 pandemic, we have seen universities worldwide having to "pivot" quickly to transform their education delivery to an online environment, as well as having to conduct their business operations virtually/remotely. For those universities who embraced digital transformation, they were able to adapt quickly to this new learning environment. Many others were not as successful. Part of the formula for success is for universities and other higher education institutions apply digital transformation technologies, processes, and leadership in this "new normal". This book will highlight what is needed in terms of digital transformation for the universities of the future in terms of technologies, processes, culture, and leadership considerations.

The book will be part of the new World Scientific book series, Digital Transformation: Accelerating Organizational Intelligence.

Readership: Students and instructors in universities and other educational institutions who are looking to move into the age of digital learning.

268pp	Sep 2022	
978-981-125-414-7	US$98	£85
978-981-125-415-4(ebook)	US$157	£140

Intelligent Information Systems - Vol 8

ADAPTIVE ENTERPRISE ARCHITECTURE AS INFORMATION

Architecting Intelligent Enterprises
by **Asif Qumer Gill** *(University of Technology Sydney, Australia)*
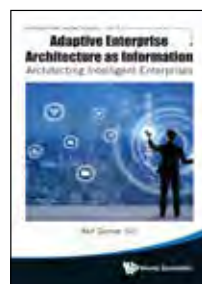
This compendium discusses the adaptive enterprise architecture (AEA) as information to support decisions and actions for desired efficiency and innovation (outcomes and impacts). This comprehensive information-driven approach uses data, analytics, and intelligence (AI/ML) for architecting intelligent enterprises.

Readership: Researchers, professionals, academics, and graduate students in AI/Machine Learning.

244pp	Aug 2022	
978-981-126-020-9	US$88	£75
978-981-126-021-6(ebook)	US$141	£125

NONLINEAR CHANNEL MODELS AND THEIR SIMULATIONS

by **Yecai Guo** *(Nanjing University of Information Science and Technology, China & Wuxi University, China)*
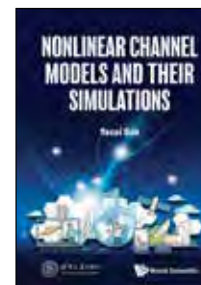
This comprehensive compendium highlights the research results of nonlinear channel modeling and simulation. Nonlinear channels include nonlinear satellite channels, nonlinear Volterra channels, molecular MIMO channels, etc.

Readership: Researchers, professionals, academics, undergraduate and graduate students in communications, computer engineering, complex systems and AI.

448pp	Jul 2022	
978-981-124-944-0	US$148	£120
978-981-124-945-7(ebook)	US$237	£190

HANDBOOK ON COMPUTER LEARNING AND INTELLIGENCE

(In 2 Volumes)
Vol 1: Explainable AI and Supervised Learning
Vol 2: Deep Learning, Intelligent Control and Evolutionary Computation
edited by **Plamen Parvanov Angelov** *(Lancaster University, UK)*

This two-volume handbook is divided into five parts. Volume 1 covers Explainable AI and Supervised Learning. Volume 2 covers three parts: Deep Learning, Intelligent Control, and Evolutionary Computation. The chapters detail the theory, methodology and applications of computer learning and intelligence, and are authored by some of the leading experts in the respective areas. The fifteen core chapters of the previous edition have been written and significantly refreshed by the same authors. Parts of the handbook have evolved to keep pace with the latest developments in computational intelligence in the areas that span across Machine Learning and Artificial Intelligence. The Handbook remains dedicated to applications and engineering-orientated aspects of these areas over abstract theories.

Readership: Researchers, practicing engineers and specialists as well as for postgraduate and advanced undergraduate students dealing with computer learning and artificial intelligence.

1056pp	Sep 2022	
978-981-124-514-5(Set)	US$298	£240
978-981-124-732-3(Set)(ebook)	US$477	£380

Series in Computer Vision - Vol 8

COMPUTATIONAL INTELLIGENCE AND IMAGE PROCESSING IN MEDICAL APPLICATIONS

edited by **C H Chen** *(University of Massachusetts Dartmouth, USA)*

This comprehensive compendium provides not only updated advances of computational intelligence and image processing in the detection and treatment of Covid-19, but also other medical applications such as in cancer detection and cardiovascular diseases, etc. More traditional approaches such as 2D segmentation and 3D reconstruction are included.

Readership: Researchers, professionals, academics, and graduate students in artificial intelligence and machine learning.

336pp	Jul 2022	
978-981-125-744-5	US$128	£100
978-981-125-745-2(ebook)	US$205	£165

THE WORLD OF 5G
(In 5 Volumes)
Volume 1: Internet of Everything
Volume 2: Intelligent Manufacturing
Volume 3: Intelligent Home
Volume 4: Intelligent Transportation
Volume 5: Intelligent Medicine
by **Quan Xue** (*South China University of Technology, China*), **Wenquan Che** (*South China University of Technology, China*), **Jishun Guo** (*GAC Automotive R&D Center, China*), **Wei Wu** (*Skyworth Group Co., Ltd, China*), **Zhiqiang Xu** (*Guangzhou Hantele Communication Co. Ltd, China*), **Wenhua Huang** (*Southern Medical University, China*) & **Haibin Lin** (*Affliated Hospital of Putian University, China*)

Editor-in-chief: **Quan Xue** (*South China University of Technology, China*)

Aim to capture new opportunities brought by 5G, this compendium set focuses on the key technologies, requirements, users' experiences, industry applications, and industrial reforms from the perspective of experts, and comprehensively introduces the related knowledge of 5G.

Readership: Researchers and practitioners in the fields of 5G. General readers who are interested in the fields of 5G, undergraduate students.

736pp	May 2022	
978-981-125-017-0(Set)	US$320	£255
978-981-125-018-7(Set)(ebook)	US$512	£410

ON RATIONALITY, ARTIFICIAL INTELLIGENCE AND ECONOMICS
by **Daniel Muller** (*BTB - Be The Bank, Tel Aviv, Israel*), **Fernando Buarque** (*University of Pernambuco, Recife, Brazil*) & **Tshilidzi Marwala** (*University of Johannesburg, South Africa*)

The authors hope that this comprehensive and modern analysis, firmly grounded in the opinions of various groundbreaking Nobel laureate economists, may be helpful to a broad audience interested in how decisions may lead us all to flourishing societies. That is, societies in which economic blunders (caused by over simplification of problems and super estimation of tools) are reduced substantially.

Readership: Students and researchers.

252pp	Apr 2022	
978-981-125-511-3	US$88	£70
978-981-125-512-0(ebook)	US$141	£110

ARTIFICIAL INTELLIGENCE APPLICATIONS IN HUMAN PATHOLOGY
edited by **Ralf Huss** (*University Hospital Augsburg, Germany*) & **Michael Grunkin** (*Visiopharm, Denmark*)

"As a cancer doctor, nothing is more foundational for making decisions about treatment than review of the pathology. The wealth of actionable knowledge that can be captured using the powerful techniques collectively referred to as artificial intelligence is beautifully exhibited in this book. These tools will undoubtedly drive critical understanding that will result in better treatment options for patients"
**James L Gulley, MD, PhD, FACP
Chief, Genitourinary Malignancies Branch
Head, Immunotherapy Group, GMB
Director, Medical Oncology Service
Deputy Director, Center for Cancer Research
National Cancer Institute, NIH**

Readership: Advanced graduate and undergraduate students in the field of life sciences. Medical doctors and researchers in biomedicine and bioinformatics specialists, as well as practicing pathologists.

336pp	Mar 2022	
978-1-80061-138-2	US$118	£95
978-1-80061-139-9(ebook)	US$189	£150

DEEP LEARNING IN BIOLOGY AND MEDICINE
edited by **Davide Bacciu** (*University of Pisa, Italy*), **Paulo J G Lisboa** (*Liverpool John Moores University, UK*) & **Alfredo Vellido** (*Universitat Politècnica de Catalunya, Spain*)

- The first to bring deep learning techniques to the life science communities, whereas other books are focused on bringing life science knowledge to the deep learning community
- An overview of consolidated approaches and methods as well as an up-to-date overview of the state-of-the-art methodologies and applications of deep learning in biology and medicine. As such, the book is also a useful guide to help navigate the literature, providing a reference for both practitioners and scientists

Readership: Researchers and practitioners in the fields of machine learning, data science, artificial intelligence, statistics, bioinformatics, computational biology, biology, medicine and chemistry.

332pp	Feb 2022	
978-1-80061-093-4	US$118	£95
978-1-80061-094-1(ebook)	US$189	£150

RECENT DEVELOPMENTS IN STRUCTURAL HEALTH MONITORING AND ASSESSMENT — OPPORTUNITIES AND CHALLENGES
Bridges, Buildings and Other Infrastructures
edited by **Achintya Haldar** (*University of Arizona, USA*) & **Abdullah Al-Hussein** (*University of Basrah, Iraq*)

This book will fill the gap in discussing the state-of-the-art for health assessment of infrastructures including MSGO, AI, AR, vision and smartphone-based techniques.

Readership: Advanced undergraduate and graduate students, academic/researchers and practitioners in the maintenance of infrastructures.

| 448pp	Feb 2022	
978-981-124-300-4	US$148	£120
978-981-124-301-1(ebook)	US$237	£190

ARTIFICIAL INTELLIGENCE FOR HIGH ENERGY PHYSICS
edited by **Paolo Calafiura** (*Lawrence Berkeley National Laboratory, USA*), **David Rousseau** (*Laboratoire de Physique des 2 Infinis Irène Joliot-Curie, France*) & **Kazuhiro Terao** (*SLAC National Accelerator Laboratory, USA*)

This book bridges the gap between introductory general-purpose machine learning texts and cutting-edge research papers in AI applied to HEP. This is the book researchers always want to have handy when a new student or researcher joins their groups

Readership: Graduate students and physicists interested in AI/ML applications to HEP; data scientists and ML researchers interested in "big science" data analysis and simulation.
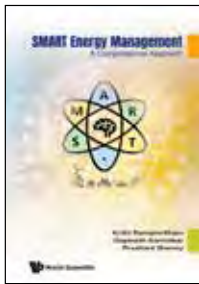
828pp	Mar 2022	
978-981-123-402-6	US$198	£160
978-981-123-403-3(ebook)	US$317	£255
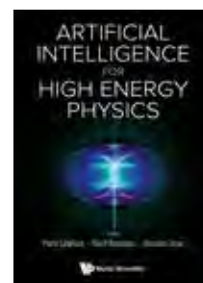
SMART ENERGY MANAGEMENT
A Computational Approach
by **Krithi Ramamritham** (Indian Institute of Technology Bombay, India & Sai University, Chennai, India), **Gopinath Karmakar** (Bhabha Atomic Research Centre Mumbai, India) & **Prashant Shenoy** (University of Massachusetts, Amherst, USA)

The focus of this book is smart energy management with the recurring theme being the use of computational and data-driven methods that use requirements/ measurement/ monitoring data to drive actuation/control, optimization, and resource management. The computational perspective is applied to manage energy, with an emphasis on smart buildings and the smart electric grids.

Readership: Graduate students, researchers and practitioners interested in an overview of recent advances in energy management systems.

312pp	Feb 2022	
978-981-125-228-0	US$118	£95
978-981-125-229-7(ebook)	US$189	£150

Computer Security / Blockchain

BUILDING SECURE AND HIGH-PERFORMANCE SOFTWARE SYSTEMS
by **Issa Traore** (University of Victoria, Canada) & **Ahmed Awad E Ahmed** (University of Victoria, Canada)

- Collects a large body of scarce knowledge and experiences on "software performance modeling"
- Contains state-of-the-art pointers to the literature on the subject
- Treating software security from a quality assurance perspective and integrating security concerns in the entire software lifecycle

Readership: Researchers, academics, postgraduate students in software engineering and networking.

200pp	Feb 2025	
978-981-283-599-4	US$106	£88
978-981-283-600-7(ebook)	US$170	£135

MACHINE LEARNING FOR MALWARE DETECTION
edited by **Edward Raff** (Booz Allen Hamilton, USA) & **Charles K Nicholas** (University of Maryland, Baltimore County, USA)

Malware detection is exceedingly challenging, requiring deeper expertise in two domains: machine learning (ML) and malware analysis.

This comprehensive collection guides ML practitioners and researchers into the state-of-the-art and underlying insights needed to work in and research problems at the intersection of machine learning and cyber security, particularly around the problem of malware targeting the Windows platform.

This useful volume's contributions come from a range of experts, representing large companies, major universities, and government labs, all working at the frontiers of malware detection and remediation research.

Readership: Researchers, professionals, academics, and graduate students in AI, machine learning and digital security.

450pp	Dec 2024	
978-981-126-203-6	US$148	£120
978-981-126-204-3(ebook)	US$237	£190

BLOCKCHAIN AND CRYPTOCURRENCY FOR ENTREPRENEURS
by **Bina Ramamurthy** (University at Buffalo, USA) & **Kumar Madurai** (CTG Inc., USA)

Blockchain is being touted as the next Internet revolution akin to the worldwide web and e-commerce. This unique compendium lays the foundations for the conceptual understanding of the components necessary to build blockchain-based applications. The volume provides more than 100 illustrations and examples of these applications in various business domains. Hands-on demonstrations on software will help to instal and explore the tools and techniques discussed.

The useful reference text benefits any existing businesses that want to introduce blockchain in their operations.

Readership: Researchers, professionals, academics, and graduate students in digital security and innovation/technology and information management.

350pp	Oct 2024	
978-981-125-638-7(pbk)	US$58	£45
978-981-125-571-7	US$98	£80
978-981-125-572-4(ebook)	US$157	£125

COMPUTER SECURITY
3rd Edition
by **Wenliang Du** (Syracuse University, USA)

This unique compendium is based on the author's teaching and research experiences. It covers the fundamental principles in cybersecurity and helps readers understand how various attacks work, what their fundamental causes are, how to defend against them, and how various defense mechanism's function.

For each security principle, the book uses a series of hands-on activities to help explain the principle. Readers can "touch", play with, and experiment with the principle, instead of just reading about it.

Readership: Researchers, professionals, academics, undergraduate and graduate students in digital security.

543pp	Apr 2024	
978-981-126-329-3	US$138	£110

World Scientific Series in Digital Forensics and Cybersecurity

A PRACTICAL GUIDE ON SECURITY AND PRIVACY IN CYBER-PHYSICAL SYSTEMS
Foundations, Applications and Limitations
edited by **Prinkle Sharma** (University of Albany – The State University of New York, USA) & **Sanjay Goel** (University of Albany – The State University of New York, USA)

A Practical Guide on Security and Privacy in Cyber-Physical System offers an in-depth look at the recent security and privacy challenges of Cyber-Physical Systems (CPS) in multiple application domains. It provides readers with a comprehensive view of system architecture for cybersecurity systems before actual implementation.

The book first presents a systematic overview on several CPS applications covering standard architectures before zooming into each of the layers of the architectureal design to describe the underpinning technological, security, and privacy issues currently facing some CPS research groups. The guiding principles that should be followed while planning future innovations for such mission-critical systems are also covered.

Readership: Computer Scientists and Engineers, Cyber Physical System Experts, Professionals specialising in Digital Forensics.

170pp	Oct 2023	
978-981-127-354-4	US$85	£75
978-981-127-355-1(ebook)	US$136	£120

11

REGULATING CYBER TECHNOLOGIES
Privacy vs Security
edited by **Nathalie Rébé**

This book is a collection of works by experts on cyber matters and legal considerations that need addressing in a timely manner. It comprises cross-disciplinary knowledge that is pooled to this end. Risk mitigation tools, including cyber risk management, data protection regulations, as well as ethical practice guidelines are reviewed in detail.

