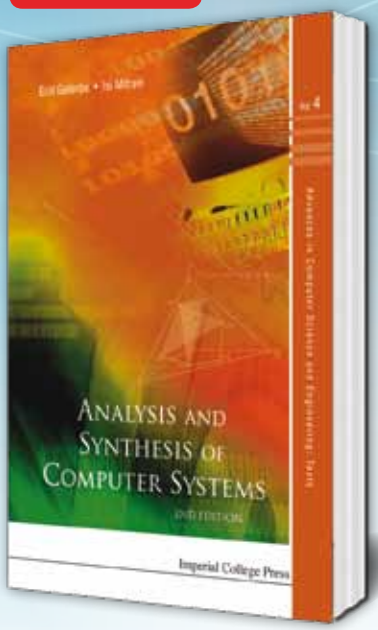
30 YEARS World Scientific 1981-2011

COMPUTER SCIENCE
TEXTBOOKS 2011 / 12

:: Bestseller



Advances in Computer Science and Engineering: Texts - Vol. 4

ANALYSIS AND SYNTHESIS OF COMPUTER SYSTEMS (2nd Edition)

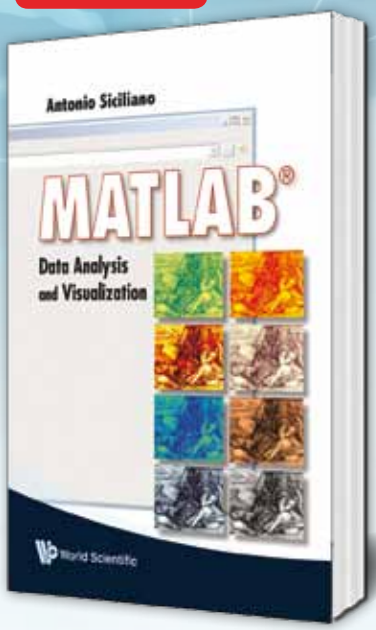
by **Erol Gelenbe** *(Imperial College, UK)* & **Isi Mitrani** *(University of Newcastle upon Tyne, UK)*

Analysis and Synthesis of Computer Systems presents a broad overview of methods that are used to evaluate the performance of computer systems and networks, manufacturing systems, and interconnected services systems. Aside from a highly readable style that rigorously addresses all subjects, this second edition includes new chapters on numerical methods for queueing models and on G-networks, the latter being a new area of queuing theory that one of the authors has pioneered.

Readership: Academic, students, professionals, telecommunications industry, operations management and industry.

324pp	**Apr 2010**	
978-1-84816-395-9	**US$99**	**£68**

:: Bestseller



MATLAB: Data Analysis and Visualization

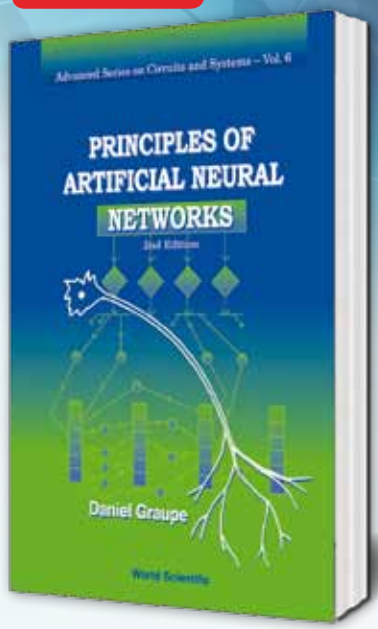
by **Antonio Siciliano** *(University of Bari, Italy)*

The book begins by looking at the main tools, in particular the Desktop, the Command and History Window, the Editor and the Help Browser. The selected number of functions, graphics objects, related properties and operators, considered fundamental in MATLAB, is a unique and remarkable feature of this book. These basic elements are minutely treated both formally and through examples. The arrangement of every data type as an array is another prominent emphasis of the book.

Readership: Undergraduate and graduate students, engineers and researchers in all science and technology fields.

296pp	**Oct 2008**	
978-981-283-554-3	**US$65**	**£36**
978-981-283-751-6(pbk)	**US$45**	**£25**

:: Bestseller



Advanced Series in Circuits and Systems - Vol. 6

PRINCIPLES OF ARTIFICIAL NEURAL NETWORKS (2nd Edition)

by **Daniel Graupe** *(University of Illinois, Chicago, USA)*

The book should serve as a text for a university graduate course or for an advanced undergraduate course on neural networks in engineering and computer science departments. Covering major neural network approaches and architectures with the theories, this text presents detailed case studies for each of the approaches, accompanied with complete computer codes and the corresponding computed results. The case studies are designed to allow easy comparison of network performance to illustrate strengths and weaknesses of the different networks.

Readership: Graduate and advanced senior students in electrical and computer engineering, computer science, biomedical engineering, systems analysts and data mining engineers.

320pp	**Apr 2007**	
978-981-270-624-9	**US$111**	**£76**

HIGHLIGHTS

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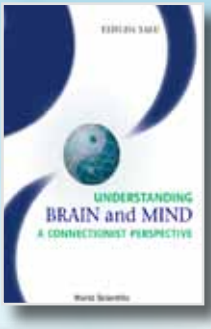
ICP Imperial College Press
www.icpress.co.uk



Artificial Intelligence

:: Highly Recommended

Advances in Computer Science and Engineering: Texts - Vol. 6

KNOWLEDGE MINING USING INTELLIGENT AGENTS

edited by **Satchidananda Dehuri** *(Fakir Mohan University, India)* & **Sung-Bae Cho** *(Yonsei University, Korea)*

By studying the behavior of swarm intelligence, this book aims to integrate the computational intelligence paradigm and intelligent distributed agents architecture to optimize various engineering problems and efficiently represent knowledge from the large gamut of data.

Readership: Researchers and professionals in the knowledge discovery industry.

324pp	**Dec 2010**	
978-1-84816-386-7	**US$89**	**£55**

:: Highly Recommended

Series in Machine Perception and Artificial Intelligence - Vol. 69

DATA MINING WITH DECISION TREES: Theory and Applications

by **Lior Rokach** *(Ben-Gurion University, Israel)* & **Oded Maimon** *(Tel-Aviv University, Israel)*

"… the book is a very useful and nice coverage of the field … It is highly recommendable for people who want to begin working in this field and need guidance to start into the large area of applying these methods." ***Zentralblatt MATH***

Readership: Researchers, graduate and undergraduate students in information systems, engineering, computer science, statistics and management.

