A. Adamatzky, University of the West of England, UK (Ed.)

Game of Life Cellular Automata

In the late 1960s British mathematician John Conway invented a virtual mathematical machine that operates on a two-dimensional array of square cell. Each cell takes two states, live and dead. The cells' states are updated simultaneously and in discrete time. A dead cell comes to life if it has exactly three live neighbours. A live cell remains alive if two or three of its neighbours are alive, otherwise the cell dies. Conway's Game of Life became the most programmed solitary game and the most known cellular automaton.

Features
► Simple to understand examples of cellular automata dynamics ► Abundance of illustrations, working examples, and codes ► Efficient techniques for evaluating space-time dynamics of discrete non-linear systems ► References to online interacting demonstrations ► Overview of exciting concepts at the edge of mathematics, computer science, engineering and physics

From the contents
1. Introduction to Cellular Automata and Conway's Game of Life.- Part I Historical.- 2. Conway's Game of Life: Early Personal Recollections.- 3. Conway's Life.- 4. Life's Still Lifes.- 5. A Zoo of Life Forms.- Part II Classical Topics.- 6. Growth and Decay in Life-Like Cellular Automata.- 7. The B36/S125 "2x2" Life-Like Cellular Automaton.- 8. Object Synthesis in Conway's Game of Life and other Cellular Automata.- 9. Gliders and Glider Guns Discovery in Cellular Automata.- 10. Constraint Programming to Solve Maximal Density Still Life.- Part III Asynchronous, Continuous and Memory-Enriched Automata.- 11. Larger than Life's Extremes: Rigorous Results for Simplified Rules and Speculation on the Phase Boundaries.- 12. RealLife.- 13. Variations on the Game of Life.

Fields of interest
Theory of Computation; Computation by Abstract Devices; Discrete Mathematics in Computer Science

Target groups
Research

Type of publication
Monograph

Due September 2010

2010. XVI, 621 p. 926 illus., 463 in color. Hardcover

► **€119,95 | £108.00**
► *** € (D) 128,35 | € (A) 131,95 | sFr 186,50**
ISBN 978-1-84996-216-2

M. R. Berthold, Konstanz University, Germany; **C. Borgelt**, European Center for Soft Computing, Mieres, Spain; **F. Höppner**, Ostfalia University of Applied Sciences, Wolfsburg, Germany; **F. Klawonn**, Ostfalia University of Applied Sciences, Wolfenbuettel, Germany

Guide to Intelligent Data Analysis

How to Intelligently Make Sense of Real Data

Each passing year bears witness to the development of ever more powerful computers, increasingly fast and cheap storage media, and even higher bandwidth data connections. This makes it easy to believe that we can now – at least in principle – solve any problem we are faced with so long as we only have enough data. Yet this is not the case. Although large databases allow us to retrieve many different single pieces of information and to compute simple aggregations, general patterns and regularities often go undetected. Furthermore, it is exactly these patterns, regularities and trends that are often most valuable. To avoid the danger of "drowning in information, but starving for knowledge" the branch of research known as data analysis has emerged, and a considerable number of methods and software tools have been developed. However, it is not these tools alone but the intelligent application of human intuition in combination with computational power, of sound background knowledge with computer-aided modeling, and of critical reflection with convenient automatic model construction, that results in successful intelligent data analysis projects.

Features
► Presents a broad-range of perspectives on data analysis, providing readers with a comprehensive account of the field ► Focuses on the practical aspects as well as presenting the theory comprehensively ► A special emphasis is given to put on pointing out the pitfalls that lead to wrong or insufficient analysis of results ► Hands-on examples are given to provide readers with further insight into the topic

Fields of interest
Artificial Intelligence (incl. Robotics)

Target groups
Graduate

Type of publication
Graduate/Advanced undergraduate textbook

Due August 2010

2010. XII, 397 p. (Texts in Computer Science, Volume 42) Hardcover

► **approx. € 69,95 | £55.00**
► **approx. * € (D) 74,85 | € (A) 76,95 | sFr 109,00**
ISBN 978-1-84882-259-7

R. Böhme, Technische Universität Dresden, Germany

Advanced Statistical Steganalysis

Steganography is the art and science of hiding information in inconspicuous cover data so that even the existence of a secret message is kept confidential, and steganalysis is the task of detecting secret messages in covers. This research monograph focuses on the role of cover signals, the distinguishing feature that requires us to treat steganography and steganalysis differently from other secrecy techniques. The main theoretical contribution of the book is a proposal to structure approaches to provably secure steganography according to their implied assumptions on the limits of the adversary and on the nature of covers. A further contribution is the emphasis on dealing with heterogeneity in cover distributions, crucial for security analyses. The author's work complements earlier approaches based on information, complexity, probability and signal processing theory, and he presents numerous practical implications. The scientific advances are supported by a survey of the classical steganography literature; a new proposal for a unified terminology and notation that is maintained throughout the book; a critical discussion of the results achieved and their limitations; and an assessment of the possibility of transferring elements of this research's empirical perspective to other domains in information security.

Features
► The first book dedicated to modern steganography and steganalysis ► The scientific advances are complemented by a survey of the classical steganography literature ► Author presents numerous practical implications of his work

From the contents
Introduction.- Principles of Modern Steganography and Steganalysis.- Towards a Theory of Cover Models.- Detection of Model-Based Steganography with First-Order Statistics.

Fields of interest
Image Processing and Computer Vision; Data Encryption; Signal, Image and Speech Processing

Target groups
Research

Type of publication
Monograph

Due August 2010

2010. XII, 285 p. (Information Security and Cryptography) Hardcover

► **approx. € 79,95 | £72.00**
► **approx. * € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-3-642-14312-0

P. Borba, Universidade Federal de Pernambuco, Recife, PE, Brazil; **A. Cavalcanti**, University of York, UK; **A. Sampaio**, Universidade Federal de Pernambuco, Recife, PE, Brazil; **J. Woodcook**, University of York, UK (Eds.)