The regulatory issues associated with new technologies along with emergent challenges in the field of cybersecurity that require improved regulatory frameworks are considered. We probe ethical, material, and enforcement threats, thus revealing the inadequacy of current legal practices. To address these shortcomings, we propose new regulatory privacy and security guidelines that can be implemented to deal with the new technologies and cyber matters.

Readership: Intended for postgraduate students in IT and Law. Also useful for academics, researchers and policymakers.

376pp	Feb 2023	
978-1-80061-285-3	US$138	£120
978-1-80061-286-0(ebook)	US$221	£195

Global Fintech Institute - World Scientific Series on Fintech - Vol 4
APPLICATIONS AND TRENDS IN FINTECH I
Governance, AI, and Blockchain Design Thinking
edited by **David Kuo Chuen Lee** *(Global Fintech Institute, Singapore & Singapore University of Social Sciences, Singapore)*, **Joseph Lim** *(Singapore University of Social Sciences, Singapore)*, **Kok Fai Phoon** *(Singapore University of Social Sciences, Singapore)* & **Yu Wang** *(Singapore University of Social Sciences, Singapore)*

This book is the first part of Applications and Trends in Fintech, which serves as a comprehensive guide to the advanced topics in fintech, including the deep learning and natural language processing algorithms, blockchain design thinking, token economics, cybersecurity, cloud computing and quantum computing, compliance and risk management, and global fintech trends. Readers will gain knowledge about the applications of fintech in finance and its latest developments as well as trends.

Readership: Professionals, researchers, and advanced undergraduate and graduate students in the field of financial technology, data science, finance, financial innovation, statistics, and technology.

288pp	Jun 2022	
978-981-124-929-7(pbk)	US$48	£40
978-981-124-796-5	US$98	£85
978-981-124-797-2(ebook)	US$157	£125

CYBER LAUNDERING
International Policies and Practices
edited by **Nathalie Rébé**

This book illustrates current cyber laundering practices and the underlying risks associated with them, such as cross-border crimes and terrorism financing. Despite the existence of international regulations and strong worldwide cooperation, countermeasures and international response efforts are often hindered by enforcement and jurisdictional issues, as well as online asset recovery complexity.

Readership: Intended for Finance, IT and Law postgraduate students. Also useful for researchers, lawyers and policymakers.

372pp	Jan 2023	
978-1-80061-282-2	US$138	£120
978-1-80061-283-9(ebook)	US$221	£195

Global Fintech Institute - World Scientific Series on Fintech - Vol 5
APPLICATIONS AND TRENDS IN FINTECH II
Cloud Computing, Compliance, and Global Fintech Trends
edited by **David Kuo Chuen Lee** *(Global Fintech Institute, Singapore & Singapore University of Social Sciences, Singapore)*, **Joseph Lim** *(Singapore University of Social Sciences, Singapore)*, **Kok Fai Phoon** *(Singapore University of Social Sciences, Singapore)* & **Yu Wang** *(Singapore University of Social Sciences, Singapore)*

This fifth volume covers global fintech trends and emerging technologies such as cloud computing and quantum computing, as well as the compliance and risk management frameworks for fintech companies. Together with the first part in applications and trends (fourth volume), these two books will deepen readers' understanding of the fintech fundamentals covered in previous volumes through various applications and analysis of impacts and trends.

Readership: Professionals, researchers, and advanced undergraduate and graduate students.

272pp	Jul 2022	
978-981-124-930-3(pbk)	US$48	£40
978-981-124-799-6	US$98	£85
978-981-124-800-9(ebook)	US$157	£125

Global Fintech Institute - World Scientific Series on Fintech
GLOBAL FINTECH INSTITUTE-CHARTERED FINTECH PROFESSIONAL SET I
edited by **David Kuo Chuen Lee** *(Global Fintech Institute, Singapore & Singapore University of Social Sciences, Singapore)*, **Joseph Lim** *(Singapore University of Social Sciences, Singapore)*, **Kok Fai Phoon** *(Singapore University of Social Sciences, Singapore)* & **Yu Wang** *(Singapore University of Social Sciences, Singapore)*

This set starts with fundamental knowledge in finance, technology, quantitative methods, and financial innovation to lay the foundation for the fundamentals of fintech, and understanding the trending issues related to fintech such as regulation, applications, and global trends. It is a good starting point to the fintech literature and is especially useful for people who aspire to become fintech professionals.

Readership: Professionals, researchers, and advanced undergraduate and graduate students.

2236pp	Jun 2022	
978-981-127-087-1(Set)(pbk)	US$230	£191

THE CONVERGENCE OF ARTIFICIAL INTELLIGENCE AND BLOCKCHAIN TECHNOLOGIES
Challenges and Opportunities
edited by **Sam Goundar** *(RMIT University, Hanoi, Vietnam)*, **G Suseendran** *(Vels Institute of Science, Technology & Advanced Studies, India)* & **R Anandan** *(Vels Institute of Science, Technology & Advanced Studies, India)*

This book covers the growing convergence between Blockchain and Artificial Intelligence for Big Data, Multi-Agent systems, the Internet of Things and 5G technologies. Using real case studies and project outcomes, it illustrates the intricate details of blockchain in these real-life scenarios. The contributions from this volume bring a state-of-the-art assessment of these rapidly evolving trends in a creative way and provide a key resource for all those involved in the study and practice of AI and Blockchain.

Readership: Academics, researchers, students and practitioners.

464pp	Jun 2022	
978-981-122-506-2	US$148	£120
978-981-122-507-9(ebook)	US$237	£190

THE FUTURE AND FINTECH
ABCDI and Beyond
edited by **Jun Xu**

"This is an excellent book, covering the most important technology areas of Fintech: AI, Blockchain, Cloud, IoT, etc. The authors have succeeded in producing self-contained chapters with rich contents, which are accessible to anyone with a good background in engineering."
Yong Xia
Managing Director, Global Head of HSBC Lab

Readership: Bankers, technical managers and developers, innovation practitioners in financial industry, Entrepreneurs, senior executives, technical managers, product owners in FinTech firms, and professors and students specialising in financial innovation and FinTech.

552pp	Jun 2022	
978-981-125-089-7	US$68	£55
978-981-125-090-3(ebook)	US$109	£85

Global Fintech Institute - World Scientific Series on Fintech - Vol 2
FINANCE FOR FINTECH PROFESSIONALS
edited by **David Kuo Chuen Lee** (*Global Fintech Institute, Singapore & Singapore University of Social Sciences, Singapore*), **Joseph Lim** (*Singapore University of Social Sciences, Singapore*), **Kok Fai Phoon** (*Singapore University of Social Sciences, Singapore*) & **Yu Wang** (*Singapore University of Social Sciences, Singapore*)

This book covers the main concepts and theories in finance which include economics, financial statement analysis, financial management, and investment management. *Finance for Fintech Professionals* is a companion volume to the book on technology that covers fundamental concepts on data, artificial intelligence, and network. Together, these two books form the foundation for a good understanding of finance and fintech applications which will be covered in subsequent volumes.

Readership: Professionals, researchers, and advanced undergraduate and graduate students in the field of financial technology, finance, financial innovation, economics, portfolio management, financial management, investment management, and financial planning.

964pp	Mar 2022	
978-981-124-185-7(pbk)	US$88	£70
978-981-124-104-8	US$198	£160
978-981-124-105-5(ebook)	US$317	£255

Data Analytics / Big Data

CLOUD TO EDGEWARE
Wireless Grid Applications, Architecture and Security for the "Internet of Things"
by **Lee W McKnight** (*Syracuse University, USA*) & **Tyson T Brooks** (*Syracuse University, USA & US Department of Defense, USA*)

This comprehensive book presents a new approach to dynamic distributed virtual systems. Wireless grids edgeware promises new cloud to edge secure architectures with mobile security for the 'Internet of Things'(IoT). The scope covers framworks and models for wireless grids edgeware, as well as open specifications and new applications called gridlets and wiglets.

Readership: Researchers, academics, professionals and graduate students in information science, digital security, parallel computing, networking and knowledge information management.

350pp	Oct 2024	
978-981-4630-80-1	US$150	£125
978-981-4630-81-8(ebook)	US$240	£190

World Scientific Series on Future Computing Paradigms and Applications
BIG DATA MANAGEMENT AND ANALYTICS
by **Brij B Gupta** (*Asia University, Taiwan*) & **Mamta** (*Thapar Institute of Engineering and Technology, India*)

Readers will gain insights into choice of data models, data extraction, data integration to solve large data problems, data modelling using machine learning techniques, Spark's scalable machine learning techniques, modeling a big data problem into a graph database and performing scalable analytical operations over the graph and different tools and techniques for processing big data and its applications including in healthcare and finance.

Readership: Graduate and postgraduate students in Innovation/ Technology/Knowledge/ Information Management. For researchers, this book provides fundamental and needful insights into the domain that can assist them in exploring this area from the elementary level. Industry CIOs will also find the book useful for conceptual clarity.

250pp	Feb 2024	
978-981-125-711-7	US$88	£70
978-981-125-712-4(ebook)	US$141	£115

Advances and Opportunities with Big Data and Analytics
APPLIED HEALTH CARE ANALYTICS
Enabling Transformative Health Care through Data Science, Machine Learning, and Cognitive Computing
by **Mark Albert** (*Loyola University, USA*), **Plamen Petrov** (*Deloitte Consulting, USA*) & **Rajeev Ronanki** (*Deloitte Consulting, USA*)

Medical technology breakthroughs, economic pressures and demographic trends are driving that transformation, but key enablers and catalysts for those changes are advancements in Analytics, Data Science, Cognitive Computing, and Machine Learning. Massive volumes of data are created during regular healthcare administration, delivery, and research operations; additionally, outside the medical community people produce data as part of their daily activities and social interactions that can be mined for medical use. How can this data be put to use in an ethical way respecting privacy and security to achieve the goal of high quality, accessible and affordable Healthcare? Advanced analytics and cognitive computing are a big part of the answer. In *Applied Heath Care Analytics*, the authors provide a concise yet comprehensive review of the key enabling tech and explain how those technologies are becoming the backbone of the Healthcare of tomorrow.

Readership: Supplementary textbook for postgraduate students in advance analytics and cognitive computing courses in Computer Science or Artificial Intelligence/Machine Learning degrees.

| 300pp	Jul 2024	
978-981-3142-54-1	US$115	£95
978-981-3142-55-8(ebook)	US$185	£150

LINEAR ALGEBRA TOOLS FOR DATA MINING
2nd Edition
by **Dan A Simovici** (*University of Massachusetts Boston, USA & Dana-Farber Cancer Institute, USA*)

This updated compendium provides the linear algebra background necessary to understand and develop linear algebra applications in data mining and machine learning. The useful reference text includes more than 600 exercises and supplements, many with completed solutions and MATLAB applications.

Readership: Researchers, professionals, academics and graduate students in pattern recognition/image analysis, AI, machine learning and databases.

870pp	Jul 2023	
978-981-127-033-8	US$198	£175
978-981-127-034-5(ebook)	US$317	£280
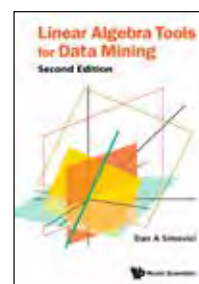
Problem Solving in Mathematics and Beyond

INTRODUCTION TO CHAOS, FRACTALS AND DYNAMICAL SYSTEMS

by **Phil Laplante** *(Penn State University, USA)* & **Chris Laplante** *(Agilent Technologies, USA)*

Introduction to Chaos, Fractals and Dynamical Systems contains ample mathematical definitions, representations, discussions and exercises, so that this book can be used as primary or secondary source in home schooling environments.
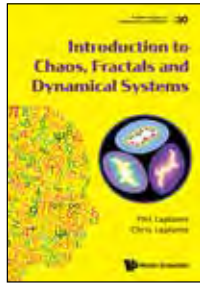
Readership: The market consists of mathematically inclined and/or homeschooled students from grades 6 or 7 through 12, and even early undergraduate, as well as computer science students the same grade levels as above. Hobbyists of all ages. Rust community — while this is not a book that intends to teach the Rust language, it is an impactful showcase of the language. We think we could generate some buzz for it on social media, for example by posting links to the program source code and full-color images (which are freely available online).

200pp	Aug 2023	
978-981-127-390-2(pbk)	US$38	£35
978-981-127-324-7	US$68	£60
978-981-127-325-4(ebook)	US$109	£95

THE WAY OF DATA

From Technology to Applications
by **Hequan Wu** *(China Information and Communication Technology Group, China)* & **Weimin Zheng** *(Tsinghua University, China)*

Everyone is already in the era of big data. It is gradually changing people's lifestyles. Therefore, it is necessary to explore the development path of big data, balance the relationship between technology, policy, and the market, so that it can better serve human society.
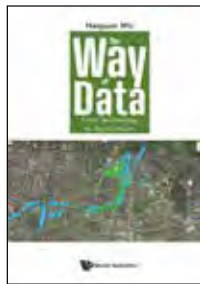
This comprehensive book introduces what big data is, big data processing systems, big data management technologies, and big data analysis methods in an easy-to-understand language. It explains the specific applications of big data in smart government affairs, economic development, and the improvement of people's livelihood and welfare.

Readership: Researchers, professionals, academics, and graduate students in Databases/Info Sciences, Digital Security and AI.

280pp	Jun 2023	
978-981-125-007-1	US$88	£75
978-981-125-008-8(ebook)	US$141	£115

DYNAMIC DATA-DRIVEN SIMULATION

Real-Time Data for Dynamic System Analysis and Prediction
by **Xiaolin Hu** *(Georgia State University, USA)*

This comprehensive book systematically introduces Dynamic Data Driven Simulation (DDDS) as a new simulation paradigm that makes real-time data and simulation model work together to enable simulation-based prediction/analysis.
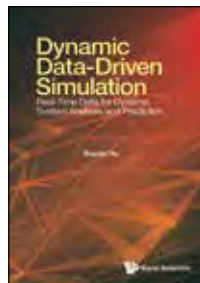
The text is significantly dedicated to introducing data assimilation as an enabling technique for DDDS. While data assimilation has been studied in other science fields (e.g., meteorology, oceanography), it is a new topic for the modeling and simulation community. This unique reference text bridges the two study areas of data assimilation and modelling and simulation, which have been developed largely independently from each other.

Readership: Researchers, professionals, academics and graduate students in AI, mathematical modeling and industrial engineering.

328pp	Apr 2023	
978-981-126-717-8	US$108	£95
978-981-126-718-5(ebook)	US$173	£150

EXPLORING BIG HISTORICAL DATA

The Historian's Macroscope (2nd Edition)
by **Shawn Graham** *(Carleton University, Canada)*, **Ian Milligan** *(University of Waterloo, Canada)*, **Scott B Weingart** *(University of Notre Dame, USA)* & **Kim Martin** *(University of Guelph, Canada)*
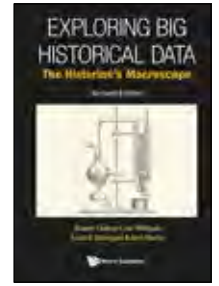
Reviews of First Edition:
"Without a question, I would use this book in a digital history class, especially one in which I wanted to introduce network visualizations. It does an excellent job of defining and illustrating the insiders' language of digital humanities, making the volume accessible to students and to historians. The presentation of the basics of network analysis is among the clearest that I've seen in a digital humanities text."
Professor Janice L Reiff
Core Faculty in Digital Humanities, UCLA

Readership: Researchers, graduate and undergraduate students in the field of Digital Humanities, and people looking to digitize historical archives.