264pp	**Dec 2007**	
978-981-277-171-1	**US$111**	**£76**

UNDERSTANDING BRAIN AND MIND: A Connectionist Perspective

by **Yehuda Salu** *(Howard University, USA)*

The connectionist model presented in this book provides tools for addressing such questions. Its nodes represent well-established biological facts combined with observations of the overall behaviors of the system. The model is based on comparing and contrasting brains, computers, and neural networks. It defines a framework for understanding the relationships between the brain and the mind. It can serve both as a starting point for developing Artificial Intelligence applications for all levels of mental activities and as a guide in the search for biological correlates of observed behaviors.

Readership: Upper level undergraduates, graduate students and researchers in artificial intelligence, neural networks and neurobiology.

252pp	**Nov 2001**	
978-981-02-4792-8	**US$98**	**£68**
978-981-02-4795-9(pbk)	**US$52**	**£36**

:: New

ARTIFICIAL BRAINS: An Evolved Neural Net Module Approach

by **Hugo de Garis** *(Xiamen University, China)*

This book explains how the author is building China's first artificial brain, using an evolved neural net module approach. These modules are evolved in special hardware very fast, each with its own little job. They are downloaded one by one into the memory of a supercomputer, and connected up according to the designs of human "BAs" (Brain Architects) to build artificial brains, which then control the hundreds of robots behaviors. Artificial brains could possibly be the missing piece of the puzzle that will make home robots more genuinely intelligent and useful. It is hence likely that by 2030, artificial brains will be one of the biggest industries in the world.

Readership: Undergraduate and graduate students in the field of artificial brain, artificial intelligence and robotics.

400pp	**Sep 2011**	
978-981-4304-27-6	**US$95**	**£65**
978-981-4304-29-0(ebook)	**US$124**	

:: New

NEW FRONTIERS IN EVOLUTIONARY ALGORITHMS: Theory and Applications

by **Hitoshi Iba** *(University of Tokyo, Japan)* & **Nasimul Noman** *(University of Tokyo, Japan)*

This book delivers theoretical and practical knowledge of Genetic Algorithms (GA) for the purpose of practical applications. It provides a methodology for a GA-based search strategy with the integration of several Alife and AI techniques, such as memetic concepts, swarm intelligence and foraging strategies. The development of such tools contributes to better optimizing methodologies when addressing tasks from areas such as robotics, financial forecasting and data mining in bioinformatics.

Readership: Undergraduates, postgraduates and researchers specialising in computer science, especially Genetic Algorithms (GA).

300pp	**Mar 2011**	
978-1-84816-681-3	**US$76**	**£47**

:: New

Atlantis Computational Intelligence Systems - Vol. 3

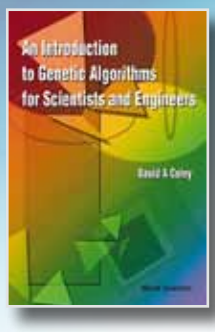
INTELLIGENCE FOR NONLINEAR DYNAMICS AND SYNCHRONISATION

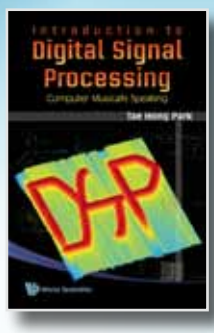
edited by **Kyandoghere Kyamakya** *(University of Klagenfurt, Austria)*, **Abdelhamid Bouchachia** *(University of Klagenfurt, Austria)*, & **Jean C Chedjou** *(University of Klagenfurt, Austria)*

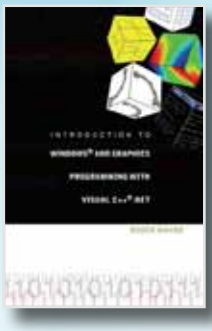
This volume summarizes the state-of-the-art of CI in the context of nonlinear dynamic systems and synchronization. Aiming at fostering new breakthroughs, the chapters in the book focus on theoretical, experimental and computational aspects of recent advances in nonlinear science intertwined with computational intelligence techniques. In addition, all the chapters have a tutorial-oriented structure.

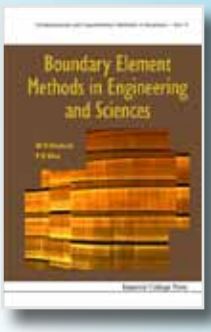
Readership: Academics and professionals working in the field of computational intelligence, control theory and artificial intelligence.

320pp	**Sep 2010**	
978-90-78677-33-8	**US$115**	**£76**







Advances in Natural Computation - Vol. 5

ADAPTATION AND EVOLUTION IN COLLECTIVE SYSTEMS

by **Akira Namatame** *(National Defense Academy, Japan)*

Self-contained and unified in presentation, this invaluable book provides a broad introduction to the fascinating subject of many-body collective systems with adapting and evolving agents. The coverage includes game theoretic systems, multi-agent systems, and large-scale socio-economic systems of individual optimizing agents.

Readership: Graduate students and advanced undergraduate students in computer science and economics, computer scientists, economists, physicists and other scientists keen in complex systems with many participants.

372pp	**Aug 2006**	
978-981-256-856-4	**US$125**	**£86**

:: Bestseller

AN INTRODUCTION TO GENETIC ALGORITHMS FOR SCIENTISTS AND ENGINEERS

by **David A Coley** *(University of Exeter)*

The approach taken is largely practical, with algorithms being presented in full and working code (in BASIC, FORTRAN, PASCAL AND C) included on a floppy disk to help the reader get up and running as quickly as possible. Student exercises are included at the end of several of the chapters, many of which are computer-based and designed to encourage exploration of the method.

Readership: Computer scientists and engineers.

244pp	**Jan 1999**	
978-981-02-3602-1	**US$41**	**£28**

Software Engineering/Design

:: Bestseller

INTRODUCTION TO DIGITAL SIGNAL PROCESSING: Computer Musically Speaking

by **Tae Hong Park** *(Tulane University, USA)*

"…Overall, Mr Park's introduction to the fundamentals of signal processing with emphasis on audio, written with a subtle, wry humor and an awareness of musical aesthetics, is an engaging and practical textbook for students and a practical reference for veterans as well." ***Computer Music Journal***

Readership: Undergraduate and graduate students, researchers and academics in digital audio and multimedia as well as music.

452pp	**Nov 2009**	
978-981-279-027-9	**US$96**	**£66**

:: Bestseller

INTRODUCTION TO WINDOWS® AND GRAPHICS PROGRAMMING WITH VISUAL C++®.NET (With CD-Rom)

by **Roger Mayne** *(University at Buffalo, State University of New York, USA)*

The step-by-step structure of each example in the book is described thoroughly and only standard Microsoft resources for graphics are required. Exercises at the end of each chapter provide opportunities to revisit and extend the tutorial examples. The project folders on the CD include complete program code for all examples.

Readership: Technical people including practicing engineers, engineering students and general readers learning C++.