Testing Techniques in Software Engineering

Second Pernambuco Summer School on Software Engineering, PSSE 2007, Recife, Brazil, December 3-7, 2007, Revised Lectures

This tutorial book presents an augmented selection of the material presented at the Second Pernambuco Summer School on Software Engineering, PSSE 2007, held in Receife, Brazil in December 2007.
The 8 contributions are the thoroughly revised versions of the papers presented by the invited lecturers. The revision was inspired by the synergy generated by the opportunity for the lecturers to present and discuss their work among themselves, and with the school's attendees. The courses cover a wide spectrum of topics in software engineering with a special focus on testing - a key activity for assuring software quality. Apart from foundational issues, languages and techniques, the courses also cover the semantic underpinnings of refinement, as well as industrial applications and refinement tools.

Features
► The book gives an detailed tutorial introduction to the scientific basis of testing
► This book is the outcome of Pernambuco Summer School on Software Engineering (PSSE) 2007, devoted to the study of computer science and to the promotion of international scientific collaboration ► includes state of the art contributions from invited lecturers

Fields of interest
Software Engineering; Programming Techniques; Programming Languages, Compilers, Interpreters

Target groups
Research

Type of publication
Graduate/Advanced undergraduate textbook

Due July 2010

2010. IX, 313 p. (Lecture Notes in Computer Science, Volume 6153) Softcover

► **€54,00 | £48.99**
► ***€ (D) 57,78 | € (A) 59,40 | sFr 84,00**
ISBN 978-3-642-14334-2

C. Care, University of Warwick, Coventry, UK

Technology for Modelling

Electrical Analogies, Engineering Practice, and the Development of Analogue Computing

Historians have different views on the core identity of analogue computing. Some portray the technology solely as a precursor to digital computing, whereas others stress that analogue applications existed well after 1940. Even within contemporary sources, there is a spectrum of understanding around what constitutes analogue computing.
To understand the relationship between analogue and digital computing, and what this means for users today, the history must consider how the technology is used. Technology for Modelling investigates the technologies, the concepts, and the applications of analogue computing. The text asserts that analogue computing must be thought of as not just a computing technology, but also as a modelling technology, demonstrating how the history of analogue computing can be understood in terms of the parallel themes of calculation and modelling. The book also includes a number of detailed case studies of the technology's use and application.

Features
► Suggests a new interpretation of the history of analogue computing, taking into account how the technology has been used and applied ► Demonstrates how the history of analogue computing can be understood in terms of the two parallel themes of calculation and modelling, and describes how the technology evolved ► Includes a number of detailed case studies examining analogue modelling in academic research, oil reservoir modelling, aeronautical design, and meteorology

Fields of interest
History of Computing; Simulation and Modeling

Target groups
Research

Type of publication
Monograph

Due August 2010

2010. XVIII, 203 p. 64 illus., 32 in color. (History of Computing) Hardcover

► **€79,95 | £59.95**
► ***€ (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-1-84882-947-3

Ò. Celma, BMAT, Barcelona, Spain

Music Recommendation and Discovery

The Long Tail, Long Fail, and Long Play in the Digital Music Space

With so much more music available these days, traditional ways of finding music have diminished. Today radio shows are often programmed by large corporations that create playlists drawn from a limited pool of tracks. Similarly, record stores have been replaced by big-box retailers that have ever-shrinking music departments. Instead of relying on DJs, record-store clerks or their friends for music recommendations, listeners are turning to machines to guide them to new music.In this book, Òscar Celma guides us through the world of automatic music recommendation. He describes how music recommenders work, explores some of the limitations seen in current recommenders, offers techniques for evaluating the effectiveness of music recommendations and demonstrates how to build effective recommenders by offering two real-world recommender examples. He emphasizes the user's perceived quality, rather than the system's predictive accuracy when providing recommendations, thus allowing users to discover new music by exploiting the long tail of popularity and promoting novel and relevant material ("non-obvious recommendations"). In order to reach out into the long tail, he needs to weave techniques from complex network analysis and music information retrieval.

Features
► Starts with a formalization of the general recommendation problem ► Presents the pros and cons of most-used recommendation approaches, with a focus on the music domain
► Combines elements from recommender systems, complex network analysis, music information retrieval, and personalization
► Emphasizes "user's perceived quality" versus "system's predictive accuracy"

Fields of interest
Information Storage and Retrieval; Discrete Mathematics in Computer Science; Artificial Intelligence (incl. Robotics)

Target groups
Graduate

Type of publication
Monograph

Due July 2010

2010. 208 p. Hardcover

► **€39,95 | £35.99**
► ***€ (D) 42,75 | € (A) 43,95 | sFr 62,00**
ISBN 978-3-642-13286-5

E. Champion, Massey University, Auckland, New Zealand

Playing with the Past

How can we increase awareness and understanding of other cultures using interactive digital visualizations of past civilizations? In order to answer the above question, this book first examines the needs and requirements of virtual travelers and virtual tourists. Is there a market for virtual travel? Erik Champion examines the overall success of current virtual environments, especially the phenomenon of computer gaming. Why are computer games and simulations so much more successful than other types of virtual environments? Arguments that virtual environments are impeded by technological constraints or by a paucity of evaluation studies can only be partially correct, for computer games and simulations are also virtual environments. Many of the underlying issues are caused by a lack of engagement with the philosophical underpinnings of culture, presence and inhabitation, and there are few exemplars that engage the public with history and heritage using interactive media in a meaningful and relevant manner.

Features
► There is very little concentrated literature on theory and practice in creating meaningful interaction in virtual environments, especially those designed to communicate heritage or history ► The book covers the gap between theory, the design and the evaluation of virtual places for learning, especially for history and heritage ► It will cover the gap between the theory, the design and the evaluation of virtual places for learning

Contents
1. Introducing Virtual Travel.- 2. Virtual Environments.- 3.Virtual Places.- 4. Cultural and Social Presence.- 5. Game-Style Interaction.- 6. Playing With The Past.- 7. Augmenting the Present With the Past.- 8. Evaluating Virtual Heritage.- 9. Conclusion.- Index.