304pp	Mar 2022	
978-981-124-398-1(pbk)	US$48	£40
978-981-124-303-5	US$98	£85
978-981-124-304-2(ebook)	US$157	£135

Innovation

THE FINTECH NATION

Excellence Unlocked in Singapore
by **Varun Mittal** *(Ernst & Young, Singapore)* & **Lillian Koh** *(FinTech Academy, Singapore)*

Based on 65 interviews with FinTech founders, movers and shakers, bringing together their stories and journeys in the FinTech ecosystem including access to capital, customers, talent, and policy initiatives which have made them and Singapore successful

Readership: Professionals and undergraduate students.

280pp	Dec 2023	
978-981-125-028-6(pbk)	US$48	£40
978-981-124-915-0	US$98	£85
978-981-124-916-7(ebook)	US$157	£125

World Scientific Series in Digital Forensics and Cybersecurity - Vol 2

INNOVATIONS IN DIGITAL FORENSICS

edited by **Suryadipta Majumdar** *(Concordia University, Canada)*, **Paria Shirani** *(University of Ottawa, Canada)* & **Lingyu Wang** *(Concordia University, Canada)*

This book presents state-of-the-art techniques to address imminent challenges in digital forensics. In particular, it focuses on cloud forensics, Internet-of-Things (IoT) forensics, and network forensics, elaborating on innovative techniques, including algorithms, implementation details and performance analysis, to demonstrate their practicality and efficacy. The innovations presented in this volume are designed to help various stakeholders with the state-of-the-art digital forensics techniques to understand the real world problems. Lastly, the book will answer the following questions: How do the innovations in digital forensics evolve with the emerging technologies? What are the newest challenges in the field of digital forensics?

Readership: Law enforcement agencies involved with digital forensics, industry practitioners in digital forensics, academic and industry researchers in cybersecurity and forensics, undergraduate and graduate students majoring in digital forensics and cybersecurity.

350pp	Jul 2023	
978-981-127-319-3	US$138	£120
978-981-127-320-9(ebook)	US$221	£195

Digital Transformation: Accelerating Organizational Intelligence - Vol 4

DIGITAL STRATEGIES AND ORGANIZATIONAL TRANSFORMATION

edited by **G Reza Djavanshir**
(Johns Hopkins University, USA)

This book discusses the integration and implementation of digital technology and the required organizational changes to take advantage of the phenomenon of digitization. In order to create competitive advantage, leadership organizations must address the challenges of formulating and implementing robust digital strategies and simultaneously, start making the required organizational changes, as this book concludes.

Readership: Academics, Technology and Industry leaders. Managers and Professionals in Technology and Management fields, Technology, Engineering, and Management Conferences such as INFORMS, IEEE, Graduate Students, Corporate Managers, Engineering and Business Schools, All Libraries.

250pp	Sep 2023	
978-981-127-197-7	US$88	£75
978-981-127-198-4(ebook)	US$141	£125

Transformations in Banking, Finance and Regulation - Vol 5

FINTECH RESEARCH AND APPLICATIONS

Challenges and Opportunities

edited by **Daisy Chou** *(RMIT University, Australia)*, **Conall O'Sullivan** *(University College Dublin, Ireland)* & **Vassilios G Papavassiliou** *(University College Dublin, Ireland)*

This book aims to provide insights on the latest developments in Financial Technology (FinTech). It is a collection of scientific articles covering the primary areas of finance. The following key themes are covered in the book: Machine Learning and Artificial Intelligence, FinTech Regulation and Smart Contracts, Cryptocurrencies, and FinTech in Financial Services. FinTech is a rapidly developing industry that uses technological innovations to improve financial activities and make financial services more accessible and affordable to businesses and individuals.

Readership: The readership of this book spans both academic audiences and industry professionals working in the financial services sector who use (or intend to use) FinTech applications to improve their business processes. Policy makers, regulators, and investors will also benefit from new results and future perspectives on the impact of FinTech on financial markets, firm behaviours, and investment strategies.

504pp	Mar 2023	
978-1-80061-271-6	US$158	£140
978-1-80061-272-3(ebook)	US$253	£220

GLOBAL SUPPLY CHAINS IN A GLOCAL WORLD

The Impact of Covid-19 and Digitalisation

edited by **Puay Guan Goh** & **Mabel C Chou**
(National University of Singapore, Singapore)
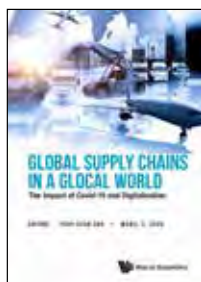
Global Supply Chains in a Glocal World aims to answer these mission-critical questions via a series of articles contributed by academics and senior management covering different industry sectors such as healthcare, food, e-commerce, textiles, mobility, and FMCG, as well as geographical, risk management, and technological perspectives.

Readership: Business School / MBA students. Entrepreneurs and senior management of MNCs, SMEs and startups across all industries. Might also be of interest to the general reader keen to understand how Covid-19 has changed industries and their global supply chains.

376pp	Sep 2022	
978-981-123-752-2	US$118	£95
978-981-123-753-9(ebook)	US$189	£150

HANDBOOK ON SMART BATTERY CELL MANUFACTURING

The Power of Digitalization

edited by **Kai Peter Birke** *(University of Stuttgart, Germany & Fraunhofer Institute for Manufacturing Engineering and Automation (IPA), Germany)*, **Max Weeber** *(Fraunhofer Institute for Manufacturing Engineering and Automation (IPA), Germany)* & **Michael Oberle** *(Fraunhofer Institute for Manufacturing Engineering and Automation (IPA), Germany)*
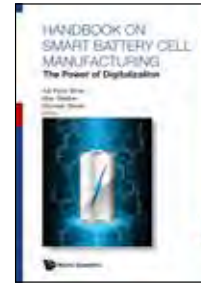
To run lithium-ion battery gigafactories successfully and sustainably, high-quality battery cell production processes and systems are required. The *Handbook on Smart Battery Cell Manufacturing* provides a comprehensive and well-structured analysis of every aspect of the manufacturing process of smart battery cell, including upscaling battery cell production, accompanied by many instructive practical examples of the digitalization of battery products and manufacturing systems using an integrated life cycle perspective.

Readership: Industry Practitioners and Researchers specialising in Battery Cell Manufacturing; Advanced Undergraduate and Postgraduate Students in Electrical, Chemical and Mechanical Engineering and Research pertaining to Batteries.

488pp	Jul 2022	
978-981-124-561-9	US$158	£125
978-981-124-562-6(ebook)	US$253	£200

A PRACTICAL GUIDE TO SCIENTIFIC AND TECHNICAL TRANSLATION

Publishing, Style and Terminology

by **James Brian Alexander Mitchell** & **Anca Irina Florescu-Mitchell**
(MERL-Consulting SAS, France)

"In this entertaining book, authors provide valuable insights and friendly advice on scientific writing and technical translation. Although the book is intended for non-English professionals, some sections may be useful for amateurish native speakers as well."

Theyencheri Narayanan
Senior Scientist, European Synchrotron Radiation Facility, France

Readership: The book will be highly useful to scientists who are non-native speakers of English and who need to publish in English journals and apply for patents. Topics covered will appeal mostly to engineers, industrial scientists and researchers in the pure sciences. The book would also interest independent technical translators and students of translation.

188pp	Feb 2022	
978-981-124-314-1(pbk)	US$28	£25
978-981-124-155-0	US$58	£50
978-981-124-156-7(ebook)	US$98	£80

Neural Networks

QUANTUM FIELD THEORY, QUANTUM PHYSICS AND MICRO-MACRO DUALITY

by **Izumi Ojima** *(Research Origin for Dressed Photon, Japan)*, **Kazuya Okamura** *(Nagoya University, Japan)* & **Hayato Saigo** *(Nagahama Institute of Bio-Science and Technology, Japan)*

According to the fundamental concept "adjunctions" in category theory, the Micro and Macro in nature can be connected in a coherent way, which constitutes quite an effective theoretical and mathematical machinery that has not been commonly recognized. On the basis of this concept, many important problems in physics and mathematics can be viewed from quite different and fresh angles, which facilitate deep understanding and the satisfactory solution of those problems.
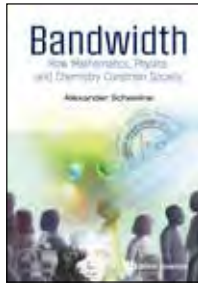
Readership: Graduate students and researchers in quantum theory, mathematical physics, neural networks, pattern recognition.

300pp	Feb 2025	
978-981-3238-36-7	US$98	£86

BANDWIDTH
How Mathematics, Physics, and Chemistry Constrain Society
by **Alexander Scheeline** *(University of Illinois at Urbana-Champaign, USA)*

"Following Alex Scheeline's exciting cruise among the wonders of modern science that starts with measurements and ends with politics, business, research, and freedom will surprise an open mind not only by consequences of the logical constructions, but also by the miracles of self-consistent scientific journeys and beauty of amazing discoveries. I absolutely recommend this book for amateur science enthusiasts with a keen interest in metrology."

Peter Strizhak
Professor of Chemistry
National Academy of Sciences, Ukraine

Readership: This book is aimed at general readers and scientists with an interest in how limitations of the physical sciences affect society and human behavior. It could be used for undergraduate courses in analytical chemistry, communications engineering, statistical mechanics and nonlinear physics, and is also appropriate for seminars in sociology, theology, politics, economics and law.

500pp	Jun 2023	
978-981-123-854-3(pbk)	US$38	£35
978-981-123-787-4	US$98	£85
978-981-123-788-1(ebook)	US$157	£125

QUANTUM-LIKE NETWORKS
An Approach to Neural Behavior through their Mathematics and Logic
by **Stephen A Selesnick** *(University of Missouri-St Louis, USA)*

"In this book, Stephen Selesnick extends his groundbreaking quantum-like model of neural dynamics, built from logical and physical first principles, to provide a novel, rigorous, and systematic treatment of neural computation. Then he derives many fundamental properties of neural systems, such as Hebbian learning and Tsien's Power-of-Two Law of neural connectivity, shedding new light on them. A brilliant achievement."

Gualtiero Piccinini
Curators' Distinguished Professor of Philosophy
University of Missouri-St. Louis, USA

Readership: Researchers and graduate students in Neuroscience, Biomathematics, Biophysics, Mathematics, Computer Science, and related fields356pp Sep 2022

365pp	Sep 2022	
978-981-126-069-8	US$118	£95
978-981-126-070-4(ebook)	US$189	£150

FUTURE NETWORK ARCHITECTURES AND CORE TECHNOLOGIES
by **Ju-long Lan** *(National Digital Switching System Engineering & Technological R&D Center of China (NDSC), China)* & **Yu-xiang Hu** *(National Digital Switching System Engineering & Technological R&D Center of China (NDSC), China)*, **Zhen Zhang** *(National Digital Switching System Engineering & Technological R&D Center of China (NDSC), China)*, **Yi-ming Jiang** *(National Digital Switching System Engineering & Technological R&D Center of China (NDSC), China)*, **Peng Wang** *(Zhongyuan University of Technology of China, China)* & **Jiang-xing Wu** *(National Digital Switching System Engineering & Technological R&D Center of China (NDSC), China)*

This book introduces the background, basic concepts and evolution of computer network development; by comparing and contrasting with the typical network architectures in the market. The book focuses on the architecture and underpinning technologies towards the future in network designs. It also provides a reconfigurable evolutionary network function innovation platform for researches to run experiments on the networks they designed.

Readership: Engineers and researchers specialising in communications or computer networks; Graduate students majoring in communications, computing, computer network related disciplines, and related other specialties in colleges/universities and training courses.

476pp	May 2022	
978-981-123-755-3	US$148	£120
978-981-123-756-0(ebook)	US$237	£190

Pattern Recognition / Image Analysis / Computer Vision

HANDS-ON COMPUTER VISION
by **Marc Pomplun** *(University of Massachusetts Boston, USA)*

This book provides its readers the fundamental concepts in computer vision and how to design and implement vision algorithms for given problems. No prior knowledge of computer vision is required, but readers are expected to have experience in computer programming. Commented sample code in the C language and a variety of programming exercises in this book will assist the readers in developing an in-depth understanding of computer vision algorithms and their implementations.

Readership: Undergraduates, graduates, and professionals studying/dealing with machine perception/computer vision, pattern recognition/image analysis, software engineering/programming, neural networks, robotics & automated systems.

650pp	Aug 2024	
978-981-4571-97-5(pbk)	US$78	£65
978-981-4571-96-8	US$129	£107

Series in Mathematical Biology and Medicine - Vol 10
OPTIMAL TRANSPORT NETWORKS IN NATURE
by **Natalya Kizilova** *(Kharkov National University, Ukraine)*

This unique book presents a broad range of data on geometry and topology of long-distance liquid transport networks in nature including circulatory and respiratory systems of mammals, trophic fluid transport systems of animals, and conducting systems of higher plants. It is the very first book where evidence of the common design principles and optimal properties of the transportation networks of vascular plants and animals is provided.

Readership: Academics, researchers, and graduate students in mathematical biology, mathematical modeling, fluid mechanics, biomedical engineering, pattern recognition/image analysis.

200pp	Jun 2024	
978-981-283-873-5	US$106	£88
978-981-283-874-2(ebook)	US$170	£135

SPARSE REPEAT CT SCANNING IN RADON SPACE
by **L Joskowicz** *(The Hebrew University of Jerusalem, Israel)*, **N Shamul** *(The Hebrew University of Jerusalem, Israel)*, **Z Adelman** *(The Hebrew University of Jerusalem, Israel)* & **G Medan** *(The Hebrew University of Jerusalem, Israel)*

This comprehensive compendium introduces a unique and novel approach to X-ray dose reduction by sparse repeat scanning. Based on sparse sampling in Radon space, the methods obviate the need for image reconstruction and reduce X-ray dose by up to 10 times of the normal dose without compromising the robustness and accuracy of the measurements.

Readership: Researchers, professionals, academics and graduate students in biomedical engineering and machine perception.

180pp	Jun 2024	
978-981-127-023-9	US$78	£70
978-981-127-024-6(ebook)	US$125	£110

World Scientific Series on Future Computing Paradigms and Applications

VISUAL QUALITY ASSESSMENT AND ENHANCEMENT FOR NATURAL IMAGES

by **Surya Prakash** (Indian Institute of Technology Indore, India) & **Piyush Joshi** (Indian Institute of Information Technology, India)
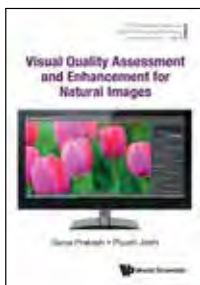
This book covers different quality assessment techniques for natural images. It further discusses image enhancement techniques that are based on estimated quality. This book presents image quality assessment techniques for different distortions, such as poor contrast, poor illumination, noise and artifacts in deblocked images. Also presented are quality-aware techniques for image enhancement for different distortions. Review and objective questions (with answers) for each chapter will be available online as part of the supplementary material.