352pp	**Aug 2005**	
978-981-256-455-9	**US$97**	**£67**
978-981-256-199-2(pbk)	**US$58**	**£40**

Series on Software Engineering and Knowledge Engineering - Vol. 6

OBJECT-ORIENTED SOFTWARE: DESIGN AND MAINTENANCE

by **Luiz Fernando Capretz** *(University of Western Ontario, Canada)* & **Miriam A M Capretz** *(University of Western Ontario, Canada)*

This is a textbook for a course in object-oriented software engineering at advanced undergraduate and graduate levels, as well as for software engineers. It discusses fundamental concepts and terminology on object-oriented software development, assuming little background on software engineering, and emphasizes design and maintenance rather than programming.

Readership: Undergraduate and graduate students in software engineering and computers.

288pp	**Sep 1996**	
978-981-02-2731-9	**US$56**	**£39**
978-981-238-285-6(pbk)	**US$34**	**£23**

Computational and Experimental Methods in Structures - Vol. 4

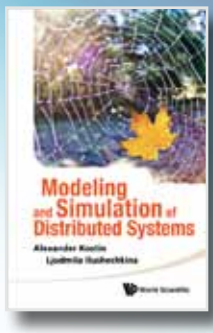
BOUNDARY ELEMENT METHODS IN ENGINEERING AND SCIENCES

by **M H Aliabadi** *(Imperial College, UK)* & **P Wen** *(Queen Mary University of London, UK)*

This book is designed to provide readers with a comprehensive and up-to-date account of the method and its application to problems in engineering and science. Each chapter provides a brief description of historical development, followed by basic theory, derivation and examples.

Readership: Graduate students, academics and researchers in engineering mechanics, materials engineering, mechanical engineering, and software engineering/programming.

450pp	**Oct 2010**	
978-1-84816-579-3	**US$124**	**£86**
978-1-84816-580-9(ebook)	**US$161**	



:: Bestseller

MATHEMATICAL TOOLS IN COMPUTER GRAPHICS WITH C# IMPLEMENTATIONS

by **Alexandre Hardy** *(University of Johannesburg, South Africa)* & **Willi-Hans Steeb** *(University of Johannesburg, South Africa)*

The book begins with a discussion of basic graphics tools such as vectors, matrices, and quaternions, and then builds up to more advanced topics such as the intersection of three-dimensional objects. Both classical and newer topics, such as parameterization, wavelets, fractals, and geometry images, are covered. In particular, the book contains all of the classes in C# necessary for computer graphics, providing a full explanation of the C# code and C# implementations for almost all algorithms.

Readership: Undergraduate, graduate students, researchers and programmers in computer graphics.

496pp	**Jan 2008**	
978-981-279-102-3	**US$125**	**£86**
978-981-279-103-0(pbk)	**US$82**	**£57**

:: Bestseller

SYSTEMS FOR ALL

by **Agnes Kaposi** *(Kaposi Associates, London)* & **Margaret Myers** *(The American International University, London)*

"I recommend this book to teachers and researchers as it provides a basis of an intellectual framework for systems engineering … I believe that this work will be a major contribution to the development of a systematic framework for systems engineering as the discipline becomes more mature." John McDermid, University of York

Readership: Undergraduate and postgraduate students in systems engineering, information technology and management; professionals working in these fields; general readers with an interest in systems.

388pp	**Jun 2001**	
978-1-86094-273-0	**US$73**	**£51**
978-1-86094-275-4(pbk)	**US$41**	**£28**

MATHEMATICAL TOOLS IN SIGNAL PROCESSING WITH C++ AND JAVA SIMULATIONS

by **Willi-Hans Steeb** *(University of Johannesburg, South Africa)*

"This book provides an excellent balance between theory and applications and can serve as a good textbook or a reference for students and beginners in signal processing. The materials of the book are presented in a self-contained way and can be easily understood at the undergraduate level. The provided C++ and Java codes are quite helpful for students and practitioners in signal processing and applied mathematics." ***Zentralblatt MATH***

Readership: Electronic engineers, computer scientists, physicists and mathematicians.

300pp	**Sep 2005**	
978-981-256-500-6	**US$121**	**£83**

C++ PROGRAMMING WITH APPLICATIONS IN ADMINISTRATION, FINANCE AND STATISTICS (Includes the Standard Template Library)

by **Willi-Hans Steeb** *(Rand Afrikaans University, South Africa)* & **Fritz Solms** *(Rand Afrikaans University, South Africa)*

This book gives a complete introduction to C++ and object-oriented programming. Additionally, it provides a large collection of C++ programs which are useful in finance, administration and statistics. The book contains more than 20 fully developed classes and more than 200 ready-to-run programs. The Standard Template Library is also included.

Readership: C and C++ programmers and developers, as well as computer science students.

548pp	**Feb 2000**	
978-981-02-4066-0	**US$98**	**£68**

Computer Systems

:: Highly Recommended

MODELING AND SIMULATION OF DISTRIBUTED SYSTEMS (With CD-ROM)

by **Alexander Kostin** *(Eastern Mediterranean University, Northern Cyprus)* & **Ljudmila Ilushechkina** *(Moscow Institute of Electronic Technology-Technical University, Russia)*

CD-ROM with a simulation system and numerous solved models is attached to the book. The book can be useful to academics who give related graduate courses or deliver research-oriented modules for graduate students. Containing a large number of models, with commented source texts and simulation results on the attached CD-ROM, it can also serve as valuable reference book for researchers who want to develop their own models in terms of Petri nets.

Readership: Advanced undergraduate and graduate students, academics and researchers in computer engineering; designers of distributed systems; developers of simulation models of complex information systems.

440pp	**Jun 2010**	
978-981-4291-67-5	**US$85**	**£56**

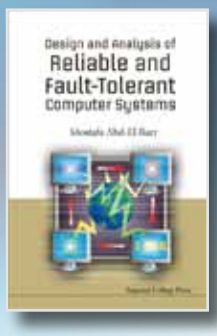
COMMUNICATION NETWORKS AND COMPUTER SYSTEMS: A Tribute to Professor Erol Gelenbe

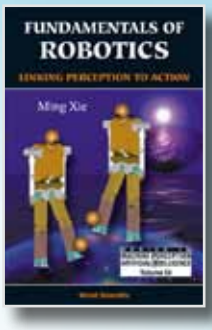
edited by **Javier A Barria** *(Imperial College London, UK)*

This volume contains contributions and presentations made by leading international researchers at a workshop which was held to honour Professor Erol Gelenbe on the occasion of his inaugural lecture as the Dennis Gabor Chair at Imperial College London.

Readership: Postgraduate and graduate students in computing and electrical & electronic engineering; computer and communication systems engineers.