Fields of interest
Computer Appl. in Social and Behavioral Sciences; Computer Appl. in Arts and Humanities; Media Design

Target groups
Research

Type of publication
Monograph

Due October 2010

2010. X, 238 p. 98 illus., 49 in color. (Human-Computer Interaction Series) Hardcover

► **approx. € 79,95 | £59.99**
► **approx. * € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-1-84996-500-2

V. Cortellessa, **A. Di Marco**, **P. Inverardi**, U L'Aquila, Italy

Model-Based Software Performance Analysis

Poor performance is one of the main quality-related shortcomings that cause software projects to fail. Thus, the need to address performance concerns early during the software development process is fully acknowledged, and there is a growing interest in the research and software industry communities towards techniques, methods and tools that permit to manage system performance concerns as an integral part of software engineering. Model-based software performance analysis introduces performance concerns in the scope of software modeling, thus allowing the developer to carry on performance analysis throughout the software lifecycle. With this book, Cortellessa, Di Marco and Inverardi provide the cross-knowledge that allows developers to tackle software performance issues from the very early phases of software development. They explain the basic concepts of performance analysis and describe the most representative methodologies used to annotate and transform software models into performance models. To this end, they go all the way from performance primers through software and performance modeling notations to the latest transformation-based methodologies.

Features
► Integrates performance modeling into the software development process ► Describes both the basic concepts of performance modeling and analysis, and state-of-the-art methodologies ► Self-contained textbook for courses on software performance

Contents
What is Software Performance Analysis.- Software Lifecycle and Software Performance.- Software Modeling Notations.- Performance Modeling Notations.- From Software Models to Performance Models.- Performance Model Solution and Results Interpretation.- Current Trends in Software Performance.

Fields of interest
Software Engineering; System Performance and Evaluation; Simulation and Modeling

Target groups
Professional/practitioner

Type of publication
Graduate/Advanced undergraduate textbook

Due September 2010

2010. 180 p. Hardcover

► **approx. € 54,95 | £49.99**
► **approx. * € (D) 58,80 | € (A) 60,45 | sFr 85,50**
ISBN 978-3-642-13620-7

M. Dastani, Department of Information and Computing Sciences, Utrecht, The Netherlands; **K. V. Hindriks**, Delft University of Technology, The Netherlands; **J. C. Meyer**, Department of Information and Computing Sciences, Utrecht, The Netherlands (Eds.)

Specification and Verification of Multi-agent Systems

Specification and Verification of Multi-agent Systems presents a coherent treatment of the area of formal specification and verification of agent-based systems with a special focus on verification of multi-agent programs. This edited volume includes contributions from international leading researchers in the area, addressing logical formalisms and techniques, such as model checking, theorem proving, and axiomatisations for (semi) automatic verification of agent-based systems.

Features
► Addresses diverse topics with known results to provide a useful tool for students, practitioners, researchers ► Ties together in a coherent conceptual framework most of the available results in this relevant area of research ► Includes contributions from international leading researchers in the area, addressing logical formalisms and techniques

From the contents
Using Theorem Proving to Verify Properties of Agent Programs.- The Refinement of Multi-Agent Systems.- Model Checking Agent Communication.- Directions for Agent Model Checking.- Model Checking Logics of Strategic Ability: Complexity.- Correctness of Multi-Agent Programs: A Hybrid Approach.- The Norm Implementation Problem in Normative Multi-Agent Systems.- A Verification Logic for Goal Agents.- Using the Maude Term Rewriting Language for Agent Development with Formal Foundations.- The Cognitive Agents Specification Language and Verification Environment.- A Temporal Trace Language for Formal Modelling and Analysis

Fields of interest
Software Engineering/Programming and Operating Systems; Artificial Intelligence (incl. Robotics); Mathematical Logic and Formal Languages

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. XVIII, 405 p. 200 illus., 100 in color. Hardcover

► **approx. € 99,35 | £90.00**
► **approx. * € (D) 106,30 | € (A) 109,29 | sFr 165,00**
ISBN 978-1-4419-6983-5

A. Dovier, University of Udine, Italy; **E. Pontelli**, New Mexiko State University, Las Cruces, NM, USA (Eds.)

A 25-Year Perspective on Logic Programming

Achievements of the Italian Association for Logic Programming, GULP

This book celebrates the 25th anniversary of GULP—the Italian Association for Logic Programming. Authored by Italian researchers at the leading edge of their fields, it presents a state-of-the-art survey of logic programming, making it a useful reference for both researchers and students. The volume contains 14 invited papers, each giving a detailed analysis of a specific field of logic programming and providing both a historical perspective and a precise discussion of current research. The book closes with a chapter reviewing in detail the main applications of logic programming developed in Italian researchers in the last 25 years, illustrating successful work done and potential directions for future developments.

Features
► Celebrating the 25th anniversary of GULP – the Italian Association for Logic Programming ► Authored by italian researchers at the leading edge of their fields ► A state-of-the-art survey of logic programming

From the contents
Logic Programming in Italy: A Historical Perspective.-Theoretical Foundations and Semantics of Logic Programming.- Theory-Specific Automated Reasoning .- Constraint Logic Programming.- Knowledge Representation and Non-monotonic Reasoning .- The Transformational Approach to Program Development.- Static Analysis, Abstract Interpretation and Verification in (Constraint Logic) Programming.- Answer Set Programming.- Logic Programming Languages for Databases and the Web.

Fields of interest
Mathematical Logic and Formal Languages; Logics and Meanings of Programs; Programming Techniques

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. XIV, 329 p. (Lecture Notes in Computer Science / Programming and Software Engineering, Volume 6125) Softcover

► **€54,00 | £48.99**
► *** € (D) 57,78 | € (A) 59,40 | sFr 84,00**
ISBN 978-3-642-14308-3

G. Elia, University of Salento, Lecce, Italy; **A. Poce**, Università Roma Tre, Italy (Eds.)

Open Networked "i-Learning"

Models and Cases of "Next-Gen" Learning

A new overall interdisciplinary framework called "i learning" integrates managerial organization and technology aspects also known as "technology enhanced learning". Open Networked i Learning: Models and Cases of "Next-Gen" Learning begins its investigation with the important changes that have recently occurred within the management, technology and society fields. Social and cultural aspects of society that influence the "dynamics" and the "styles" of the learning processes are presented as well. The last section of this edited volume focuses on possible future scenarios of the learning processes by describing the main models, processes, tools, technologies, and involved organizations. Open Networked i Learning: Models and Cases of "Next-Gen" Learning is suitable for advanced under- and graduate level students and professors concentrating on computer science, engineering and business management as a secondary text or reference book. Professionals and researchers who work in the related industry of "technology enhanced learning "will find this book useful as well.