Readership: Advanced undergraduate and graduate students, and researchers specialising in Artificial Intelligence, Computer Vision, Pattern Recognition and Image Analysis; practitioners in the fields of Image processing, Computer vision and Image quality assessment; technologists in the digital media industry.

300pp	Apr 2024	
978-981-125-728-5	US$78	£60
978-981-125-729-2(ebook)	US$125	£100

Series in Computer Vision - Vol 7

HANDBOOK OF RANDOM FORESTS

Theory and Applications for Remote Sensing

by **Ronny Hänsch** (German Aerospace Center (DLR), Germany)

This compendium provides a hands-on description of Random Forests. It starts with a consistent introduction of general methods to create, train, and fuse ensembles of decision trees. Instead of limiting the discussion to the general-purpose layout of traditional Random Forests, this book outlines specifications during tree creation and training that are especially well suited to analyze structured data such as images.

Readership: Researchers, professionals, academics and graduate students in pattern recognition/image analysis, machine perception/ computer vision, and artificial intelligence.

300pp	May 2024	
978-981-3224-05-6	US$128	£113
978-981-3224-06-3(ebook)	US$205	£165

Series on Language Processing, Pattern Recognition, and Intelligent Systems - Vol 7

IMAGE ANALYSIS AND PATTERN RECOGNITION

State of the Art in the Russian Federation

edited by **Igor Gurevich** & **Vera Yashina** (Federal Research Centre "Computer Science and Control" of the Russian Academy of Sciences, Moscow, Russian Federation)
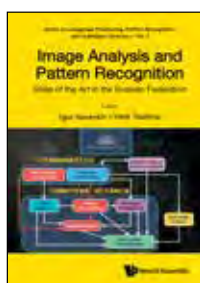
This collective compendium highlights the achievements of Soviet and Russian mathematical and computer science scientific schools in the area of image analysis and understanding, pattern recognition, artificial intelligence and adjacent fields of computer sciences and applied mathematics.

Readership: Researchers, professionals, academics, and graduate students in pattern recognition/image analysis, theoretical computer science and AI.

950pp	Apr 2024	
978-981-126-720-8	US$248	£220
978-981-126-721-5(ebook)	US$397	£350

QUANTUM MECHANICS AND BAYESIAN MACHINES

by **George Chapline** (Lawrence Livermore National Laboratory, USA)
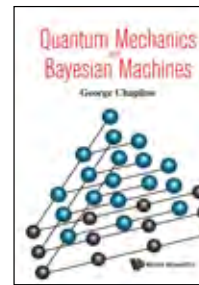
This compendium brings together the fields of Quantum Computing, Machine Learning, and Neuromorphic Computing. It provides an elementary introduction for students and researchers interested in quantum or neuromorphic computing to the basics of machine learning and the possibilities for using quantum devices for pattern recognition and Bayesian decision tree problems. The volume also highlights some possibly new insights into the meaning of quantum mechanics, for example, why a description of Nature requires probabilistic rather than deterministic methods.

Readership: Researchers, academics, professionals and graduate students in pattern recognition/image analysis, machine learning, quantum mechanics and general applied maths.

100pp	Jun 2023	
978-981-3232-46-4	US$68	£60
978-981-3232-47-1(ebook)	US$109	£85

CONJURING WITH COMPUTATION

A Manual of Magic and Computing for Beginners

by **Paul Curzon** (Queen Mary University, UK) & **Peter W McOwan** (Queen Mary University, UK)

Both authors are eminent researchers and award winning for their public engagement work. Their cs4fn and Teaching London Computing Projects that the book draws from have a huge global following including of teachers. This book is an extended version of one of the most popular aspects of their projects: using magic tricks to introduce computer science ideas. This is a much more comprehensive version of that idea

Readership: General public: Those interested in learning how to do magic tricks and lay computing/mathematics/science including those visiting science and technology/computing museums. Those learning computer science subjects (at school or university) with an interest in magic.

420pp	Jun 2023	
978-981-126-433-7	US$88	£75
978-981-126-434-4(ebook)	US$141	£125

Series on Technology Management - Vol 38

ARTIFICIAL INTELLIGENCE AND INNOVATION MANAGEMENT

edited by **Stoyan Tanev** (Carleton University, Canada) & **Helena Blackbright** (Mälardalen University, Sweden)
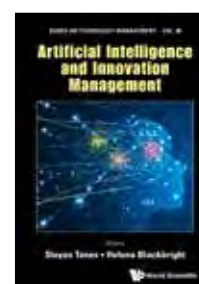
Artificial Intelligence and Innovation Management contributes to the ongoing debate among innovation scholars and practitioners focusing on the potential impact of Artificial Intelligence (AI) on the ways companies and organizations do business, operate and innovate. It considers AI as a source of innovation both in terms of innovation within the field of AI itself (AI innovation) and in terms of how it enables or disrupts innovation in other fields (AI-*driven* innovation).

Readership: Innovation management researchers, innovation managers, and technology entrepreneurs. Of use to graduate students studying courses on technology innovation management, emerging technologies, innovation management research methods, and responsible artificial intelligence and ethics.

328pp	Apr 2022	
978-1-80061-132-0	US$98	£85
978-1-80061-133-7(ebook)	US$157	£135

INTRODUCTION TO COMPUTATIONAL METAGENOMICS
by **Zhong Wang** *(DOE Joint Genome Institute, USA & Lawrence Berkeley National Lab, USA)*

"This book combines the fundamental knowledge of data science and microbiology. It clearly shows the research goals and obstacles of microbiomics, and accurately introduces the practical knowledge and tools of computational science. This book is the perfect "primer" for beginners in metagenomics. It is friendly for computer science background readers. You can understand and gain a lot from it even with minimal prior biologic knowledge."

Li Deng
Associate Professor
Shanghai University

Readership: Graduate students and advanced undergraduates from genomics science or computer science fields, beginner researchers from similar disciplines.

212pp	May 2022	
978-981-124-246-5	US$88	£70
978-981-124-247-2(ebook)	US$141	£115

2D COMPUTER VISION
Principles, Algorithms and Applications
by **Yu-Jin Zhang** *(Tsinghua University, China)*

This special compendium introduces the basic principles, typical methods and practical techniques of 2D computer vision. The volume comprehensively covers the introductory content of computer vision and the materials are selected based on courses conducted in the past 20 years.

Readership: Researchers, professionals, academics, undergraduate and graduate students in pattern recognition, machine perception and electrical & electronic engineering.

556pp	Mar 2022	
978-981-124-508-4	US$138	£110
978-981-124-509-1(ebook)	US$221	£175

Quantum Computing

World Scientific Lectures in Emerging Technologies - Vol 1

FIRST STEP TO QUANTUM COMPUTING
A Practical Guide for Beginners
by **Javad Shabani** *(New York University, USA)* & **Eva Gurra** *(New York University, USA)*

Quantum information is a young and evolving field. This compendium introduces quantum information in a comprehensive self-contained guide without assuming a wealth of knowledge prior to reading.

The volume highlights intuition on counterintuitive topics such as quantum mechanics, basic mathematical tools and calculations involving linear algebra, and applies these concepts to quantum information with guided problems and coding exercises.

This applied guide largely benefits mid-level undergraduates and perhaps motivated high schoolers.

Readership: Researchers, professionals, academics, undergraduate and graduate students in supercomputing.

150pp	Apr 2024	
978-981-125-412-3(pbk)	US$38	£30
978-981-125-319-5	US$78	£60
978-981-125-320-1(ebook)	US$125	£100

Robotics

World Scientific Series on Future Computing Paradigms and Applications

SDN AND NFV
A New Dimension to Virtualization
by **Brij B Gupta** *(Asia University, Taiwan)*, **Amrita Dahiya** *(Punjab Engineering College, India)* & **Elhadj Benkhelifa** *(Staffordshire University, UK)*
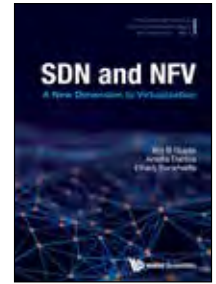
This book illustrates the fundamentals and evolution of SDN and NFV and highlights how these two technologies can be integrated to solve traditional networking problems. In addition, it will focus on the utilization of SDN and NFV to enhance network security, which will open ways to integrate them with current technologies such as IoT, edge computing and blockchain, SDN-based network programmability, and current network orchestration technologies.

Readership: Graduate- and postgraduate-level students in Robotics and Automated Systems, Networking, Software Engineering and Digital Security, Innovation, Technology, Knowledge and Information Management.

230pp	Feb 2024	
978-981-125-487-1	US$88	£70
978-981-125-598-4(ebook)	US$141	£115

UNMANNED SYSTEMS
Best of 10 Years
edited by **Jie Chen** *(Tongji University, China)*, **Ben M Chen** *(Chinese University of Hong Kong, China)* & **Lihua Xie** *(Nanyang Technological University, Singapore)*

The articles selected in this celebratory volume cover all subjects related to the development of automatic machine systems in unmanned hardware platforms (aerial, ground, underwater and unconventional platforms), unmanned software systems, energy systems, modelling and control, communications systems, computer vision systems, sensing and information processing, navigation and path planning, computing, information fusion, multi-agent systems, mission management, machine intelligence, artificial intelligence, and innovative application case studies.

Readership: Researchers and professionals specialising in autonomous and unmanned systems and vehicles, and related fields in engineering and artificial intelligence.

300pp	Aug 2023	
978-981-127-331-5	US$138	£120
978-981-127-444-2(ebook)	US$221	£195
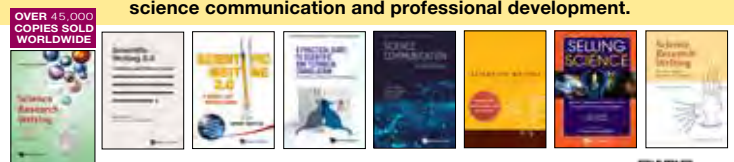
ELEGANT AUTOMATION
Robotic Analysis of Chaotic Systems
by **Julien Clinton Sprott** *(University of Wisconsin-Madison, USA)*

This book was mostly written by a machine that was programmed to search a system of equations for chaotic solutions, simplify the equations to the extent possible, analyze the behavior, produce figures, and write the accompanying text. The equations are coupled autonomous ordinary differential equations with three variables and at least one nonlinearity.
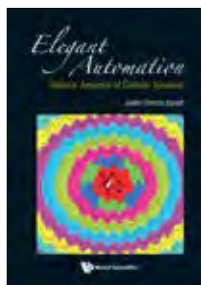
Readership: Advanced undergraduates, graduate students and researchers studying chaotic systems, as well as educators.

348pp	May 2023	
978-981-127-751-1	US$118	£105
978-981-127-752-8(ebook)	US$189	£165

ROBOTICS
From Manipulator to Mobilebot
by **Zixing Cai** *(Central South University, China & ZIXING Academy of AI, China)*

This book is a comprehensive collection and practical guide on robotics derived from the author's research in robotics since 1988. The Chinese edition of this book has sold over 300,000 copies, and is one of the best-selling books on robotics in China.

The book covers the core technology of robotics, including the basic theories and techniques of robot manipulator, mobile robots to focus on location navigation, and intelligent control underpinned by artificial intelligence and deep learning.

Readership: Advanced undergraduate, graduate and post-grad researcher in the discipline/profession of robotics, automatic control, mechatronic engineering, intelligent S&T, computer science and engineering, electronic engineering, management and decision system engineering, and other related fields.

656pp	Oct 2022	
978-981-125-346-1	US$178	£155
978-981-125-347-8(ebook)	US$285	£250

COMPUTATIONAL GEOMETRY WITH INDEPENDENT AND DEPENDENT UNCERTAINTIES
by **Rivka Gitik** *(The Hebrew University of Jerusalem, Israel)* & **Leo Joskowicz** *(The Hebrew University of Jerusalem, Israel)*

This comprehensive compendium describes a parametric model and algorithmic theory to represent geometric entities with dependent uncertainties between them. The theory, named Linear Parametric Geometric Uncertainty Model (LPGUM), is an expressive and computationally efficient framework that allows to systematically study geometric uncertainty and its related algorithms in computer geometry.
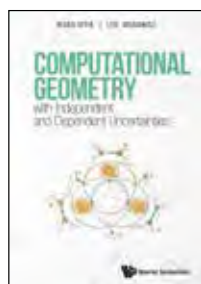
Readership: Researchers, professionals, academics, undergraduate and graduate students in robotics and mechanical engineering.

160pp	Sep 2022	
978-981-125-383-6	US$78	£60
978-981-125-384-3(ebook)	US$125	£100

e-Catalogues
www.worldscientific.com/page/ecatalogues

Software Engineering

IISc Lecture Notes Series - Vol 7
INTRODUCTION TO TIME-DEPENDENT QUANTUM MECHANICS WITH PYTHON
by **Atanu Bhattacharya** *(GITAMUniversity, India)* & **Elliot R Bernstein** *(Colorado State University, USA)*

This book gives an introduction to the Time-Dependent Quantum Chemistry for use with any introductory college/university course in optics, spectroscopy, kinetics, dynamics, or experimental physical chemistry or chemical physics of the kind usually taken by undergraduate and graduate students in physical chemistry.

Readership: Advanced undergraduate and graduate students, researchers and practitioners in the fields of optics, physical chemistry, spectroscopy, molecular dynamics.

300pp	Nov 2023	
978-981-127-716-0	US$98	£85
978-981-127-717-7(ebook)	US$157	£140

MARKETING RESEARCH WITH R AND PYTHON
by **Howard Pong Yuen Lam** *(The Chinese University of Hong Kong, Hong Kong)*

This book is meant for readers with little or no experience in programming in R and Python, who wish to quickly learn what is necessary, and be able to conduct marketing research by running tests easily in R or Python.

Readership: Primary: Marketing Research course for undergraduate and postgraduate students. Secondary: Computer programming introductory course for undergraduate and postgraduate students.

200pp	Nov 2023	
978-981-127-754-2	US$88	£75
978-981-127-869-3(pbk)	US$48	£40
978-981-127-755-9(ebook)	US$141	£125

STUDY OF LINEAR AND NONLINEAR MODELS WITH "MATHEMATICA"
by **Czesław Mączka** *(AGH University of Science and Technology, Poland)*, **Sergii Skurativskyi** *(National Academy of Science of Ukraine, Ukraine)* & **Vsevolod Vladimirov** *(AGH University of Science and Technology, Poland)*

The textbook consists of two parts that can be studied independently of each other. The first part deals with the issues of nonlinear mechanics and the theory of oscillations. The second part covers linear problems of classical mathematical physics and nonlinear evolution models describing, inter alia, transport phenomena and propagation of waves. The book contains the codes of programs written in the "Mathematica" package environment. Supplementary materials of programs illustrating and often complementing the presented material are available on the publisher's website.
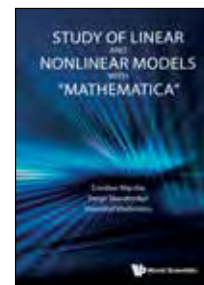
Readership: Graduate students and researchers interested in mathematical modeling of nonlinear systems; advanced undergraduate and graduate students in applied mathematics, physics, engineering and technology; researchers in nonlinear science, engineering and technology; libraries.