276pp	**Jun 2006**	
978-1-86094-659-2	**US$107**	**£74**





DESIGN AND ANALYSIS OF RELIABLE AND FAULT-TOLERANT COMPUTER SYSTEMS

by **Mostafa Abd-El-Barr** *(Kuwait University, Kuwait)*

The book is divided into six parts to facilitate coverage of the material by course instructors and computer systems professionals. The sequence of chapters in each part ensures the gradual coverage of issues from the basics to the most recent developments. A useful set of references, including electronic sources, is listed at the end of each chapter.

Readership: Computer engineers, computer scientists, information scientists, graduate and senior undergraduate students in information science and computer engineering.

464pp	**Dec 2006**	
978-1-86094-668-4	**US$172**	**£118**
978-1-86094-890-9(ebook)	**US$224**	

Robotics

RAPID PROTOTYPING: Principles and Applications - Third Edition (with Companion CD-ROM)

by **C K Chua** *(Nanyang Technological University, Singapore)*, **K F Leong** *(Nanyang Technological University, Singapore)*, & **C S Lim** *(Nanyang Technological University, Singapore)*

"To date, this is the only published text on RP that can be recommended to undergraduate students. Whenever I start my students off on a project that involves RP, and they say 'what is RP?', this is the book I give them to read. This book is an excellent introduction to RP." ***Dr Ian Gibson, Co-Editor of Rapid Prototyping Journal, MCB Press, UK***

Readership: Diploma and advanced diploma students, undergraduates, postgraduates, consultants, academics and professionals in mechanical and industrial engineering.

540pp	**Jan 2010**	
978-981-277-897-0	**US$96**	**£63**
978-981-277-898-7(pbk)	**US$69**	**£46**

Series in Machine Perception and Artificial Intelligence - Vol. 54

FUNDAMENTALS OF ROBOTICS: Linking Perception to Action

by **Ming Xie** *(Singapore-MIT Alliance & Nanyang Technological University, Singapore)*

This book will guide you, the curious beginner, from yesterday to tomorrow. The book will cover practical knowledge in understanding, developing, and using robots as versatile equipment to automate a variety of industrial processes or tasks. But, the book will also discuss the possibilities we can look forward to when we are capable of creating a vision-guided, learning machine.

Readership: Upper-level undergraduates, graduates and researchers in robotics & automated systems, artificial intelligence, machine perception and computer vision.

716pp	**Apr 2003**	
978-981-238-313-6	**US$167**	**£115**
978-981-238-335-8(pbk)	**US$82**	**£57**

ADAPTIVE CONTROL OF ROBOT MANIPULATORS: A Unified Regressor-Free Approach

by **An-Chyau Huang** *(National Taiwan University of Science and Technology, Taiwan)* & **Ming-Chih Chien** *(National Taiwan University of Science and Technology, Taiwan)*

This book introduces an unified function approximation approach to the control of uncertain robot manipulators containing general uncertainties. It works for free space tracking control as well as compliant motion control. It is applicable to the rigid robot and the flexible joint robot. Even with actuator dynamics, the unified approach is still feasible. All these features make the book stand out from other existing publications.

Readership: Researchers, practitioners, and graduate students in the field of robot control.

276pp	**Apr 2010**	
978-981-4307-41-3	**US$99**	**£68**

:: New

INTELLIGENT VEHICLE: Perception, Decision and Action

by **Ming Xie** *(Nanyang Technological University, Singapore)*, **Hui Chen** *(Tongji University, China)*, & **Zhencheng Hu** *(Kumamoto University, Japan)*

This book provides a broad introduction to the three key modules behind the design and development of intelligent vehicles for the ultimate purpose of actively ensuring driving safety as well as preventing accidents from all possible causes. Self-contained and unified in presentation, the book explains in detail the fundamental solutions of vehicle perception, vehicle decision-making and vehicle action-taking in a pedagogic order.

Readership: Advanced undergraduate and graduate students in automotive engineering, mechanical engineering and computer science; researchers and practitioners in automotive industries.

300pp	**Apr 2011**	
978-981-4271-63-9	**US$88**	**£61**

World Scientific Series in Robotics and Intelligent Systems - Vol. 8

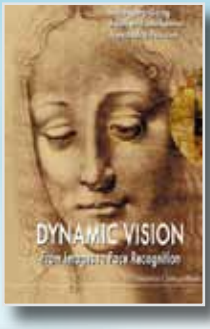
MODELLING AND SIMULATION OF ROBOT MANIPULATORS: A Parallel Processing Approach

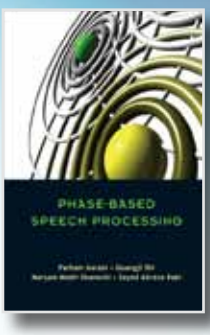
by **Albert Y Zomaya** *(The University of Western Australia)*

This book aims to describe how parallel computer architectures can be used to enhance the performance of robots, and their great impact on future generations of robots. It provides an in-depth, consistent and rigorous treatment of the topic. This book also includes "benchmark" results that can be used for the development of future work, or can serve as a basis for comparison with other work. In addition, it surveys useful material to aid readers in pursuing further research.

Readership: Engineers and computer scientists.

312pp	**Jan 1993**	
978-981-02-1043-4	**US$69**	**£47**





Pattern Recognition/Computer Vision

Series in Machine Perception and Artificial Intelligence - Vol. 32

INTRODUCTION TO PATTERN RECOGNITION

Statistical, Structural, Neural and Fuzzy Logic Approaches

by **Menahem Friedman** *(Nuclear Research Center-Negv, Israel)* & **Abraham Kandel** *(University of South Florida, USA & Tel-Aviv University, Israel)*

Most of the topics are accompanied by detailed algorithms and real world applications. In addition to statistical and structural approaches, novel topics such as fuzzy pattern recognition and pattern recognition via neural networks are also reviewed. The only prerequisites for using this book are a one-semester course in discrete mathematics and a knowledge of the basic preliminaries of calculus, linear algebra and probability theory.

Readership: Undergraduate and graduate students in computer science and related fields in science and technology.

344pp	**Mar 1999**	
978-981-02-3312-9	**US$54**	**£37**

Communications and Signal Processing - Vol. 4

AUDIO VISUAL PERSON TRACKING: A Practical Approach

by **Fotios Talantzis** *(Athens Information Technology, Greece)*, **Aristodemos Pnevmatikakis** *(Athens Information Technology, Greece)*, & **Anthony G Constantinides** *(Imperial College London, UK)*

This book deals with the creation of the algorithm backbone that enables a computer to perceive humans in a monitored space, by processing the signals that humans use in order to perform a task, i.e., audio and video. This book also focuses on implementation by providing MATLAB code for every presented component. This way, the reader can connect every presented concept with a corresponding piece of code that follows immediately after the theory.