Features
► This is the first available book that specifically focuses on "i Learning" ► Includes descriptive case studies that describe how the "i-Learning" framework has been instanced and implemented ► Presents social and cultural aspects of society that influence the "dynamics" and the "styles" of the learning processes

Contents
Introduction.- Chapter 1 – The emerging of the "i-Learning" paradigm.- Chapter 2 – Collaborative i-Learning.- Chapter 3 – Problem Based i-Learning.- Chapter 4 – Case Based i-Learning.- Chapter 5 – Networked i-learning.- Chapter 6 – Future i-Learning.- Conclusions.- Bibliography.- Index.

Fields of interest
Computer Appl. in Social and Behavioral Sciences; Information Systems Applications (incl.Internet); Computer Systems Organization and Communication Networks

Target groups
Professional/practitioner

Type of publication
Monograph

Due September 2010

2010. 195 p. Hardcover

► **approx. € 73,40 | £66.99**
► **approx. * € (D) 78,54 | € (A) 80,74 | sFr 114,00**
ISBN 978-1-4419-6853-1

E. Estrada, **M. Fox**, **D. J. Higham**, **G. Oppo**, University of Strathclyde, Glasgow, UK (Eds.)

Network Science

Complexity in Nature and Technology

Network Science is the emerging field concerned with the study of large, realistic networks.
This interdisciplinary endeavor, focusing on the patterns of interactions that arise between individual components of natural and engineered systems, has been applied to data sets from activities as diverse as high-throughput biological experiments, online trading information, smart-meter utility supplies, and pervasive telecommunications and surveillance technologies.
This unique text/reference provides a fascinating insight into the state of the art in network science, highlighting the commonality across very different areas of application and the ways in which each area can be advanced by injecting ideas and techniques from another. The book includes contributions from an international selection of experts, providing viewpoints from a broad range of disciplines. It emphasizes networks that arise in nature–such as food webs, protein interactions, gene expression, and neural connections–and in technology–such as finance, airline transport, urban development and global trade.

Features
► Presents a broad, topical overview of the new and emerging discipline of network science ► Provides viewpoints from disciplines as varied as computer science, mathematics, engineering, physics, chemistry, biology, ecology, neuroscience, epidemiology, and the social sciences ► Includes contributions from an international selection of experts

Fields of interest
Computer Communication Networks; Analysis; Algorithm Analysis and Problem Complexity

Target groups
Research

Type of publication
Contributed volume

Due September 2010

2010. XVIII, 248 p. Hardcover

► **approx. € 79,95 | £59.95**
► **approx. * € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-1-84996-395-4

J. Feng, University of Warwick, Coventry, UK; **W. Fu**, Michigan State University, East Lansing, MI, USA; **F. Sun**, University of Southern California, Los Angeles, CA, USA (Eds.)

Frontiers in Computational and Systems Biology

This unique volume surveys state-of-the-art research on statistical methods in molecular and systems biology, with contributions from leading experts in the field. Each chapter discusses theoretical aspects, applications to biological problems, and possible future developments. Topics and features: presents the use of thermodynamic models to analyze gene regulatory mechanisms; reviews major algorithms for RNA secondary structure prediction; discusses developments in the area of oligo arrays; examines the application of models of stochastic processes in nonequilibrium thermodynamics and biological signal transduction; describes phylogenetic footprinting methods for TFBS identification; introduces penalized regression-based methods for constructing genetic interaction or regulatory networks; investigates the specific role played by irreversible Markov processes in modeling cellular biochemical systems; explores the concept of gene modules in a transcriptional regulatory network.

Features
► Reviews the current hot topics in computational biology and system biology, using probability and statistics as mathematical tools
► With contributions by towering figures in the field from across the globe, including Prof. Michael Waterman and Prof. Terry Speed

Fields of interest
Computational Biology/Bioinformatics; Systems Biology; Statistics and Computing/Statistics Programs

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. XXV, 24 p. 186 illus., 93 in color. (Computational Biology, Volume 15) Hardcover

► **€99,95 | £90.00**
► ***€ (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-1-84996-195-0

B. Furht, Florida Atlantic University, Boca Raton, FL, USA (Ed.)

Handbook of Social Network Technologies and Applications

Social networking is a concept that has existed for a long time; however, with the explosion of the Internet, social networking has become a tool for people to connect and communicate in ways that were impossible in the past. The recent development of Web 2.0 has provided many new applications, such as Myspace, Facebook, and LinkedIn. The purpose of Handbook of Social Networks: Technologies and Applications is to provide comprehensive guidelines on the current and future trends in social network technologies and applications in the field of Web-based Social Networks. This handbook includes contributions from world experts in the field of social networks from both academia and private industry. A number of crucial topics are covered including Web and software technologies and communication technologies for social networks. Web-mining techniques, visualization techniques, intelligent social networks, Semantic Web, and many other topics are covered. Standards for social networks, case studies, and a variety of applications are covered as well.

Features
► Provides current and future trends in creating intelligent social networks, and the main players and their social networks applications
► Presents web-mining techniques, visualization techniques, social networks and Semantic Web, and many other topics ► Includes contributions from world experts in the field of social networks from both academia and private industry
► Presents standards for social networks, case studies, and a variety of applications

Fields of interest
Management of Computing and Information Systems; Information Systems Applications (incl. Internet); Computer Systems Organization and Communication Networks

Target groups
Research

Type of publication
Handbook

Due October 2010

2011. X, 650 p. 100 illus., 50 in color. Hardcover

► **approx. € 147,50 | £132.50**
► **approx. * € (D) 157,83 | € (A) 162,25 | sFr 229,00**
ISBN 978-1-4419-7141-8

J. Fürnkranz, Technische Universität Darmstadt, Darmstadt, Germany; **E. Hüllermeier**, Philipps-Universität Marburg, Germany (Eds.)