336pp	Jan 2023	
978-981-126-622-5	US$108	£95
978-981-126-623-2(ebook)	US$173	£150

Series on Computers and Operations Research - Vol 10

ANALYSIS, CRYPTOGRAPHY AND INFORMATION SCIENCE

edited by **Nicholas J Daras** *(Hellenic Military Academy, Greece)*, **Panos M Pardalos** *(University of Florida, USA)* & **Michael Th Rassias** *(Hellenic Military Academy, Greece)*
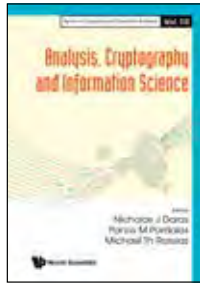
This compendium focuses on self-contained presentations of various developments in mathematical analysis, cryptography and information science.

The volume features both original research and survey papers contributed by experts from the international community. The book has a strong interdisciplinary flavor and features the most recent developments in the topics treated.

Readership: Researchers, professionals, academics, and graduate students in information sciences, digital security, computer maths & science and theoretical computer science.

190pp	Aug 2023	
978-981-127-191-5	US$88	£75
978-981-127-192-2(ebook)	US$141	£125

Domain-Specific Bodies of Knowledge in Project Management - Vol 2

MANAGING INFORMATION TECHNOLOGY PROJECTS

Building a Body of Knowledge in IT Project Management
edited by **Srinath Perera** *(Western Sydney University, Australia)* & **Robert Eadie** *(Ulster University, UK)*

As a milestone publication, this book augments and boosts the specialized body of knowledge in IT project management by capturing and consolidating key elements of this knowledge base.

Readership: Undergraduates, research institutes, IT project management practitioners and professional bodies in project management.

548pp	Apr 2023	
978-981-124-057-7	US$158	£140
978-981-124-058-4(ebook)	US$253	£220

Theoretical Computer Science

Series on Computers and Operations Research - Vol 10

MATHEMATICAL ANALYSIS, DIFFERENTIAL EQUATIONS AND APPLICATIONS

edited by **Panos M Pardalos** *(University of Florida, USA)* & **Themistocles M Rassias** *(National Technical University of Athens, Greece)*

This comprehensive volume presents essential mathematical results devoted to topics of mathematical analysis, differential equations and their various applications. It focuses on differential operators, Wardowski maps, low-oscillation functions, Galois and Pataki connections, Hardy-type inequalities, to name just a few. Effort has been made for this unique title to have an interdisciplinary flavor and features several applications such as in tomography, elastic scattering, fluid mechanics, etc. This work could serve as a useful reference text to benefit professionals, academics and graduate students working in theoretical computer science, computer mathematics, and general applied mathematics.

Readership: Researchers, professionals, academics and graduate students in theoretical computer science, computer maths, and general applied maths.

750pp	Sep 2024	
978-981-126-703-1	US$188	£165
978-981-126-704-8(ebook)	US$301	£265

COMPUTING WITH INCOMPLETE INFORMATION

The Mathematics of Enumeration and Positive Reducibilities
by **S Barry Cooper** *(University of Leeds, UK)*, **Andrea Sorbi** *(University of Siena, Italy)* & **Mariya Soskova** *(Sofia University, Bulgaria)*

This book aims to provide a unique introduction to the mathematics of computing with imperfect information. This rapidly developing field has been represented by a growing number of diverse contributions to academic journals and the proceedings of international conferences. The aim here is to bring a new coherence and clarity to this complex and expanding body of research, and to give a comprehensive overview that will be invaluable to both experts and research students new to the area.

Readership: Research students and experts in the mathematics of computing with incomplete information and computational structure of information.

450pp	May 2024	
978-981-4383-14-1	US$148	£130
978-981-4383-15-8(ebook)	US$237	£190

Series on Knots and Everything

HIGH DIMENSIONAL KNOTTING

An Illustrated Guide
by **Dennis Roseman** *(University of Iowa, USA)*

Focused on concrete examples and constructions and using extensive computer generated three-dimensional graphics, this book serves as a guide to methods and examples of higher dimensional knotting. The book has modest mathematical requirements, has been written with non-specialists in mind and contains considerable background information.

Readership: Graduate students and researchers in geometric topology, manifolds and cellcomplexes, scientists and engineers who want a concrete introduction to high dimensional construction and visualization.

500pp	Aug 2024	
978-981-3237-39-1	US$178	£157
978-981-3237-40-7(ebook)	US$285	£230

FIBONACCI CUBES WITH APPLICATIONS AND VARIATIONS

by **Ömer Eğecioğlu** *(University of California at Santa Barbara, USA)*, **Sandi Klavžar** *(University of Ljubljana, Slovenia)* & **Michel Mollard** *(CNRS Université Grenoble Alpes, France)*
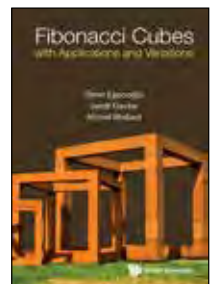
Fibonacci Cubes have been an extremely popular area of research since the 1990s.

This unique compendium features the state of research into Fibonacci Cubes. It expands the knowledge in graph theoretic and combinatorial properties of Fibonacci Cubes and their variants.

Readership: Researchers, professionals, academics and graduate students in theoretical computer science, graph theory and combinatorics.

304pp	Mar 2023	
978-981-126-903-5	US$98	£85
978-981-126-915-8(ebook)	US$157	£140

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AUTOMATA
Theory, Trends, and Applications
by **Alexander Meduna** *(Brno University of Technology, Czech Republic)* & **Tomás Kožár** *(Brno University of Technology, Czech Republic)*
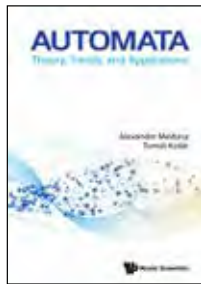
In *Automata: Theories, Trends and Applications* all formalisms concerning automata are rigorously introduced, and every complicated mathematical passage is preceded by its intuitive explanation so that even complex parts of the book are easy to grasp. The book also demonstrates how automata underlie several computer-science engineering techniques.

Readership: Scientists working in the areas of theoretical computer science, computational mathematics, computational linguistics, and compiler writing, and graduate courses dealing with the theory and application of automata, and theory of computation.

360pp	Dec 2023	
978-981-127-812-9	US$138	£120
978-981-127-813-6(ebook)	US$221	£195

QUERY COMPLEXITY
by **Robin Kothari** *(Microsoft Quantum, USA)*, **Troy Lee** *(Nanyang Technological University, Singapore)*, **Ilan Newman** *(University of Haifa, Israel)* & **Mario Szegedy** *(Rutgers University, USA)*

Query complexity addresses issues like the number of calls to a black box routine, the number of queries to a data structure or the number of steps made by a parallel processor. It has immense applications, and not surprisingly a large number of papers have been written on it. Yet, currently there is no book that is entirely devoted to this subject. We fill this gap, and gather not only many valuable articles into a single book, but also organize knowledge, explain some key results, and give presentable outlines.

Readership: Researchers, academics, professionals and graduate students in theoretical computer science.

200pp	May 2024	
978-981-3223-20-2	US$88	£77
978-981-3223-21-9(ebook)	US$141	£115

MATHEMATICS FOR COMPUTATION (M4C)
edited by **Marco Benini** *(Università degli Studi dell'Insubria, Italy)*, **Olaf Beyersdorff** *(Friedrich-Schiller-Universität Jena, Germany)*, **Michael Rathjen** *(University of Leeds, UK)* & **Peter Schuster** *(Università degli Studi di Verona, Italy)*

The overall topic of the volume, Mathematics for Computation (M4C), is mathematics taking crucially into account the aspect of computation, investigating the interaction of mathematics with computation, bridging the gap between mathematics and computation wherever desirable and possible, and otherwise explaining why not.

Recently, abstract mathematics has proved to have more computational content than ever expected. Indeed, the axiomatic method, originally intended to do away with concrete computations, seems to suit surprisingly well the programs-from-proofs paradigm, with abstraction helping not only clarity but also efficiency.

The aim of this volume is to provide a point of reference by presenting up-to-date contributions by some of the most active scholars in each field. A variety of approaches and techniques are represented to give as wide a view as possible and promote cross-fertilization between different styles and traditions.

Readership: Graduate students, researchers, and professors in Mathematics, Computer Science, and Philosophy.

476pp	Apr 2023	
978-981-124-521-3	US$148	£130
978-981-124-522-0(ebook)	US$237	£210

MAKING WISE DECISIONS IN A SMART WORLD
Responsible Leadership in an Era of Artificial Intelligence
(Student Edition)
by **Peter Verhezen** *(University of Antwerp, Belgium)*
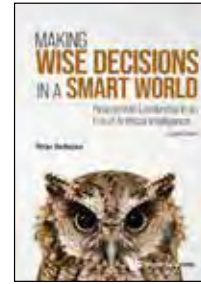
First book that presents an integrated view on benefits and limitations of artificial intelligence (AI) in a corporate world, and how it relates to the distinction of objective descriptive phenomena versus subjective experiences and prescriptive/normative thinking where AI may help us humans to become smarter but not wiser.

Readership: Corporate leaders, academics, students, and anyone interested in topics related to artificial intelligence and a smarter world.

400pp	May 2023	
978-981-126-942-4(pbk)	US$38	£29

LOGIC AND LANGUAGE MODELS FOR COMPUTER SCIENCE
4th Edition
by **Dana Richards** *(George Mason University, USA)* & **Henry Hamburger** *(George Mason University, USA)*

This unique compendium highlights the theory of computation, particularly logic and automata theory. Special emphasis is on computer science applications including loop invariants, program correctness, logic programming and algorithmic proof techniques.

This innovative volume differs from standard textbooks, by building on concepts in a different order, using fewer theorems with simpler proofs. It has added many new examples, problems and answers. It can be used as an undergraduate text at most universities.

Readership: Researchers, professionals, academics, and graduate students in theoretical computer science.

496pp	Mar 2023	
978-981-126-066-7	US$118	£105
978-981-126-067-4(ebook)	US$189	£165

Series on Knots and Everything - Vol 72
LAWS OF FORM
A Fiftieth Anniversary
edited by **Louis H Kauffman** *(University of Illinois Chicago, USA)*, **Fred Cummins** *(University College Dublin, Ireland)*, **Randolph Dible** *(The New School for Social Research, USA)*, **Leon Conrad** *(Independent Scholar, UK)*, **Graham Ellsbury** *(Independent Scholar, UK)*, **Andrew Crompton** *(University of Liverpool, UK)* & **Florian Grote** *(CODE University of Applied Sciences, Germany)*
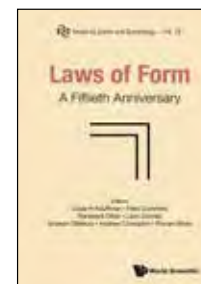
- This is a unique book consisting of new and groundbreaking research and viewpoints related to Laws of Form
- This book can serve as companion and as an introduction to Spencer-Brown's book *Laws of Form*
- The reader will find significant new mathematics that has grown from Laws of Form and significant philosophical articulations that grow from this ground

Readership: Academic and scientific readers: undergraduate and graduate students and researchers in mathematics, logic, computer science, cybernetics, philosophy, linguistics, physics and natural sciences. General readers: persons interested in the above fields.

944pp	Jan 2023	
978-981-124-742-2	US$188	£165
978-981-124-743-9(ebook)	US$301	£240

ALGORITHMS
A Top-Down Approach
by **Rodney R Howell** *(Kansas State University, USA)*

This comprehensive compendium provides a rigorous framework to tackle the daunting challenges of designing correct and efficient algorithms. It gives a uniform approach to the design, analysis, optimization, and verification of algorithms. The volume also provides essential tools to understand algorithms and their associated data structures.

This useful reference text describes a way of thinking that eases the task of proving algorithm correctness. Working through a proof of correctness reveals an algorithm's subtleties in a way that a typical description does not. Algorithm analysis is presented using careful definitions that make the analyses mathematically rigorous.

Readership: Researchers, professionals, academics, undergraduate and graduate students in theoretical computer science.

612pp	Feb 2023	
978-981-126-383-5	US$138	£120
978-981-126-384-2(ebook)	US$221	£195

WSPC Book Series in Unconventional Computing - Vol 2
UNCONVENTIONAL COMPUTING, ARTS, PHILOSOPHY
edited by **Andrew Adamatzky** *(University of the West of England, UK)*

The unique compendium re-assesses the value of future and emergent computing technologies via artistic and philosophical means. The book encourages scientists to adopt inspiring thinking of artists and philosophers to reuse scientific concepts in their works.

The useful reference text consists of non-typical topics, where artistic and philosophical concepts encourage readers to adopt unconventional approaches towards computing and immerse themselves into discoveries of future emerging landscape.

Readership: Researchers, professionals, academics, and graduate students in theoretical computer science, information theory, complex systems and popular science.

600pp	Oct 2022	
978-981-125-714-8	US$178	£155
978-981-125-715-5(ebook)	US$285	£250

GUIDE TO THE UMBRAL CALCULUS
A Different Mathematical Language
by **Silvia Licciardi** *(ENEA Research Center, Frascati, Italy)* & **Giuseppe Dattoli** *(ENEA Research Center, Frascati, Italy & University of Rome La Sapienza, Italy)*

This book covers different aspects of umbral calculus and of its more recent developments. It discusses the technical details in depth, including its relevant applications. The book has therefore manyfold scopes to introduce a mathematical tool, not widespread known as it should be; to present a complete account of the relevant capabilities through the use of different examples of applications; to provide a formal bridge between different fields of research in pure and applied.

Readership: Undergraduates, graduates and research professionals in mathematical physics.

296pp	Jul 2022	
978-981-125-532-8	US$108	£85
978-981-125-533-5(ebook)	US$173	£140

Lecture Notes Series on Computing - Vol 16
PARALLEL ALGORITHMS
by **M H Alsuwaiyel** *(King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia)*

This book is an introduction to the field of parallel algorithms and the underpinning techniques to realize the parallelization. The emphasis is on designing algorithms within the timeless and abstracted context of a high-level programming language. The focus of the presentation is on practical applications of the algorithm design using different models of parallel computation.

Readership: Advanced undergraduate and graduate students studying parallel algorithms.

400pp	Jun 2022	
978-981-125-297-6	US$128	£100
978-981-125-298-3(ebook)	US$205	£165

Between Science and Economics - Vol 3
QUANTUM COMPUTING FOR THE BRAIN
by **Melanie Swan** *(University College London, UK)*, **Renato P dos Santos** *(Lutheran University of Brazil, Brazil)*, **Mikhail Lebedev** *(National Research University Higher School of Economics, Russia)* & **Frank Witte** *(University College London, UK)*

"This far-ranging book explores approaches to understanding the brain through metaphorical connections to several cutting-edge information technologies and physics theories. The book proposes that these connections provide insights and tools for studying the brain and speculates on how these insights may advance neurobiology with nontraditional models of the brain. Along the way, the book provides concise surveys of the underlying concepts, motivations and applications in these fields."

Tad Hogg
Institute for Molecular Manufacturing, USA

Readership: Thought-leaders, executives, industry strategists, research scientists, graduate students, advanced undergraduate students, policy-makers, research funding agencies, private research institutions, government regulators, investors, corporate managers, purchasing agents, and entrepreneurs in the areas of computer science, quantum computing, information theory, neuroscience, and physics.