Readership: Graduate students, academics and researchers in signal processing, machine perception/computer vision and electrical & electronic engineering.

250pp	**May 2011**	
978-1-84816-581-6	**US$56**	**£37**

A GENTLE INTRODUCTION TO SUPPORT VECTOR MACHINES IN BIOMEDICINE: Volume 1: Theory and Methods

by **Alexander Statnikov** *(New York University, USA)*, **Constantin F Aliferis** *(New York University, USA)*, **Douglas P Hardin** *(Vanderbilt University, USA)*, & **Isabelle Guyon** *(ClopiNet, USA)*

The purpose of this book is to introduce Support Vector Machines and their extensions and allow biomedical researchers to understand and apply them in real-life research in a very easy manner.

Readership: Biomedical researchers and healthcare professionals who would like to learn about SVMs and relevant bioinformatics tools but do not have the necessary technical background.

200pp	**Jan 2011**	
978-981-4324-38-0	**US$78**	**£48**

:: Bestseller

DYNAMIC VISION: From Images to Face Recognition

by **Shaogang Gong** *(Queen Mary and Westfield College)*, **Stephen J McKenna** *(University of Dundee)*, & **Alexandra Psarrou** *(University of Westminster)*

"The clear presentation style helps the reader to appreciate the painstaking work involved in making the automatic recognition of faces possible. The authors were successful in providing 'a coherent and unified treatment of the issue from a computational and systems perspective' and highly recommend the book to any researcher interested in face recognition or visual recognition in general." ***Cognitive Systems Research***

Readership: Researchers in image processing, computer vision, neural networks, artificial intelligence, pattern recognition, robotics and real-time systems.

364pp	**May 2000**	
978-1-86094-181-8	**US$71**	**£49**

PHASE-BASED SPEECH PROCESSING

by **Parham Aarabi** *(University of Toronto, Canada)*, **Guangji Shi** *(University of Toronto, Canada)*, **Maryam Modir Shanechi** *(Massachusetts Institute of Technology, USA)*, & **Seyed Alireza Rabi** *(University of Toronto, Canada)*

This is the first book that takes a detailed look at the importance of phase in the design of speech processing systems. Phase, in comparison with amplitude, is often ignored for speech recognition applications. Thus, this book highlights some of the important ways in which the phase of speech signals can be utilized for sound localization, enhancement, and recognition.

Readership: Academics, advanced undergraduates or graduate students in speech recognition and speech processing.

152pp	**Dec 2005**	
978-981-256-612-6	**US$65**	**£45**
978-981-256-613-3(pbk)	**US$36**	**£25**

DIGITAL VIDEO TRANSITION ANALYSIS AND DETECTION

by **Wei Jyh Heng** *(University of Western Australia & Laboratories for Information Technology, Australia & Singapore)* & **King N Ngan** *(University of Western Australia & Nanyang Technological University, Australia & Singapore)*

This book presents a comprehensive coverage of video transition analysis and detection, which is a critical technology in video indexing embodied in the recent MPEG-7 standard, defining the description interface for multimedia content. The book outlines a revolutionary system for automatic analysis and detection of transitions, which is not found in any other book.

Readership: Researchers and graduate students in multimedia and electrical & electronic engineering.

200pp	**Dec 2002**	
978-981-238-185-9	**US$60**	**£41**

Digital Security

BUILDING SECURE AND HIGH-PERFORMANCE SOFTWARE SYSTEMS

by **Issa Traore** *(University of Victoria, Canada)* & **Ahmed Awad E Ahmed** *(University of Victoria, Canada)*

The contribution of this book is two fold: bring to light a large body of knowledge on this issue and proposing basic techniques to build secure high-performance software systems. The first part focuses on performance requirements analysis for distributed software systems. The second part proposes a model-driven perspective on secure software engineering.

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

200pp	**Sep 2011**	
978-981-283-599-4	**US$81**	**£56**

Theoretical Computer Science

:: New

Series on Theoretical Computer Science - Vol. 1

THEORY OF RANDOMIZED SEARCH HEURISTICS

Foundations and Recent Developments

edited by **Anne Auger** *(INRIA, France)* & **Benjamin Doerr** *(Max-Planck-Institut für Informatik, Germany)*

This book covers both classical results and the most recent theoretical developments in the field of randomized search heuristics such as runtime analysis, drift analysis and convergence. Each chapter provides an overview of a particular domain and gives insights into the proofs and proof techniques of more specialized areas. Open problems still remain widely in randomized search heuristics — being a relatively young and vast field.

Readership: Advanced undergraduates and graduate students in computer science and mathematics; experts and non-experts interested in theory of randomized search heuristics.

360pp	**Feb 2011**	
978-981-4282-66-6	**US$98**	**£61**

Lecture Notes Series on Computing - Vol. 12

PLANAR GRAPH DRAWING

by **Takao Nishizeki** *(Tohoku University, Japan)* & **Md Saidur Rahman** *(Bangladesh University of Engineering and Technology, Bangladesh)*

Extensively illustrated and with exercises included at the end of each chapter, it is suitable for use in advanced undergraduate and graduate level courses on algorithms, graph theory, graph drawing, information visualization and computational geometry.

Readership: Upper-level undergraduates, graduate students, researchers, academics, lecturers, and professionals in theoretical computer science, combinatorics & graph theory and computer engineering.

312pp	**Sep 2004**	
978-981-256-033-9	**US$99**	**£68**

:: Highly Recommended

Mathematics, Computing, Language, and Life: Frontiers in Mathematical Linguistics and Language Theory - Vol. 1

PARSING SCHEMATA FOR PRACTICAL TEXT ANALYSIS

by **Carlos Gómez-Rodríguez** *(University of Corunna, Spain)*

The book presents a wide range of recent research results about parsing schemata, introducing formal frameworks and theoretical results while keeping a constant focus on applicability to practical parsing problems. The first part includes a general introduction to the parsing schemata formalism that contains the basic notions needed to understand the rest of the parts. Thus, this compendium can be used as an introduction to natural language parsing, allowing postgraduate students not only to get a solid grasp of the fundamental concepts underlying parsing algorithms, but also an understanding of the latest developments and challenges in the field.

Readership: Researchers, academics, professionals, postgraduate and advanced undergraduate students in computational linguistics, theoretical computer science and artificial intelligence.

292pp	**Jun 2010**	
978-1-84816-560-1	**US$89**	**£61**

A COURSE IN DISCRETE MATHEMATICAL STRUCTURES

by **L R Vermani** *(Kurukshetra University, India)* & **Shalini Vermani** *(Apeejay Institute of Management, India)*

This book provides a broad introduction to some of the most fascinating and beautiful areas of Discrete Mathematical Structures. It starts with a chapter on sets, before providing examples in logic, and a presentation on the Principal of Mathematical Introduction. Computational techniques are also provided, as well as a study on elementary properties of graphs, trees and lattices.