Preference Learning

The topic of preferences is a new branch of machine learning and data mining, and it has attracted considerable attention in artificial intelligence research in previous years. It involves learning from observations that reveal information about the preferences of an individual or a class of individuals. Representing and processing knowledge in terms of preferences is appealing as it allows one to specify desires in a declarative way, to combine qualitative and quantitative modes of reasoning, and to deal with inconsistencies and exceptions in a flexible manner. And, generalizing beyond training data, models thus learned may be used for preference prediction. This is the first book dedicated to this topic, and the treatment is comprehensive. The editors first offer a thorough introduction, including a systematic categorization according to learning task and learning technique, along with a unified notation. The first half of the book is organized into parts on label ranking, instance ranking, and object ranking; while the second half is organized into parts on applications of preference learning in multiattribute domains, information retrieval, and recommender systems.

Features
► This is the first book dedicated to this topic
► This topic has attracted considerable attention in artificial intelligence research in recent years
► A comprehensive treatment

Fields of interest
Artificial Intelligence (incl. Robotics); Data Mining and Knowledge Discovery

Target groups
Research

Type of publication
Monograph

Due October 2010

2010. VIII, 454 p. Hardcover

► **approx. € 99,95 | £90.00**
► **approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-3-642-14124-9

D. M. Gabbay, **O. T. Rodrigues**, King's College London, UK; **A. Russo**, Imperial College London, UK

Revision, Acceptability and Context

Theoretical and Algorithmic Aspects

An important aspect in the formalisation of common-sense reasoning is the construction of a model of what an agent believes the world to be like to help in her reasoning process. This model is often incomplete or inaccurate, but new information can be used to refine it. The study of techniques that achieve this in a rational way is the task of the discipline of belief revision, with which this book is concerned. There are three key elements to the book's approach. Firstly, the methodology of logic by translation. A specific instance of this is the idea of revision by translation. Revision for a foreign logic is done via its translation into a well-known logic, usually classic logic. Secondly, the technique of meta-level/object-level movement, where we bring some operation defined at the meta-level of a logic into its object level. In this book, we bring the operation of deletion to the object level. Finally, through Labelled Deductive Systems, we use the context of the revision to fine-tune its operation and illustrate the idea through the presentation of various algorithms.

Features
► This is the most-up-to-date book on this topic ► The book is suitable for researchers and postgraduates in the areas of artificial intelligence, database theory, and logic ► The authors illustrate the idea through the presentation of various algorithms

Contents
Background and Overview.- Introducing Revision Theory.- Stepwise Revision Operations.- Iterating Revision.- Structured Revision.- Algorithmic Context Revision.- Revision by Translation.- Object-Level Deletion.- Conclusions and Discussions.- List of Symbols.- Subject Index

Fields of interest
Artificial Intelligence (incl. Robotics); Database Management

Target groups
Research

Type of publication
Monograph

Due August 2010

2010. VI, 385 p. (Cognitive Technologies) Hardcover

► **approx. € 99,95 | £90.00**
► **approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-3-642-14158-4

L. Gavrilovska, Ss. Cyril and Methodius University of Skopje, Macedonia; **S. Krco**, Ericsson Ireland Research Centre, Athlone, County Westmeath, Ireland; **V. Milutinovic**, University of Belgrade, Serbia; **I. Stojmenovic**, University of Ottawa, ON, Canada; **R. Trobec**, Jožef Stefan Institute, Ljubljana, Slovenia (Eds.)

Application and Multi-disciplinary Aspects of Wireless Sensor Networks

Concepts, Integration, and Case Studies

It is a general trend in computing that computers are becoming ever smaller and ever more interconnected. Sensor networks – large networks of small, simple devices – are a logical extreme of this trend. Wireless sensor networks (WSNs) are attracting an increasing degree of research interest, with a growing number of industrial applications starting to emerge. Two of these applications, personal health monitoring and emergency/disaster recovery, are the focus of the European Commission project ProSense: Promote, Mobilize, Reinforce and Integrate Wireless Sensor Networking Research and Researchers. This hands-on introduction to WSN systems development presents a broad coverage of topics in the field, contributed by researchers involved in the ProSense project. An emphasis is placed on the practical knowledge required for the successful implementation of WSNs. Divided into four parts, the first part covers basic issues of sensors, software, and position-based routing protocols. Part two focuses on multidisciplinary issues, including sensor network integration, mobility aspects, georouting, medical applications.

Features
► Provides a broad overview of WSN technology, and a basic introduction to related fields
► Includes an extensive case studies section
► Reviews the frameworks for WSN systems integration, through which WSN technology is to become one of the backbones of the Future Internet concept ► Covers real-life applications of WSN systems in medical and vehicular sensor networks

Fields of interest
Computer Communication Networks

Target groups
Graduate

Type of publication
Contributed volume

Due October 2010

2011. VI, 310 p. (Computer Communications and Networks) Hardcover

► **€79,95 | £59.95**
► *** € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-1-84996-509-5

D. Hamlet, Camas, WA, USA

Composing Software Components

A Software-testing Perspective

Software components and component-based software development (CBSD) are acknowledged as the best approach for constructing quality software at reasonable cost. Composing Software Components: A Software-testing Perspective describes a 10-year investigation into the underlying principles of CBSD.

Features
► Provides more than a dozen revealing case studies of component synthesis ► Includes supporting software (written in Perl for Linux, Mac, and Windows) with tutorial examples and data for the replication of experiments ► Presents an original, fundamental theory of component composition based on software testing rather than proof-of-programs

From the contents
Introduction.- Part I Components and Component-based Development.- Engineering, Components, and Software.- Software Components and Component-based Development.- CBSD in Practice and Theory.- Part II Software Testing: Practice and Theory.- Software Testing's Place in Development.- Software Testing Theory.- Subdomain Testing.- Part III Composition of Components.- Subdomain Theory of Stateless Component Composition.- Tutorial Example – SYN Tools for Stateless Components.- Persistent State.- Concurrent Execution.- The Other Non-functional Property: Reliability.- Part IV Supporting Tools.- CBSD Support Tools.- Tool Implementation.- Debugging Components, Component-based Systems, and Support Tools.- Unfinished Business: Volunteer Tool Makers.- Part V Case Studies.- Accuracy of Component Measurements and System Predictions.- Case Studies of I-CBSD.- Part VI Implications for Software Testing Unit vs. System Testing.- Functional vs. Non-functional Properties.- Conclusion: Lessons Learned from I-CBSD.