552pp	Jun 2022	
978-1-80061-061-3	US$158	£125
978-1-80061-062-0(ebook)	US$253	£200

ALGORITHMIC FINANCE
A Companion to Data Science
by **Christopher Hian-Ann Ting** *(Hiroshima University, Japan)*

This book champions a fundamental principle of science — objective reproducibility of evidence independently by others. From a companion web site, readers can download many easy-to-understand Python programs and real-world data. Independently, readers can draw for themselves the figures in the book. Even so, readers are encouraged to run the statistical tests described as examples to verify their own results against what the book claims.

Readership: Advanced undergraduate and graduate students, researchers and practitioners in the fields of finance and quantitative finance, data scientists who are learning a new application domain.

408pp	Jun 2022	
978-981-123-830-7	US$148	£130
978-981-123-831-4(ebook)	US$237	£190
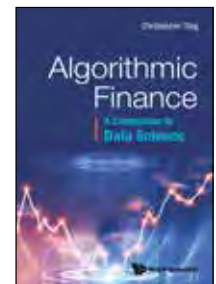
CODE BASED SECRET SHARING SCHEMES

Applied Combinatorial Coding Theory

by **Selda Calkavur** *(Kocaeli University, Turkey)*, **Alexis Bonnecaze** *(University of Aix-Marseille, France)*, **Romar dela Cruz** *(University of the Philippines Diliman, Philippines)* & **Patrick Solé** *(University of Aix-Marseille, France)*

This book is devoted to such schemes inspired by Coding Theory. The classical schemes of Shamir, Blakley, Massey are recalled. Survey is made of research in Combinatorial Coding Theory they triggered, mostly self-dual codes, and minimal codes. Applications to engineering like image processing, and key management of MANETs are highlighted.

Readership: Academics interested in Coding Theory, and Cryptography. Engineers and Researchers working in digital security. The book can form the basis for a graduate level course on the topic, to be a part of a master degre in Crypto or Computer security.

212pp	May 2022	
978-981-124-832-0	US$88	£70
978-981-124-833-7(ebook)	US$141	£115

Primers in Electronics and Computer Science - Vol 5

D'OH! FOURIER

Theory, Applications, and Derivatives

by **Mark Nixon** *(University of Southampton, UK)*
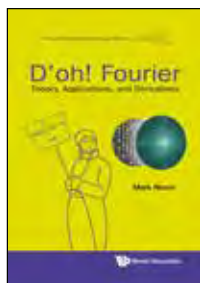
D'oh! Fourier introduces the Fourier transform and is aimed at undergraduates in Computer Science, Mathematics, and Applied Sciences, as well as for those wishing to extend their education. Formulated around ten key points, this accessible book is light-hearted and illustrative, with many applications. The basis and deployment of the Fourier transform are covered applying real-world examples throughout inductively rather than the theoretical approach deductively.

Readership: Aimed at undergraduates with a mathematical background who cover Fourier as part of their undergraduate curriculum. The target curricula include courses on signal processing, communications, speech analysis and understanding, image processing, and computer vision. The book is also aimed at people who are interested in furthering their knowledge on Fourier, for whom maths might be less practiced.

304pp	Apr 2022	
978-1-80061-119-1(pbk)	US$58	£38
978-1-80061-110-8	US$98	£80
978-1-80061-111-5(ebook)	US$157	£130

PERFECT CODES AND RELATED STRUCTURES

by **Tuvi Etzion** *(Technion, Israel)*
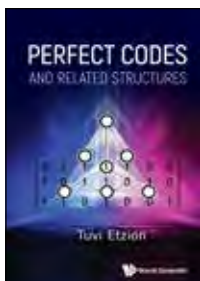
In this monograph, we develop the theory of one of the most fascinating topics in coding theory, namely, perfect codes and related structures. Perfect codes are considered to be the most beautiful structure in coding theory, at least from the mathematical side. These codes are the largest ones with their given parameters. The book develops the theory of these codes in various metrics — Hamming, Johnson, Lee, Grassmann, as well as in other spaces and metrics. It also covers other related structures such as diameter perfect codes, quasi-perfect codes, mixed codes, tilings, combinatorial designs, and more. The goal is to give the aspects of all these codes, to derive bounds on their sizes, and present various constructions for these codes.

Readership: Undergraduate and graduate students, researchers in coding theory and mathematicians interested in combinatorics and extremal combinatorics.

436pp	Apr 2022	
978-981-125-587-8	US$148	£120
978-981-125-588-5(ebook)	US$237	£190

Series on Advances in Mathematics for Applied Sciences - Vol 91

FRACTAL ANALYSIS

Basic Concepts and Applications

by **Carlo Cattani** *(University of Tuscia, Italy)*, **Anouar Ben Mabrouk** *(University of Monastir, Tunisia & University of Kairouan, Tunisia & University of Tabuk, Saudi Arabia)* & **Sabrine Arfaoui** *(University of Monastir, Tunisia & University of Tabuk, Saudi Arabia)*
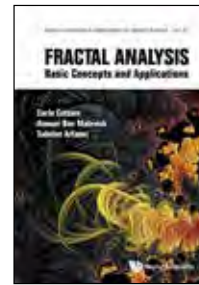
The aim of this book is to provide a basic and self-contained introduction to the ideas underpinning fractal analysis. The book illustrates some important applications issued from real data sets, real physical and natural phenomena as well as real applications in different fields, and consequently, presents to the readers the opportunity to implement fractal analysis in their specialties according to the step-by-step guide found in the book.

Readership: Young researchers at master's level in sciences; researchers in PhD studies in pure and applied mathematical/physical sciences; and researchers at advanced levels are provided the necessary tools that allow them to understand and adapt fractal analysis to their needs such as supervision and development of research projects. Advanced undergraduate students will gain a clear idea on what fractal analysis is, that will guide them to decide their course on their future scientific research areas. It is applicable to the industrial and professional sectors such as ready-made constructions, town planning, such as construction and the development of plans for urban areas (fractal cities); for economists to develop good forecasting models and for researchers in nanofractal materials, geology, geosciences, biology, among others.

244pp	Mar 2022	
978-981-123-943-4	US$98	£85
978-981-123-944-1(ebook)	US$157	£135

MATHEMATICS, PHYSICS & CHEMISTRY WITH THE WOLFRAM LANGUAGE

by **S M Blinder** *(University of Michigan, USA & Wolfram Research, USA)*
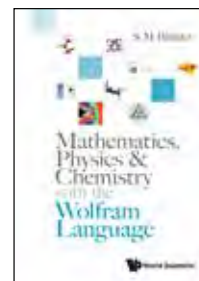
"This book will be of great help for instructors teaching math, physics and chemistry classes. While the topics covered can be found in other textbooks, the uniqueness of this book lies in translating them into interactive Mathematica code. This makes it possible for students and instructors to interact with the problem dynamically in a manner that is not possible when using more traditional graphical aids... I thoroughly enjoyed reading it."

**Eitan Geva
Professor, University of Michigan, USA**

The Wolfram language is the programming language of Mathematica, used increasingly by scientists due to its ease of learning and user-friendliness. This book focuses on applications of the Wolfram language to applied mathematics, physics and chemistry. Topics discussed are broad and comprehensive, from differential equations and special functions to fractals and chess, from electromagnetism and optics to relativity and black holes. There is also extensive coverage of quantum theory and quantum chemistry, and the book is peppered with more than 200 color graphics to aid visualization of these concepts. .

Readership: Researchers, faculty, instructors, graduate and undergraduate students in mathematics, physics, chemistry and computing, and especially scientific fields and courses related to quantum theory. Those interested in active learning and use of technology in science education.

444pp	Mar 2022	
978-981-124-718-7	US$148	£120
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INTERNATIONAL JOURNAL OF PATTERN RECOGNITION AND ARTIFICIAL INTELLIGENCE (IJPRAI)

https://www.worldscientific.com/ijprai

IMPACT FACTOR: 1.5

Editors-in-Chief: Xiaoyi Jiang *(University of Münster, Germany,* **Frank Shih** *(New Jersey Institute of Technology, USA) &* **Patrick S P Wang** *(Northeastern University, USA)*

This journal publishes both applications and theory-oriented articles on new developments in the fields of pattern recognition and artificial intelligence, and is of interest to both researchers in industry and academia. From the beginning, there has always been a close relationship between the disciplines of pattern recognition and artificial intelligence. The recognition and understanding of sensory data like speech or images, which are major concerns in pattern recognition, have always been considered as important subfields of artificial intelligence. On the other hand, topics like knowledge representation, inference, search or learning that belong to the center of artificial intelligence, have constantly attracted the attention of researchers working in pattern recognition.

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INTERNATIONAL JOURNAL ON ARTIFICIAL INTELLIGENCE TOOLS (IJAIT)

https://www.worldscientific.com/ijait

IMPACT FACTOR: 1.1

Editors-in-Chief: Dr. I. Hatzilygeroudis *(University of Patras, Greece) &* **Jeffrey J P Tsai** *(Asia University, Taiwan)*

The journal provides an interdisciplinary forum in which AI scientists and professionals can share their research results and report new advances on AI tools or tools that use AI. Topics covered by IJAIT include but are not limited to: AI in Bioinformatics, AI for Service Engineering, AI for Software Engineering, AI for Ubiquitous Computing, AI for Web Intelligence Applications, AI Parallel Processing Tools (hardware/software), AI Programming Languages, AI Tools for CAD and VLSI Analysis/Design/Testing, AI Tools for Computer Vision and Speech Understanding, AI Tools for Multimedia, Cognitive Informatics, Data Mining and Machine Learning Tools, Heuristic and AI Planning Strategies and Tools, Image Understanding, Integrated/Hybrid AI Approaches, Intelligent System Architectures, Knowledge-Based/Expert Systems, Knowledge Management and Processing Tools, Knowledge Representation Languages, Natural Language Understanding, Neural Networks for AI, Object-Oriented Programming for AI, Reasoning and Evolution of Knowledge Bases, Self-Healing and Autonomous Systems, and Software Engineering for AI.

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INTERNATIONAL JOURNAL OF COMPUTATIONAL METHODS (IJCM)

https://www.worldscientific.com/ijcm

IMPACT FACTOR: 1.7

Chief Editor
G R Liu *(University of Cincinnati, USA)*

The purpose of this journal is to provide a unique forum for the fast publication and rapid dissemination of original research results and innovative ideas on the state-of-the-art on computational methods. The methods should be innovative and of high scholarly, academic and practical value.

The journal is devoted to all aspects of modern computational methods and the articles can involve theory, algorithm, programming, coding, numerical simulation and/or novel application of computational techniques to problems in engineering, science, and other disciplines related to computations. The journal places a great emphasis on creativity, novelty and innovation of computational methods. It aims to become the major platform that archives the history of the technical development of new generations of computational methods.

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INTERNATIONAL JOURNAL OF IMAGE AND GRAPHICS (IJIG)

https://www.worldscientific.com/ijig

IMPACT FACTOR: 1.6

Editors-in-Chief: David Zhang *(Hong Kong Polytechnic University, Hong Kong) &* **Yong Xu** *(Harbin Institute of Technology Shenzhen, China)*

This journal will emphasize on efficient and effective image and graphics technologies and systems. This journal covers the following research and application issues:

*Image Processing (*Image acquisition & storage • Image pre-processing • Image coding and transmission • Image indexing & retrieval)*,*

*Image Analysis and Understanding (*Image segmentation & measurement • Texture & motion analysis • Image matching and scene interpretation • 3-D modeling)*,*

*Pattern Recognition Application (*Statistical, structural & neural approaches • Character, speech, image & video applications • Biometrics technologies & system)*,*

*Computer Vision (*Active, real-time & stereo computer vision • VLSI image model, algorithm & architecture • Multi-modal image systems)

*Graphics Modeling, Rendering and Animation (*Graphics algorithms • Modeling methods • Rendering algorithms • Animation)*,*

*Visualization (*Virtual Reality & Virtual Environment • Augmented Reality • Media immersion)*,*

*Multimedia Systems and Techniques (*Multimedia algorithms • Multimedia communication and CSCW • Multimedia database • Multimedia systems)*,*

*Graphics User Interface (*User interface management system • Multi-agent/Artificial life/Intelligent agent • Multi-modal user interface)*,*

*Image and Graphics Applications (*Medical & bio-medical • Telecommunication & remote sensing • Document & industrial • Security (internet, digital watermaking,?))

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INTERNATIONAL JOURNAL OF COMPUTATIONAL GEOMETRY AND APPLICATIONS (IJCGA)

https://www.worldscientific.com/ijcga

Editors-in-Chief
Der-Tsai Lee *(Academia Sinica, Taiwan)*
Jinhui Xu *(State University of New York at Stony Brook, USA)*

A bimonthly journal devoted to the field of computational geometry within the framework of design and analysis of algorithms. Emphasis is placed on the computational aspects of geometric problems that arise in various fields of science and engineering including computer-aided geometry design (CAGD), computer graphics, constructive solid geometry (CSG), operations research, pattern recognition, robotics, solid modelling, VLSI routing/layout, and others. Research contributions ranging from theoretical results in algorithm design — sequential or parallel, probabilistic or randomized algorithms — to applications in the above-mentioned areas are welcome. Research findings or experiences in the implementations of geometric algorithms, such as numerical stability, and papers with a geometric flavour related to algorithms or the application areas of computational geometry are also welcome.

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PARALLEL PROCESSING LETTERS (PPL)

IMPACT FACTOR: 0.4
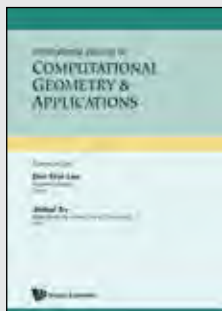
https://www.worldscientific.com/ppl

Editor-in-Chief: A Adamatzky
(University of the West of England, UK)

Parallel Processing Letters (PPL) aims to rapidly disseminate results on a worldwide basis in the field of parallel processing in the form of short papers. It fills the need for an information vehicle which can convey recent achievements and further the exchange of scientific information in the field. This journal has a wide scope and topics covered include:

- design and analysis of parallel and distributed algorithms
- theory of parallel computation
- parallel programming languages
- parallel programming environments
- parallel architectures and VLSI circuits
- unconventional computational problems (e.g., time-varying variables, interacting variables, time-varying complexity)
- unconventional computational paradigms (e.g., biomolecular computing, chemical computing, quantum computing)
- computing in nature (e.g., photosynthesis, plant respiration, bacterial communication)
- nature-inspired algorithms (e.g., genetic algorithms, neural networks, swarm intelligence)

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JOURNAL OF MEDICAL ROBOTICS RESEARCH (JMRR)
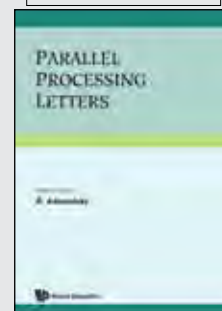
https://www.worldscientific.com/jmrr

Editor-in-Chief:
Jaydev P. Desai
(Georgia Tech, USA)

Medical robotics has been progressively revolutionizing treatment for at least the past two decades. The Journal of Medical Robotics Research (JMRR) invites fundamental contributions to all areas of medical robotics including clinical evaluation studies. The journal is primarily aimed towards bringing the scientific and technological developments as well as clinical evaluation studies in the area of medical robotics to a wider robotics and clinical audience.