Readership: Undergraduate and graduate students and researchers in the field of computer science, computer engineering and mathematics.

500pp	**Apr 2011**	
978-1-84816-696-7	**US$120**	**£74**
978-1-84816-707-0(pbk)	**US$60**	**£37**

:: Bestseller

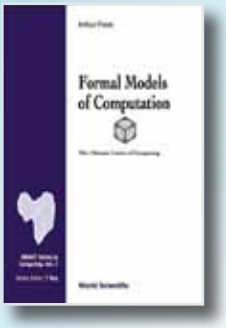
AN INTRODUCTION TO THE ANALYSIS OF ALGORITHMS

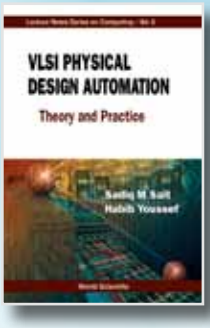
by **Michael Soltys** *(McMaster University, Canada)*

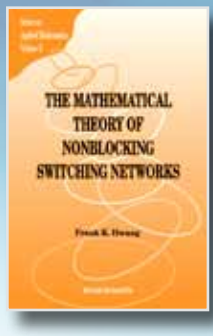
This textbook covers the mathematical foundations of the analysis of algorithms. The gist of the book is how to argue, without the burden of excessive formalism, that a given algorithm does what it is supposed to do. The two key ideas of the proof of correctness, induction and invariance, are employed in the framework of pre/post-conditions and loop invariants.

Readership: Undergraduate students in computer science, software engineers and mathematicians.

152pp	**Oct 2009**	
978-981-4271-40-0	**US$45**	**£34**







Amast Series in Computing - Vol. 7

FORMAL MODELS OF COMPUTATION: The Ultimate Limits of Computing

by **Arthur Fleck** *(University of Iowa, USA)*

"In this book, the author presents a comprehensive survey, suitable as a text for advanced undergraduates or beginning graduate students, of computation models that span the traditional range: finite state automata, pushdown automata, linear bounded automata, and Turing machines." ***Mathematical Reviews, 2002***

Readership: Undergraduate and graduate students in computer science.

548pp	**Mar 2001**	
978-981-02-4500-9	**US$99**	**£68**

DOMAIN-THEORETIC FOUNDATIONS OF FUNCTIONAL PROGRAMMING

by **Thomas Streicher** *(Technical University Darmstadt, Germany)*

This textbook provides a basis for a PhD course on domain-theoretic semantics of functional programming languages and their meta-mathematical properties. It introduces basic domain theory and the technique of logical relations as developed by Scott and Plotkin. The solution of recursive domain equations is explained in detail.

Readership: Graduate students of mathematics or computer science keen to specialize in theoretical computer science.

132pp	**Dec 2006**	
978-981-270-142-8	**US$37**	**£26**

:: Bestseller

Lecture Notes Series on Computing - Vol. 6

VLSI PHYSICAL DESIGN AUTOMATION: Theory and Practice

by **Sadiq M Sait** *(King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia)* & **Habib Youssef** *(King Fahd University of Petroleum & Minerals (KFUPM), Saudi Arabia)*

The book deals with all aspects of VLSI physical design, from partitioning and floorplanning to layout generation and silicon compilation; provides a comprehensive treatment of most of the popular algorithms; covers the latest developments and gives a bibliography for further research; offers numerous fully described examples, problems and programming exercises.

Readership: Final year undergraduate students in computer science, computer engineering and electrical engineering, as well as postgraduate students in VLSI design and design automation.

504pp	**Oct 1999**	
978-981-02-3883-4	**US$108**	**£75**

THEORY OF FORMAL LANGUAGES WITH APPLICATIONS

by **Dan Simovici** *(University of Massachusetts, Boston)* & **Richard L Tenney** *(University of Massachusetts, Boston)*

This book combines an algebraic approach with algorithmic aspects and decidability results and explores applications both within computer science and in fields where formal languages are finding new applications. It contains more than 600 graded exercises. While some are routine, many of the exercises are in reality supplementary material. Although the book has been designed as a text for graduate and upper-level undergraduate students, the comprehensive coverage of the subject makes it suitable as a reference for scientists.

Readership: Graduates and undergraduates in computer science, molecular and developmental biology.

644pp	**Jun 1999**	
978-981-02-3729-5	**US$108**	**£75**

AUTOMATA THEORY

by **Matthew Simon** *(San Jose State University)*

This book covers substantially the central ideas of a one semester course in automata theory. It is oriented towards a mathematical perspective that is understandable to non-mathematicians. Comprehension is greatly aided by many examples, especially on the Chomsky — Schützenberger theorem, which is not found in most books in this field. Special attention is given to semiautomata theory: the relationship between semigroups and sequential machines (including Green's relations), Schützenberger's maximal subgroup, von Neumann inverses, wreath products, transducers using matrix notation, shuffle and Kronecker shuffle products.

Readership: Colleges offering a good mathematics program.

440pp	**Apr 1999**	
978-981-02-3753-0	**US$97**	**£67**

Series on Applied Mathematics - Vol. 11

THE MATHEMATICAL THEORY OF NONBLOCKING SWITCHING NETWORKS

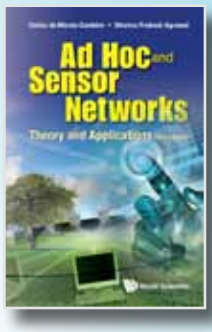
by **Frank K Hwang** *(National Chiao-Tung University)*

This is the first book to cover comprehensively the mathematical theory of nonblocking switching networks since Beneš' book published 30 years ago. Not only is the material on the classical theory of nonblocking and rearrangeable networks updated, but the modern topics on multicast and multirate switching are also surveyed. The author had spent more than 25 years working on switching networks at Bell Laboratories before he started teaching the course at Chiao-Tung University. He has published about 40 papers and obtained a dozen patents on multistage interconnection networks.

Contents: Nonblocking Networks; Rearrangeable Networks; Multicast Traffic; Multirate Networks.

Readership: Computer scientists.

160pp	**Sep 1998**	
978-981-02-3311-2	**US$41**	**£28**



Databases/Data Mining

Series in Machine Perception and Artificial Intelligence - Vol. 76

AUTOMATED DATABASE APPLICATIONS TESTING: Specification Representation for Automated Reasoning

by **Rana Farid Mikhail** *(University of South Florida, USA)*, **Donald Berndt** *(University of South Florida, USA)*, & **Abraham Kandel** *(University of South Florida, USA)*

This book introduces SpecDB, an intelligent database created to represent and host software specifications in a machine-readable format, based on the principles of artificial intelligence and unit testing database operations. SpecDB is demonstrated via two automated intelligent tools. The first automatically generates database constraints from a rule-base in SpecDB. The second is a reverse engineering tool that logs the actual execution of the program from the code.