Fields of interest
Computer-Aided Engineering (CAD, CAE) and Design; Models and Principles; Performance and Reliability

Target groups
Research

Type of publication
Monograph

Due September 2010

2010. XVIII, 368 p. 100 illus., 50 in color. Hardcover

► **approx. € 95,60 | £86.00**
► **approx. * € (D) 102,29 | € (A) 105,16 | sFr 148,50**
ISBN 978-1-4419-7147-0

C. Hazay, **Y. Lindell**, Bar Ilan University, Israel

Efficient Secure Two-Party Protocols

Techniques and Contructions

The authors present a comprehensive study of efficient protocols and techniques for secure two-party computation. They study both general constructions that can be used to securely compute any functionality, and protocols for specific problems of interest. The aim of the book is to focus on techniques for both constructing protocols and proving them secure. In addition, the authors study the different definitional paradigms used and compare the efficiency of protocols achieved under these different definitions. This book is essential for practitioners and researchers in the field of secure protocols, particularly those with a focus on efficiency, and for researchers in the area of privacy-preserving data mining.

Features
► Essential reading for researchers in the area of secure protocols ► The authors compare the efficiencies of different protocols ► Essential reading for researchers in the area of privacy-preserving data mining

Contents
Introduction.- Definitions.- Semi-honest Adversaries.- Malicious Adversaries.- Covert Adversaries.- Sigma Protocols and Efficient Zero-Knowledge.- Oblivious Transfer and Applications.- The k-th Ranked Element.- Search Problems.- References.- Index.

Fields of interest
Data Structures, Cryptology and Information Theory; Computer Communication Networks; Data Mining and Knowledge Discovery

Target groups
Research

Type of publication
Monograph

Due September 2010

2010. VIII, 265 p. (Information Security and Cryptography) Hardcover

► **approx. € 79,95 | £72.00**
► **approx. * € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-3-642-14302-1

A. G. Hoekstra, **J. Kroc**, **P. M. Sloot** (Eds.)

Simulating Complex Systems by Cellular Automata

Deeply rooted in fundamental research in Mathematics and Computer Science, Cellular Automata (CA) are recognized as an intuitive modeling paradigm for Complex Systems. Already very basic CA, with extremely simple micro dynamics such as the Game of Life, show an almost endless display of complex emergent behavior. Conversely, CA can also be designed to produce a desired emergent behavior, using either theoretical methodologies or evolutionary techniques. Meanwhile, beyond the original realm of applications - Physics, Computer Science, and Mathematics – CA have also become work horses in very different disciplines such as epidemiology, immunology, sociology, and finance.

Features
► A well balance and up-to-date introduction to both foundations and applications ► Edited and authored by leading researchers in the field ► Excellent starting point for own research for newcomers to the field

Contents
Theory of Cellular Automata.- Applications.- Cellular Automata Software.

Fields of interest
Simulation and Modeling; Statistical Physics, Dynamical Systems and Complexity; Computational Science and Engineering

Target groups
Research

Type of publication
Monograph

Due July 2010

2010. XXI, 384 p. (Understanding Complex Systems) Hardcover

► **€119,95 | £108.00**
► *** € (D) 128,35 | € (A) 131,95 | sFr 186,50**
ISBN 978-3-642-12202-6

H. Isomäki, University of Jyväskylä, Finland; **S. Pekkola**, Tampere University of Technology, Finland (Eds.)

Reframing Humans in Information Systems Development

Modern society has been transformed by the digital convergence towards a future where technologies embed themselves into the fabric of everyday life. This ongoing merging of social and technological infrastructures provides and necessitates new possibilities to renovate past notions, models and methods of information systems development that accommodates humans as actors within the infrastructure. This shift introduces new possibilities for information systems designers to fulfil more and more everyday functions, and to enhance their value and worth to the user. Reframing Humans in Information Systems Development aims to reframe the phenomenon of human-centered development of information systems by connecting scientific constructs produced within the field of information systems which has recently provided a plethora of multidisciplinary user views, without explicitly defining clear constructs that serve the IS field in particular.

Features
► Provides a comprehensive overview of the perceptions of the end-users in different ISD methods and approaches. ► Reduces the current detached viewpoints of human-centred ISD by synthesizing and concentrating on the most essential viewpoints. ► Offers conceptualisations that serve as key constructs for theory development in information systems science and thus promotes grounds for multi-perspective theory development within the field of IS

Fields of interest
User Interfaces and Human Computer Interaction; Computer Appl. in Social and Behavioral Sciences; History of Computing

Target groups
Research

Type of publication
Reference work

Due September 2010

2011. XII, 300 p. 32 illus. (Computer Supported Cooperative Work, Volume 201) Hardcover

► **€99,95 | £79.95**
► *** € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-1-84996-346-6

I. Koch, Johann Wolfgang Goethe University, Frankfurt am Main, Germany; **W. Reisig**, Humboldt-University Berlin, Germany; **F. Schreiber**, Martin Luther University, Halle-Wittenberg, Germany (Eds.)

Modeling in Systems Biology

The Petri Net Approach

The emerging, multi-disciplinary field of systems biology is devoted to the study of the relationships between various parts of a biological system, and computer modeling plays a vital role in the drive to understand the processes of life from an holistic viewpoint. Advancements in experimental technologies in biology and medicine have generated an enormous amount of biological data on the dependencies and interactions of many different molecular cell processes, fueling the development of numerous computational methods for exploring this data. The mathematical formalism of Petri net theory is able to encompass many of these techniques. This essential text/reference presents a comprehensive overview of cutting-edge research in applications of Petri nets in systems biology, with contributions from an international selection of experts. Those unfamiliar with the field are also provided with a general introduction to systems biology, the foundations of biochemistry, and the basics of Petri net theory. Further chapters address Petri net modeling techniques for building and analyzing biological models, as well as network prediction approaches, before reviewing the applications to networks of different biological classification.