Areas of discussion include: • Robot-assisted Surgery • Image-guided Interventions • Rehabilitation Robotics • Assistive Robotics • Surgical simulation • Image-guided Diagnosis and Therapy • Nano-scale and micro-scale Interventions • Telesurgery • Haptics for Medical Robotics • Smart instrumented tools for surgery • Surgical Navigation • Surgical Workflow• Wearable Rehabilitation Systems

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INTERNATIONAL JOURNAL OF FOUNDATIONS OF COMPUTER SCIENCE (IJFCS)

https://www.worldscientific.com/ijfcs

IMPACT FACTOR: 0.662

Editor-in-Chief: O H Ibarra
(University of California, Santa Barbara, USA)

The theoretical and mathematical aspects covered include: Algebraic theory of computing and formal systems, Algorithm and system implementation, issues, Approximation, probabilistic, and randomized algorithms, Automata and formal languages, Automata and formal languages, Automated deduction, Combinatorics and graph theory, Complexity theory, Computational biology and bioinformatics, Cryptography, Database theory, Data structures, Design and analysis of algorithms, DNA computing, Foundations of computer security, Foundations of high-performance computing, Logic in computer science, Foundations of high-performance computing, Logic in computer science, Model checking and computer-aided verification, Models of computation, Quantum computing, Semantics, concurrency, and type theory, Theories and models of internet computing, Theory of learning and inductive inference, Theory of parallel and distributed computing, Wireless networks and mobile computing.

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JOURNAL OF INTERCONNECTION NETWORKS (JOIN)

https://www.worldscientific.com/join

IMPACT FACTOR: 0.7

Editor-in-Chief: Eddie Cheng
(Oakland University, USA)

An international scientific journal dedicated to the advancing the state-of-the-art of interconnection networks. The journal addresses all aspects of interconnection networks including their theory, analysis, design, implementation and application, and corresponding issues of communication, computing and function arising from (or applied to) a variety of multifaceted networks. Interconnection problems occur at different levels in the hardware and software design of communicating entities in integrated circuits, multiprocessors, multicomputers, and communication networks as diverse as telephone systems, cable network systems, computer networks, mobile communication networks, satellite network systems, the Internet and biological systems.

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INTERNATIONAL JOURNAL OF INFORMATION TECHNOLOGY & DECISION MAKING (IJITDM)

https://www.worldscientific.com/ijitdm

IMPACT FACTOR: 4.9

Editor-in-Chief: Yong Shi
(University of Nebraska at Omaha, USA)

Managing Editor: Gang Kou
(Southwestern University of Finance and Economics, China)

This journal provides a global forum for exchanging research findings and case studies which bridge the latest information technology and various decision-making techniques. It promotes how information technology improves decision techniques as well as how the development of decision-making tools affects the information technology era. The journal is peer-reviewed and publishes both high-quality academic (theoretical or empirical) and practical papers in the broad ranges of information technology related topics.

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INTERNATIONAL JOURNAL OF NEURAL SYSTEMS (IJNS)

https://www.worldscientific.com/ijns

IMPACT FACTOR: 8.0

Editor-in-Chief: Hojjat Adeli
(The Ohio State University, USA)

The *International Journal of Neural Systems* is a bimonthly peer-reviewed journal which covers information processing in natural and artificial neural systems. The journal presents a fresh, undogmatic attitude towards this multi-disciplinary field, aiming to be a forum for novel ideas and improved understanding of collective and cooperative phenomena in systems with computational capabilities.

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INTERNATIONAL JOURNAL OF COMPUTATIONAL INTELLIGENCE AND APPLICATIONS (IJCIA)

https://www.worldscientific.com/ijcia

IMPACT FACTOR: 1.8

Editor-in-Chief: Brijesh Verma
(Griffith University, Australia)

A refereed journal dedicated to the theory and applications of computational intelligence (artificial neural networks, fuzzy systems, evolutionary computation and hybrid systems). The main goal of this journal is to provide the scientific community and industry with a vehicle whereby ideas using two or more conventional and computational intelligence based techniques could be discussed.

The IJCIA welcomes original works in areas such as neural networks, fuzzy logic, evolutionary computation, pattern recognition, hybrid intelligent systems, symbolic machine learning, statistical models, image/audio/video compression and retrieval. The IJCIA greatly encourages new ideas, combining two or more areas, such as neuro-fuzzy, neuro-symbolic, neuro-evolutionary, neuro-symbolic, neuro-pattern recognition, fuzzy-evolutionary, evolutionary-symbolic, fuzzy-evolutionary, evolutionary-symbolic, fuzzy-symbolic, etc. to be submitted.

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INTERNATIONAL JOURNAL OF COOPERATIVE INFORMATION SYSTEMS (IJCIS)

https://www.worldscientific.com/ijcis

IMPACT FACTOR: 1.5

Editors-in-Chief
Heiko Ludwig (IBM Almaden Research Center, USA) & **J Yang** (Macquarie University, Australia)

Advisory Editor
M P Papazoglou (Tilburg University, The Netherlands)

This journal addresses the intricacies of cooperative work in the framework of distributed interoperable information systems. It provides a forum for the presentation and dissemination of research covering all aspects of CIS design, requirements, functionality, implementation, deployment, and evolution. IJCIS will publish papers describing original ideas and new results, on topics that include, but are not limited to: *CIS Principles, Information Agents, Large-Scale Knowledge Bases for CIS, Theoretical Frameworks and Formal Methods for CIS, CIS Implementation Techniques, Integration Challenges, Information Modelling and Reasoning techniques for CISs, Advanced CIS Programming, CIS Evolution, Re-Engineering, Business Process Management Systems.*

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UNMANNED SYSTEMS (US)

https://www.worldscientific.com/us

Managing Editor-in-Chief
Jie Chen (Tongji University, China)

IMPACT FACTOR: 5.3

Co-Editors-in-Chief
Ben M. Chen (Chinese University of Hong Kong, China)
Lihua Xie (Nanyang Technological University, Singapore)

Unmanned Systems (US) aims to cover all subjects related to the development of automatic machine systems, which include advanced technologies in unmanned hardware platforms (aerial, ground, underwater and unconventional platforms), unmanned software systems, energy systems, modeling and control, communications systems, computer vision systems, sensing and information processing, navigation and path planning, computing, information fusion, multi-agent systems, mission management, machine intelligence, artificial intelligence, and innovative application case studies.

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JOURNAL OF THEORETICAL AND COMPUTATIONAL ACOUSTICS (JTCA)

https://www.worldscinet.com/jtca

IMPACT FACTOR: 1.9

Co-Editors-In-Chief
Steffen Marburg (Technical University of Munich, Germany) & **Sean F. Wu** (Wayne State University, USA)

The aim of this journal is to provide an international forum for the dissemination of the state-of-the-art information in the field of Computational Acoustics.

Topics covered by this journal include research and tutorial contributions in OCEAN ACOUSTICS (a subject of active research in relation with sonar detection and the design of noiseless ships), SEISMO-ACOUSTICS (of concern to earthquake science and engineering, and also to those doing underground prospection like searching for petroleum), AEROACOUSTICS (which includes the analysis of noise created by aircraft), COMPUTATIONAL METHODS, and SUPERCOMPUTING. In addition to the traditional issues and problems in computational methods, the journal also considers theoretical research acoustics papers which lead to large-scale scientific computations.

Abstracting/Indexing: Academic OneFile | Academic Search Complete/ Elite/ Premier | Baidu | CNKI Scholar | CnpLINKer | CompuMath Citation Index® | CrossRef | CSA Aquatic Sciences and Fisheries Abstracts (ASFA) | CSA Meteorological & Geoastrophysical Abstracts | CSA Oceanic Abstracts | CSA Selected Water Resources Abstracts | Current Contents®Engineering, Computing and Technology | Ebsco Computer & Applied Science Complete | Ebsco Discovery Service | Ebsco Electronic Journal Service (EJS) | Ebsco Engineering Source | Ebsco Science & Technology Collection | ExLibris Primo Central | Google Scholar | ISI Alerting Services | J-Gate | Journal Citation Reports/Science Edition | Mathematical Reviews® (MR) | Naver | NSTL - National Science and Technology Libraries | OCLC WorldCat® | Proquest Computer & Information Systems Abstracts | ProQuest SciTech Premium Collection | Science Citation Index® | Science Citation Index Expanded | Scopus | The Summon® Service | Zentralblatt MATH.

ADVANCES IN DATA SCIENCE AND ADAPTIVE ANALYSIS (ADSAA)

https://www.worldscientific.com/adsaa

IMPACT FACTOR: 0.6

Editor-in-Chief:
Carson Kai-Sang Leung
(University of Manitoba, Canada)
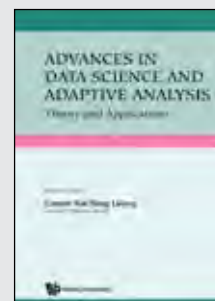
This is an interdisciplinary journal dedicated to report original research results on data analysis methodology developments and their applications, with a special emphasis on the adaptive approaches. The mission of the journal is to elevate data analysis from the routine data processing by traditional tools to a new scientific level, which encourages innovative methods development for data science and its scientific research and engineering applications.

Abstracting/Indexing: Abstracting/Indexing: Academic OneFile | Baidu | CNKI | CnpLINKer | Compendex | Computer & Information Systems Abstracts | CrossRef | DBLP Computer Science Bibliography | Ebsco Discovery Service | EBSCO Electronic Journal Service (EJS) | Emerging Sources Citation Index (ESCI) | ExLibris Primo Central | Google Scholar | J-Gate | Mathematical Reviews® (MR) / MathSciNet® | Naver | NSTL - National Science and Technology Libraries | OCLC WorldCat® | ProQuest Technology Collection (Advanced Technologies Database with Aerospace) | The Summon® Service | Zentralblatt MATH.

INTERNATIONAL JOURNAL OF HUMANOID ROBOTICS (IJHR)

https://www.worldscientific.com/ijhr

Editors-in-Chief
Ming Xie *(Nanyang Technological University, Singapore)*
Juyang (John) Weng *(Michigan State University, USA)*
Giulio Sandini *(Italian Institute of Technology, Italy)*

This journal covers all subjects on the mind and body of humanoid robots. It is dedicated to advancing new theories, new techniques, and new implementations contributing to the successful achievement of future robots which not only imitate human beings, but also serve human beings. While IJHR encourages the contribution of original papers which are solidly grounded on proven theories or experimental procedures, the journal also encourages the contribution of innovative papers which venture into the new, frontier areas in robotics.

GUIDANCE, NAVIGATION AND CONTROL (GNC)

https://www.worldscientific.com/gnc

Editors-in-Chief
Haibin Duan & Yingxun Wang
(Beihang University, China)

Guidance, Navigation and Control **(GNC)** will report on advances in the understanding and utilization of guidance, navigation and control theories, technologies and systems. The journal serves as a platform for academic exchange by experts, scholars and researchers in these fields. The following subjects are of particular interest to the journal:

- Modeling, analysis and design of dynamics, control and guidance systems
- Stability, optimization, electronics, avionics, and information processing related to various vehicle systems (marine, ground, aeronautical, and astronautical systems)
- Theoretical and empirical research in guidance, navigation and control technologies
- Application of guidance, navigation and control technologies to real-world problems

INTERNATIONAL JOURNAL OF ASIAN LANGUAGE PROCESSING (IJALP)

https://www.worldscientific.com/ijalp

Editor-in-Chief

Minghui Dong *(Institute for Infocomm Research, Singapore)*

The aim of the journal is to provide a channel for researchers working on Asian Language Processing to share their high-quality work and to promote research in this field. The scope of the journal will include the automatic processing or study of Asian languages on the following aspects: natural language processing, spoken language processing, linguistic study towards language processing, and processing for language education, among other areas.
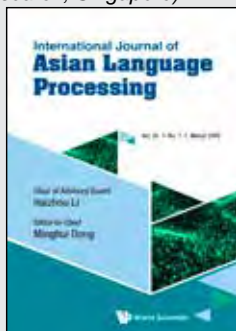
INTERNATIONAL JOURNAL OF MODELING, SIMULATION, AND SCIENTIFIC COMPUTING (IJMSSC)

https://www.worldscientific.com/ijmssc

IMPACT FACTOR: 1.2

Editors-in-Chief:
Lin Zhang *(Beihang University (BUAA), China)*
Agostino Bruzzone *(Genoa University, Italy)*

This is a quarterly journal which deals with the fields of system modeling, simulation and scientific computing. The scope of the journal covers, but is not limited to:

- Modeling theory and methodology for complex systems, system simulation theory and methodology
- Complex applications of high level simulation languages, Multi-parameter Optimization in simulation
- Verification, validation and accreditation of theory and technology
- Finite element methods, finite difference methods, Approximation theory
- Distributed/High-Performance/Pervasive/Grid/Cloud Computing, Bioinformatics/Data-Mining, High Performance simulation technology
- Computational electromagnetics, electrodynamics, fluid dynamics, computational heat, mass, and momentum transfer
- M&S technology of continuous systems/discrete systems/hybrid systems/Intelligent systems, complex systems/open systems/ huge systems
- SBA/virtual prototyping engineering technology
- Simulation language methodology, supporting platforms, application techniques

INTERNATIONAL JOURNAL OF SOFTWARE ENGINEERING AND KNOWLEDGE ENGINEERING (IJSEKE)

https://www.worldscientific.com/ijseke

IMPACT FACTOR: 0.9

Editor-in-Chief
Professor S.K. Chang
(Knowledge Systems Institute, USA)

This journal intended to serve as a forum for researchers, practitioners, and developers to exchange ideas and results for the advancement of software engineering and knowledge engineering. Three types of papers will be published:

This journal intended to serve as a forum for researchers, practitioners, and developers to exchange ideas and results for the advancement of software engineering and knowledge engineering. The journal publishes papers in the areas of software engineering methods and practices, object-oriented systems, rapid prototyping, software reuse, cleanroom software engineering, stepwise refinement/enhancement, formal methods of specification, ambiguity in software development, impact of CASE on software development life cycle, knowledge engineering methods and practices, logic programming, expert systems, knowledge-based systems, distributed knowledge-based systems, deductive database systems, knowledge representations, knowledge-based systems in language translation & processing, software and knowledge-ware maintenance, reverse engineering in software design, and applications in various domains of interest.

INTERNATIONAL JOURNAL OF UNCERTAINTY, FUZZINESS AND KNOWLEDGE-BASED SYSTEMS (IJUFKS)

https://www.worldscientific.com/ijufks

IMPACT FACTOR: 1.5

Editor-in-Chief: Bernadette Bouchon-Meunier
(Sorbonne Université, CNRS, France)

This International Journal is a forum for research on various methodologies for the management of imprecise, vague, uncertain or incomplete information. The aim of the journal is to promote theoretical, methodological or practical works dealing with all kinds of methods to represent and manipulate imperfectly described pieces of knowledge. It is published bimonthly, with worldwide distribution to researchers, engineers, decision-makers, and educators.

INTERNATIONAL JOURNAL OF SEMANTIC COMPUTING (IJSC)

https://www.worldscientific.com/ijsc

Editor-in-Chief: Phillip C-Y Sheu
(University of California, Irvine, USA)

IMPACT FACTOR: 0.8

International Journal of Semantic Computing **(IJSC)** addresses the computing technologies (e.g., artificial intelligence, natural language, software engineering, data and knowledge engineering, computer systems, signal processing, etc.), and their interactions, that may be used to extract or process computational content and descriptions. While some areas of Semantic Computing have appeared as isolated pieces in journals dedicated to individual disciplines, IJSC is a journal that glues these pieces together into an integrated theme with synergetic interactions.