Readership: Researchers and graduate students in database, software testing or software design courses.

212pp	**Jan 2010**	
978-981-283-728-8	**US$85**	**£58**

Science, Engineering, and Biology Informatics - Vol. 5

BIODATA MINING AND VISUALIZATION: Novel Approaches by Ilkka Havukkala

The latest novel approaches are explained in detail, their advantages and disadvantages are summarized, and pointers to the future development of new applications are given.

Readership: Advanced undergraduate and graduate students in bioinformatics, data mining, knowledge discovery, pattern recognition, genomics, systems biology, and biostatistics; biology researchers and biodata knowledge engineers.

324pp	**Jun 2010**	
978-981-279-036-1	**US$88**	**£61**

Series in Machine Perception and Artificial Intelligence - Vol. 61

DECOMPOSITION METHODOLOGY FOR KNOWLEDGE DISCOVERY AND DATA MINING: Theory and Applications

by **Oded Maimon** *(Tel-Aviv University, Israel)* & **Lior Rokach** *(Tel-Aviv University, Israel)*

This book provides an introduction to the field with an emphasis on advanced decomposition methods in general data mining tasks and for classification tasks in particular. The book presents a complete methodology for decomposing classification problems into smaller and more manageable sub-problems that are solvable by using existing tools. The various elements are then joined together to solve the initial problem.

Readership: Students and practitioners in information systems, engineering, computer science, statistics and management.

344pp	**May 2005**	
978-981-256-079-7	**US$99**	**£68**

World Scientific Series in Computer Science - Vol. 4

UNDERSTANDING AND LEARNING STATISTICS BY COMPUTER

by **M Yang** *(Florida)* & **D Robinson** *(St. Cloud State)*

This textbook provides an introduction to statistics for computer users or computer science undergraduates.

Readership: Computer scientists.

216pp	**Jun 1986**	
978-9971-5-0019-1	**US$76**	**£52**
978-9971-5-0091-7(pbk)	**US$38**	**£26**

Neural Networks/ Network Communications

:: New

Series in Machine Perception and Artificial Intelligence

INTEGRATION OF SWARM INTELLIGENCE AND ARTIFICIAL NEURAL NETWORK

edited by **Satchidananda Dehuri** *(Fakir Mohan University, India)*, **Susmita Ghosh** *(Jadavpur University, India)*, & **Sung-Bae Cho** *(Yonsei University, South Korea)*

This book provides a new forum for the dissemination of knowledge in both theoretical and applied research on swarm intelligence (SI) and artificial neural network (ANN).

Readership: Researchers, academics and graduate students in neural networks, machine vision, artificial intelligence, electrical & electronic engineering and industrial engineering.

400pp	**Jan 2011**	
978-981-4280-14-3	**US$111**	**£76**

:: New

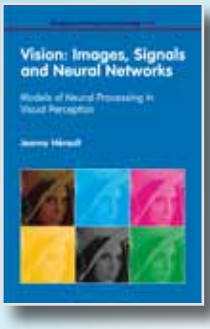
AD HOC AND SENSOR NETWORKS: Theory and Applications (2nd Edition)

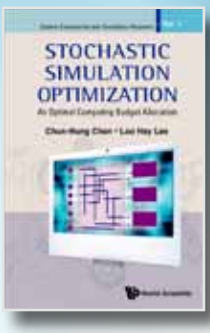
by **Carlos de Morais Cordeiro** *(Intel Corporation, USA)* & **Dharma Prakash Agrawal** *(University of Cincinnati, USA)*

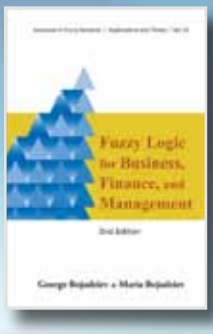
This book emphasizes that there is a major interdependence among various layers of the network protocol stack. Contrary to wired or even one-hop cellular networks, the lack of a fixed infrastructure, the inherent mobility, the wireless channel, and the underlying routing mechanism by ad hoc and sensor networks introduce a number of technological challenges that are difficult to address within the boundaries of a single protocol layer.

Readership: Researchers, developers and institutions keen in the applications of wireless devices, and graduate and senior undergraduate students in networking, computer engineering and electrical engineering.

600pp	**Mar 2011**	
978-981-4338-88-2	**US$98**	**£61**
978-981-4338-89-9(pbk)	**US$51**	**£32**







Progress in Neural Processing - Vol. 19

VISION: IMAGES, SIGNALS AND NEURAL NETWORKS

Models of Neural Processing in Visual Perception

by **Jeanny Hérault** *(University Joseph Fourier & Institut National Polytechnique of Grenoble, France)*

This book addresses the problem of human and computer vision on the basis of cognitive modeling. After recalling the physics of light and its transformation through media and optics, Hérault presents the principles of the primate's visual system in terms of anatomy and functionality. All along the book, many comparisons between the models and human perception are discussed as well as detailed applications to computer vision.

Readership: Students, teachers and researchers in human vision modeling.

308pp	**Mar 2010**	
978-981-4273-68-8	**US$65**	**£43**

SELECTED TOPICS IN COMMUNICATION NETWORKS AND DISTRIBUTED SYSTEMS

edited by **Sudip Misra** *(Indian Institute of Technology, Kharagpur, India)*, **Subhas Chandra Misra** *(Indian Institute of Technology, Kanpur, India)*, & **Isaac Woungang** *(Ryerson University, Canada)*

Communication networks and distributed system technologies are undergoing rapid advancements. The last few years have experienced a steep growth in research on different aspects in these areas. This review volume discusses important issues in selected emerging and matured topics in communication networks and distributed systems.

Readership: Undergraduates, graduates, instructors, researchers, engineers and strategists in the field of communication networks and distributed systems.

808pp	**Apr 2010**	
978-981-283-943-5	**US$168**	**£111**

RECONSTRUCTION OF CHAOTIC SIGNALS WITH APPLICATIONS TO CHAOS-BASED COMMUNICATIONS

by **Jiu Chao Feng** *(South China University of Technology, Guangzhou, China)* & **Chi Kong Tse** *(The Hong Kong Polytechnic University, Hong Kong)*

This book provides a systematic review of the fundamental theory of signal reconstruction and the practical techniques used in reconstructing chaotic signals. Specific applications of signal reconstruction methods in chaos-based communications are expounded in full detail, along with examples illustrating the various problems associated with such applications.