Features
► Presents a comprehensive overview of cutting-edge research in applications of Petri nets in systems biology ► Enables readers to apply and develop their own biochemical models using Petri net techniques ► Contains a glossary of the concepts and notation used in the book, in addition to exercises at the end of each chapter

Fields of interest
Computational Biology/Bioinformatics; Systems Biology

Target groups
Research

Type of publication
Contributed volume

Due November 2010

2010. XX, 368 p. (Computational Biology, Volume 16) Hardcover

► **approx. € 99,95 | £79.95**
► **approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-1-84996-473-9

R. J. Lipton, Georgia Institute of Technology, Atlanta, GA, USA

The P=NP Question and Gödel's Lost Letter

The P=NP question is one of the great problems of science, which has intrigued computer scientists and mathematicians for decades. Despite the abundant research in theoretical computer science regarding the P=NP question, it has not been solved.

Features
► A cutting edge discussion of the "The P=NP Question" ► Includes free access to the author's blog "The P=NP Question" ► "This is a much needed treatment of great open problem computing," states Richard Demillo, Professor, Georgia Institute of Technology

From the contents
Part I A Prologue.- A Walk In the Snow.- Part II On the P=NP Question.- Algorithms: Tiny Yet Powerful.- Is P=NP Well Posed?.- What Would You Bet?.- What Happens What P=NP Is Resolved?.- NP Too Big or P Too Small?. - How To Solve P=NP?.- Why Believe P Not Equal To NP?.- A Nightmare About SAT.- Bait and Switch.- Who's Afraid of Natural Proofs?.- An Approach To P=NP.- Is SAT Easy?.- SAT is Not Too Easy.- Ramsey's Theorem and NP.- Can They Do That?.- Rabin Flips a Coin.- A Proof We All Missed.- Barrington Gets Simple.- Exponential Algorithms.- An EXPSPACE Lower Bound.- Randomness has Unbounded Power.- Counting Cycles and Logspace.- Ron Graham Gives a Talk.- An Approximate Counting Method.- Easy and Hard Sums.- How To Avoid O-Abuse.- How Good is The Worst Case Model?.- Savitch's Theorem.- Adaptive Sampling and Timed Adversaries.- On The Intersection of Finite Automata.- Where are the Movies?.- Part III On Integer Factoring.- Factoring and Factorials.- BDD's.- Factoring and Fermat.- Part IV On Mathematics.- A Curious Algorithm.- Edit Distance.- Protocols.- Erdős and the Quantum Method.- Amplifiers.- Amplifying.

Fields of interest
Theory of Computation; Mathematics of Computing; History of Computing

Target groups
Professional/practitioner

Type of publication
Monograph

Due September 2010

2010. XII, 244 p. 20 illus. Hardcover

► **approx. € 44,95 | £39.99**
► **approx. * € (D) 48,10 | € (A) 49,45 | sFr 69,00**
ISBN 978-1-4419-7154-8

H. Liu, University of Portsmouth, UK; **D. Gu**, University of Essex, UK; **R. J. Howlett**, University of Brighton, UK; **Y. Liu**, University of Wales, Bangor, UK (Eds.)

Robot Intelligence

An Advanced Knowledge Processing Approach

Robot intelligence has become a major focus of intelligent robotics. Recent innovation in computational intelligence including fuzzy learning, neural networks, evolutionary computation and classical Artificial Intelligence provides sufficient theoretical and experimental foundations for enabling robots to undertake a variety of tasks with reasonable performance. This book reflects the recent advances in the field from an advanced knowledge processing perspective; there have been attempts to solve knowledge based information explosion constraints by integrating computational intelligence in the robotics context.

Features
► Recent innovations on robot learning and adaptive methods ► Advanced knowledge-based qualitative reasoning ► Integration of robot learning and robot control

From the contents
1. Programming-by-Demonstration of Robot Motions.- 2. Grasp Recognition by Fuzzy Modeling and Hidden Markov Models.- 3. Distributed Adaptive Coordinated Control of Multi-Manipulator Systems Using Neural Networks.- 4. A New Framework for View-invariant Human Action Recognition.- 5. Using Fuzzy Gaussian Inference and Genetic Programming to Classify 3D Human Motions.- 6. Obstacle Detection using Cross-ratio and Disparity Velocity.- 7. Learning and Vision-based Obstacle Avoidance and Navigation.- 8. A Fraction Distortion Model for Accurate Camera Calibration and Correction.- 9. A Leader-follower Flocking System Based on Estimated Flocking Center.- 10. A Behavior Based Control System for Surveillance.- 11. Hierarchical Composite Anti-Disturbance Control for Robotic Systems Using Robust Disturbance Observer.

Fields of interest
Artificial Intelligence (incl. Robotics)

Target groups
Research

Type of publication
Monograph

Due August 2010

2010. XIV, 301 p. 136 illus., 68 in color. (Advanced Information and Knowledge Processing) Hardcover

► **€99,95 | £79.95**
► *** € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-1-84996-328-2

T. Liu, Microsoft Research Asia, Beijing, China

Learning to Rank for Information Retrieval

Due to the fast growth of the Web and the difficulties in finding desired information, efficient and effective information retrieval systems have become more important than ever, and the search engine has become an essential tool for many people. The ranker, a central component in every search engine, is responsible for the matching between processed queries and indexed documents. Because of its central role, great attention has been paid to the research and development of ranking technologies. In addition, ranking is also pivotal for many other information retrieval applications, such as collaborative filtering, definition ranking, question answering, multimedia retrieval, text summarization, and online advertisement. Leveraging machine learning technologies in the ranking process has led to innovative and more effective ranking models, and eventually to a completely new research area called "learning to rank".