NEW MATHEMATICS AND NATURAL COMPUTATION (NMNC)

https://www.worldscientific.com/nmnc

Managing Editor: Shu-Heng Chen
(National Chengchi University, Taiwan)

IMPACT FACTOR: 0.9

Recognizing the world is full of vague-ness and uncertainty, this journal has chosen three very focused areas of research: **i.** Mathematics of Uncertainty **ii.** Economics & Finances **iii.** Cognitive Science

The close cooperation of the above three areas is of paramount importance. This journal strongly encourages the suggestions of any topic within these three general areas of research. The journal has demonstrated there is room for artificial intelligence & modern control theory in contributing solutions to some selected economic problems. We shall continue to explore other possibilities. A new initiative on cognitive science and economics is a good example. Over the years, this journal has published some papers on pattern recognition, image processing, and natural languages vis-a-vis artificial intelligence. We welcome any proposal on worthy new initiatives.

JOURNAL OF ARTIFICIAL INTELLIGENCE AND CONSCIOUSNESS (JAIC)

https://www.worldscientific.com/jaic

Chief and Executive Editors
Antonio Chella *(Università degli Studi di Palermo & ICAR-CNR Palermo, Italy)*, **David Gamez** *(Middlesex University, UK)* & **Riccardo Manzotti** *(IULM University, Milan, Italy)*

NEW

The *Journal of Artificial Intelligence and Consciousness* **(JAIC)** will offer a multidisciplinary platform to discuss AI and consciousness in the light of robotics and artificial systems, computational science, psychology, philosophy of mind, ethics, and neuroscience. The aims and scope of the journal are: (i) articles that take inspiration from biological consciousness and/or that explore theoretical issues of consciousness to build robots and AI systems that show forms of functional consciousness; (ii) articles that employ robots and AI systems as tools to model and better understand biological mechanisms of consciousness; (iii) articles that discuss ethical problems emerging or uncovered through the overlap of AI and consciousness, and that investigate the ethical and societal impact of consciousness and the limits of it, and (iv) to pursue the hybridization between the field of AI and the field of consciousness studies.
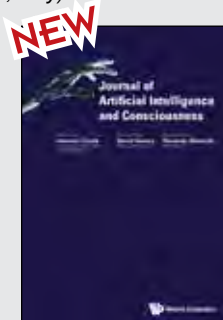
Abstracting/Indexing: Baidu | CNKI Scholar | CnpLINKer | Computer & Information Systems Abstracts (ProQuest) | CrossRef | Ebsco Discovery Service | EBSCO Electronic Journal Service (EJS) | ExLibris Primo Central | Google Scholar | J-Gate | Naver | NSTL - National Science and Technology Libraries | OCLC WorldCat® | ProQuest Central Technology Research Database (ProQuest) | The Summon® Service | WanFang Data.

INTERNATIONAL JOURNAL OF BIG DATA MINING FOR GLOBAL WARMING (IJBDMGW)

https://www.worldscinet.com/ijbdmgw

Editors-In-Chief
Donald Huisingh *(University of Tennessee, Knoxville, USA)*
Zhihua Zhang *(Beijing Normal University, China)*

Present and future global warming research must be increasingly based on big datasets at terabyte and exabyte scales from diverse sources (e.g. climate, ocean, economy, energy, ecosystem dynamics, industry, agriculture, environment, public's attitude/ knowledge surveys). The **"International Journal of Big Data Mining for Global Warming"** is an inter-disciplinary journal dedicated to the publication of high-quality research articles, review articles, letters, case studies and book reviews in all aspects of global warming through traditional mining methods (statistical, spectral, numerical, simulating, LCA, 3E, etc.) and non-traditional mining methods (neural networks, deep learning, cloud computing, etc.) of these big datasets.

Abstracting/Indexing: Baidu | CNKI | CnpLINKer | CrossRef | Ebsco Discovery Service | EBSCO Electronic Journal Service (EJS) | ExLibris Primo Central | Google Scholar | J-Gate | Naver | NSTL - National Science and Technology Libraries | OCLC WorldCat® | The Summon® Service.

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COMPUTING-OPEN

A rapid publication open access journal

https://www.worldscientific.com/computing-open

Subject Editors

Ding-Zhu Du *(University of Texas at Dallas, USA),*
Piero Malcovati *(University of Pavia, Italy),* **Emre Salman** *(Stony Brook University (SUNY), USA),* **Frank Y. Shih** *(New Jersey Institute of Technology, USA),* **Jinlong Shu** *(East China Normal University, Shanghai, China),* **Zoran Stamenkovic** *(IHP GmbH, Germany),* **Patrick S. P. Wang** *(Northeastern University, USA)* & **Tongquan Wei** *(East China Normal University)*

Computing Open is a new fully peer-reviewed, rapid publication, open access, broad scope journal that publishes original research and review articles on all aspects of computer science. The journal is editorially aligned with World Scientific's collection of high-quality and leading computer science journals which are considered essential content by top institutions globally.

Computing Open focuses on ensuring that all papers published are of high technical quality but allows the scientific community to determine the impact of published work. The editorial process focuses on the technical validity of the research, from methodological, analytical, statistical, and publication ethics.

DISCRETE MATHEMATICS, ALGORITHMS AND APPLICATIONS (DMAA)

https://www.worldscientific.com/dmaa

Co-Editors-in-Chief

Ding-Zhu Du *(University of Texas at Dallas, USA)*

Jinlong Shu *(East China Normal University, Shanghai, China)*

IMPACT FACTOR: 1.2

The aim of this journal is to advance and promote the theory and applications of discrete mathematics, which is a research area in mathematics with applications in advanced science and technology, such as machine learning, blockchain, data science, cloud-computing, social networks, edge computing, wireless communications, etc.
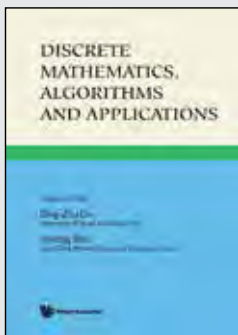
The journal encourages contributions from the three important parts of discrete mathematics, graph theory, combinatorics, and discrete optimization. The first part includes structural graph theory, extremal graph theory, algebraic graph theory, random graphs, and social networks. The second part consists of combinatorial design, combinatorial enumeration, coding theory, combinatorial probabilistic method, etc. The third part includes scheduling, network optimization, integer programming, game theory, algorithm design and analysis, etc.

*Please log in to your existing account or register for a FREE account to enjoy FREE access to the selected articles.

INTERNATIONAL JOURNAL OF DATA SCIENCE IN THE MATHEMATICAL SCIENCES (IJDSMS)

https://www.worldscientific.com/ijdsms

Editor-in-Chief

Yang-Hui He *(University of Oxford, UK)*

The aim of this new, highly inter-disciplinary journal is to establish a much-needed platform for experimental mathematicians, both pure and applied, physicists and other experts in theoretical STEM fields, as well as data scientists and computer scientists specializing in machine-learning and artificial intelligence.

This platform will publish and promote discussion in the following areas: Data in pure mathematics, especially those already freely available online: LMFdB, GrDB, GAP, KnotsDB, etc. and in particular in line with MathSage; Data in applied mathematics, ranging from mathematical biology to theoretical physics; Data Science & Theoretical Physics: especially in relation to the string landscape & others.
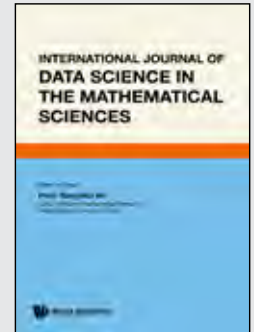
INNOVATION AND EMERGING TECHNOLOGIES (IET)

An International Journal on Innovative Applied Sciences, Engineering and Biomedical Research

https://www.worldscientific.com/iet

Editors-in-Chief

Biomedical: **Utkan Demirci** *(Stanford Univ., USA)*

Physics and Engineering: **Supriyo Datta** *(Purdue University, USA)*

Fashioned as a high-impact, high-visibility, top-echelon publication, this new ground-breaking journal - Innovation and Emerging Technologies - will feature the development of cutting-edge new technologies in a broad array of emerging fields of science and engineering. The content will have an applied science and technological slant with a focus on both innovation and application to daily lives. It will cover diverse disciplines such as health and life science, energy and environment, advanced materials, technology-based manufacturing, information science and technology, and marine and transportations technologies.

INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE AND ROBOTICS RESEARCH (IJAIRR)

An Interdisciplinary Scientific Journal on Integration of AI, Robotics and Fundamental Science

https://www.worldscientific.com/ijairr

Editors-in-Chief

Yu Sun *(University of South Florida, USA)*

Dong Xu *(University of Missouri-Columbia, USA)*

Xiaorui Zhu *(Galaxy Artificial Intelligence and Robotics Research Institute, Singapore)*

Artificial Intelligence and Robotics (Abbreviated as AIR) are playing more and more critical roles in many fields. AIR will not only accelerate fundamental scientific research but also empower many paradigm-shift applications. The advancement of AIR will consistently benefit from close cooperation among various disciplines, including mathematics, physics, biology, psychology, and engineering.

JOURNAL OF MATHEMATICAL LOGIC

https://www.worldscientific.com/jml

IMPACT FACTOR: 0.9

Editor-in-Chief

Chitat Chong
National University of Singapore

Theodore A Slaman
University of California, Berkeley, USA

W Hugh Woodin
Harvard University, USA

Yue Yang
National University of Singapore

The *Journal of Mathematical Logic* (JML) provides an important forum for the communication of original contributions in all areas of mathematical logic and its applications. It aims at publishing papers at the highest level of mathematical creativity and sophistication. JML intends to represent the most important and innovative developments in the subject.

VIETNAM JOURNAL OF COMPUTER SCIENCE

IMPACT FACTOR: 0.9

https://www.worldscientific.com/vjcs

𝗢 Open Access

Editor-in-Chief

Ngoc Thanh Nguyen
(Wroclaw University of Science and Technology, Poland)

VJCS strives to cover all aspects of working out new technologies for knowledge engineering, creating intelligent systems and processing data. Papers also highlight advances in use of knowledge engineering technologies and intelligent systems for solving tasks in management, industry, engineering, administration, and education, and evaluations of existing intelligent systems and tools, emphasising comparative studies and user experiences. Papers on key applications, highlighting methods, time schedules and other relevant materials, are welcome. VJCS aims to promote the scientific works of Vietnamese researchers (but not only) in the fields of Computer Science and Information Technology.

WORLD SCIENTIFIC ANNUAL REVIEW OF ARTIFICIAL INTELLIGENCE

https://www.worldscientific.com/wsarai

Editors-in-Chief

Xiaoli Li *(Institute for Infocomm Research, and Nanyang Technological University, Singapore)*

Co-Editor-in-Chief

Philip S. Yu *(University of Illinois at Chicago, USA)*

In recent years, Artificial Intelligence has become part of almost every aspect of innovation, ranging from medical research to Internet Of Things (IoT), its development from rule-based systems to deep learning has redefined research and development in many ways. To properly document the landmark development in Artificial Intelligence, this Annual Review aims to invite pioneers and experts in the fourth front of AI research to document and keeps audience updated on the story of this remarkable journey from Chess playing program in the 1950s to today underpinning a spectrum breath-taking innovations.

JOURNAL OF UNCERTAIN SYSTEMS

https://www.worldscientific.com/jus

IMPACT FACTOR: 0.7

Editors-in-Chief

Jinwu Gao
Ocean University of China, China

Vicenzo Loia
University of Salerno, Italy

Journal of Uncertain Systems (JUS) aims to publish original research related to uncertain systems with mathematical descriptions and applications in engineering, economics, finance, and management sciences. Some typical topics covered by JUS include but are not limited to the following four topics:
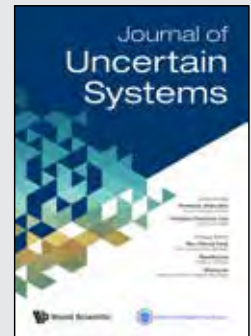
1. Uncertain systems related
   o Uncertain Statistics
   o Uncertain Programming
   o Uncertain Logic
   o Uncertain Inference
   o Uncertain Dynamic Systems
2. Economic, management, and financial systems involving uncertainty
   o Supply Chain Management
   o Transportation and Logistics
   o Economic Models and Policy
   o Financial Models and Engineering
   o Ocean Economy and Sustainable Development
3. AI, big data techniques and applications
   o Data Mining
   o Machine Learning
   o Deep Learning
   o Knowledge Graphs
   o Rule-based Systems
4. Decision and control in engineering
   o Decision Theory
   o Causal Discovery and Inference
   o Command and Control
   o Systems Engineering

WORLD SCIENTIFIC ANNUAL REVIEW OF DATA SCIENCE (WSARDS)

https://www.worldscientific.com/wsards

Editors-in-Chief

Yike Guo *(The Hong Kong University of Science and Technology, Hong Kong, China)*

In the era of big data, Data Science is transforming our world and touching our daily lives with its wide applications in healthcare, banking and finance, business, science, and education. It also lays down the foundation of the development of artificial intelligence. This Annual Review of Data Science brings together expert perspectives and reviews on data science advances and challenges. Diverse subjects are addressed including data management governance, data curation, quality assessment and sharing, data analysis, data communication, data visualization, data literacy and education. By drawing the genuine insights and views of a wide range of expertise, the Annual Review aims to promote international exchange of new knowledge and offer readers ideas and inspiration on the key technology underpinning the direction of research in Data Science and a look to future developments.

Proceedings

TITLE	EDITOR	AFFILIATION	PUB DATE	ISBN13	TYPE	US$	£
COMPUTABILITY THEORY AND FOUNDATIONS OF MATHEMATICS - PROCEEDINGS OF THE 9TH INTERNATIONAL CONFERENCE ON COMPUTABILITY THEORY AND FOUNDATIONS OF MATHEMATICS	PENG NINGNING ET AL	WUHAN UNIV OF TEHCNOLOGY, CHINA	20-May-22	9789811259289	Hardcover	98	80
				9789811259296	Ebook	157	125
MACHINE LEARNING, MULTI AGENT AND CYBER PHYSICAL SYSTEMS - PROCEEDINGS OF THE 15TH INTERNATIONAL FLINS CONFERENCE (FLINS 2022)	SUN QINGLIN ET AL	NANKAI UNIV, CHINA	20-Dec-22	9789811269257	Hardcover	188	165
				9789811269264	Ebook	301	265
INFINITE DIMENSIONAL ANALYSIS, QUANTUM PROBABILITY AND RELATED TOPICS, QP38 - PROCEEDINGS OF THE INTERNATIONAL CONFERENCE	WATANABE NOBORU ET AL	TOKYO UNIV OF SCIENCE, JAPAN	30-Apr-23	9789811275982	Hardcover	128	115
				9789811275999	Ebook	205	180
DIGITAL ECONOMY AND COMPUTER APPLICATIONS - PROCEEDINGS OF THE 2ND INTERNATIONAL CONFERENCE	MANICKAM SELVAKUMAR	UNIV SAINS MALAYSIA, MALAYSIA	31-Jul-23	9789811270291	Hardcover	188	165
				9789811270307	Ebook	301	265
ECONOMIC MANAGEMENT AND BIG DATA APPLICATION - PROCEEDINGS OF THE 3RD INTERNATIONAL CONFERENCE	QALATI SIKANDAR ALI	JIANGSU UNIV, CHINA	31-Jul-23	9789811270260	Hardcover	188	165
				9789811270277	Ebook	301	265

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