Readership: Advanced undergraduate and graduate students in electronic and communication engineering, physics, automatic control, and applied mathematics; non-experts interested in nonlinear science.

232pp	**Sep 2008**	
978-981-277-113-1	**US$82**	**£57**

General Computer Science

System Engineering and Operations Research - Vol. 1

STOCHASTIC SIMULATION OPTIMIZATION: An Optimal Computing Budget Allocation

by **Chun-Hung Chen** *(George Mason University, USA & National Taiwan University, Taiwan)* & **Loo Hay Lee** *(National University of Singapore, Singapore)*

Stochastic Simulation Optimization addresses the pertinent efficiency issue via smart allocation of computing resource in the simulation experiments for optimization, and aims to provide academic researchers and industrial practitioners with a comprehensive coverage of OCBA approach for stochastic simulation optimization.

Readership: Academics and professionals in the fields of stochastic analysis, systems and industrial engineering, probability and statistics, and computer science.

248pp	**Jun 2010**	
978-981-4282-64-2	**US$102**	**£70**

THE THEORY AND TECHNIQUE OF ELECTRONIC MUSIC

by **Miller Puckette** *(University of California, San Diego, USA)*

This is the first book to develop both the theory and the practice of synthesizing musical sounds using computers. Each chapter starts with a theoretical description of one technique or problem area and ends with a series of working examples (over 100 in all), covering a wide range of applications.

Readership: Graduate students, music composers, researchers, performers and music software enthusiasts.

348pp	**May 2007**	
978-981-270-077-3	**US$111**	**£76**

Advances in Fuzzy Systems-Applications and Theory - Vol. 23

FUZZY LOGIC FOR BUSINESS, FINANCE, AND MANAGEMENT (2nd Edition)

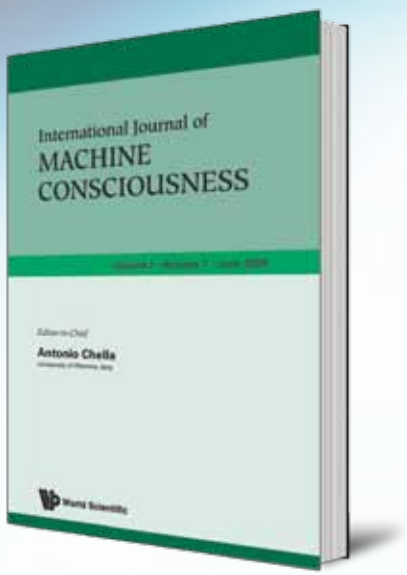
by **George Bojadziev** *(Simon Fraser University, Canada)* & **Maria Bojadziev** *(British Columbia Institute of Technology, Canada)*

This is truly an interdisciplinary book for knowledge workers in business, finance, management and socio-economic sciences based on fuzzy logic. It serves as a guide to and techniques for forecasting, decision making and evaluations in an environment involving uncertainty, vagueness, impression and subjectivity. Emphasis is on applications presented in the 27 case studies including Time Forecasting for Project Management, New Product Pricing, and Control of a Parasit-Pest System.

Readership: Researchers and students in fuzzy logic, neural networks, business, finance and management.

252pp	**Apr 2007**	
978-981-270-649-2	**US$121**	**£83**

:: Journals ::



International Journal of Machine Consciousness (IJMC)

http://www.worldscinet.com/ijmc/

About IJMC: Aims & Scope

The journal examines the theoretical foundations of conscious machines and analyzes current approaches to machine consciousness. It offers unity and visibility to a wide spread of research, which is now scattered throughout many diverse and often unrelated journals. The journal also allows a publication focus where scholars could present, compare and evaluate their work on machine consciousness both from the theoretical and technical side. Since the topic of machine consciousness is still highly controversial, each issue will endorse a blend of papers covering provocative theories as well as testable models. Machine consciousness is pursued for:

Implementing and designing machines resembling human beings (cognitive robotics)
Understanding the nature of consciousness (cognitive science)
Implementing and designing more efficient control systems
Machine consciousness is a field placed at the crossing between technical disciplines (AI, Robotics, Computer Science and Engineering), theoretical ones (Cognitive Science, Philosophy of Mind, Linguistics, Logic), and empirical ones (Psychology and Neuroscience). However, machine consciousness focuses mostly on attempts to use robots and informational machines as vehicles that advance various ways of understanding consciousness and examine the possible role of consciousness in the further development of such robots and other informational machines.

International Journal of Software Engineering and Knowledge Engineering (IJSEKE)

http://www.worldscinet.com/ijseke/

About IJSEKE: Aims & Scope

A central theme of this journal is the interplay between software engineering and knowledge engineering: how knowledge engineering methods can be applied to software engineering, and vice versa. 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.

Abstracting/Indexing

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CompuMath Citation Index® (CMCI®)
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DBLP Bibliography Server
io-port.net
Compendex
Computer Abstracts

Journal of Computational Acoustics (JCA)

http://www.worldscinet.com/jca/

About JCA: Aims & Scope

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

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CSA Aquatic Sciences and Fisheries Abstracts (ASFA)
CSA Oceanic Abstracts
CSA Selected Water Resources Abstracts
CSA Meteorological & Geoastrophysical Abstracts
Zentralblatt MATH

:: Journals ::

International Journal of Computational Geometry and Applications (IJCGA)

http://www.worldscinet.com/ijcga

About IJCGA: Aims & Scope

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 are also welcome.

Abstracting/Indexing

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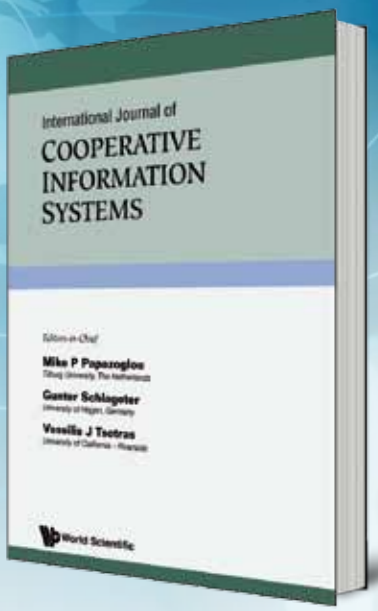

International Journal of Cooperative Information Systems (IJCIS)

http://www.worldscinet.com/ijcis

About IJCIS: Aims & Scope

The International Journal of Cooperative Information Systems (IJCIS) 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.

International Journal of Foundations of Computer Science (IJFCS)

http://www.worldscinet.com/ijfcs/

About IJFCS: Aims & Scope

The International Journal of Foundations of Computer Science is a bimonthly journal that publishes articles which contribute new theoretical results in all areas of the foundations of computer science. 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
Foundations of high-performance computing
Logic in computer science

Abstracting/Indexing

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