Features
► Only comprehensive overview of a key innovative technology for search engine development ► Written by one of the leading authorities in this field ► Combines scientific theoretical soundness with broad development and application experiences

Contents
1. Ranking in IR.- 2. Learning to Rank for IR.- 3. Regression/Classification: Conventional ML Approach to Learning to Rank.- 4. Ordinal Regression: A Pointwise Approach to Learning to Rank.- 5. Preference Learning: A Pairwise Approach to Learning to Rank.- 6. Listwise Ranking: A Listwise APproach to Learning to Rank.- 7. Advanced Topics.- 8. LETOR: A Benchmark Dataset for Learning to Rank.- 9. SUmmary and Outlook.

Fields of interest
Information Storage and Retrieval; Artificial Intelligence (incl. Robotics); Probability and Statistics in Computer Science

Target groups
Research

Type of publication
Monograph

Due September 2010

2010. 300 p. Hardcover

► **approx. € 79,95 | £72.00**
► **approx. * € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-3-642-14266-6

Y. Ma, **K. Zhan**, **Z. Wang**, Lanzhou University, Gansu, China

Applications of Pulse-Coupled Neural Networks

"Applications of Pulse-Coupled Neural Networks" explores the fields of image processing, including image filtering, image segmentation, image fusion, image coding, image retrieval, and biometric recognition, and the role of pulse-coupled neural networks in these fields. This book is intended for researchers and graduate students in artificial intelligence, pattern recognition, electronic engineering, and computer science.

Features
► First book focusing on efficient adaptive pulse coupled neural networks ► New spiking cortical models proposed and analysis on their behaviors ► Comprehensive and systematical introduction to pulse coupled neural networks ► Robust and novel application examples on image processing

Contents
I. Pulse Coupled Neural Networks.- II. Image filter.- III. Adaptive PCNN Model for Image segment.- IV. Image coding.- V. Image enhancement.- VI. Image fusion.- VII. Feature extraction using entropy.- VIII. Combinatorial Optimization.

Fields of interest
Artificial Intelligence (incl. Robotics); Pattern Recognition; Electrical Engineering

Target groups
Research

Type of publication
Monograph

Due August 2010

Distribution rights in China: Higher Education Press

Jointly published with Higher Education Press

2010. 260 p. 90 illus. Hardcover

► **€129,95 | £117.00**
► *** € (D) 139,05 | € (A) 142,94 | sFr 202,00**
ISBN 978-3-642-13744-0

Z. Manna, Stanford University, Stanford, CA, USA; **D. A. Peled**, Bar Ilan University, Ramat Gan, Israel (Eds.)

Time for Verification

Essays in Memory of Amir Pnueli

This volume is dedicated to the memory of the 1996 Turing Award winner Amir Pnueli, who passed away in November 2009. The Festschrift contains 15 scientific articles written by leading scientists who were close to Amir Pnueli either as former students, colleagues or friends. The topics covered span the entire breadth of the scientific work of Amir Pnueli, with a focus on the development and the application of formal methods. Also included is the first chapter of the unpublished Volume III of Zohar Manna and Amir Pnueli's work on the verification of reactive systems using temporal logic techniques.

Fields of interest
Programming Techniques; Mathematical Logic and Formal Languages; Computation by Abstract Devices

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. VIII, 413 p. (Lecture Notes in Computer Science / Theoretical Computer Science and General Issues, Volume 6200) Softcover

► **€62,00 | £55.99**
► *** € (D) 66,34 | € (A) 68,20 | sFr 96,50**
ISBN 978-3-642-13753-2

New Series

Lecture Notes in Social Networks

Series editor: **Nasrullah Memon, Reda Alhajj**

Lecture Notes in Social Networks (LNSN) comprises serialized volumes that cover the theory, foundations and applications of the new emerging multidisciplinary field of social networks analysis and mining. LNSN publishes peer reviewed works (including conference/workshop proceedings and edited books) in the analytical, technical as well as the organizational side of social computing, social networks, sociology and other related disciplines. The numbered volumes are guest-edited by experts in a specific domain.

N. Memon, University of Southern Denmark, Odense, Denmark; **R. Alhajj**, University of Calgary, AB, Canada (Eds.)

From Sociology to Computing in Social Networks

Theory, Foundations and Applications

Important aspects of social networking analysis are covered in this work by combining experimental and theoretical research. A specific focus is devoted to emerging trends and the industry needs associated with utilizing data mining techniques. Some of the techniques covered include data mining advances in the discovery and analysis of communities, in the personalization of solitary activities (like searches) and social activities (like discovering potential friends), in the analysis of user behavior in open fora (like conventional sites, blogs and fora) and in commercial platforms (like e-auctions), and in the associated security and privacy-preservation challenges; as well as social network modeling, scalable, customizable social network infrastructure construction, and the identification and discovery of dynamic growth and evolution patterns using machine learning approaches or multi-agent based simulation. These topics will be of interest to practitioners and researchers alike in this dynamic and growing field.

Features
► Experts in Social Networking and Data Mining have come together to create this volume ► Special Focus on emerging trends and the needs of industry associated with data mining techniques for social networking ► Useful applications for utilizing the commercial aspects of social networking

Fields of interest
Computer Appl. in Social and Behavioral Sciences

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. XIX, 430 p. 127 illus. in color. (Lecture Notes in Social Networks, Volume 1) Hardcover

► **approx. € 99,95 | £90.00**
► **approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-3-7091-0293-0

X. Meng, Information School, Renmin University of China, Beijing, China; **J. Chen**, EMC Research China, Beijing, China

Moving Objects Management

Models, Techniques and Applications

The continued advances in wireless communication and positioning technologies such as GPS have made new data management applications possible, such as location-based services (LBS) that store and manage the continuously changing positions of moving objects. "Moving Objects Management - Models, Techniques and Applications" focuses on moving objects management, from the location management perspective to the exploration of how the continually changing locations affect the traditional database and data mining technology. Specifically, the book describes the topics of moving objects modeling and location updating, indexing and querying, clustering, location uncertainty and privacy issues, as well as their application to intelligent transportation systems.

Features
► A comprehensive architecture including not only basic theories and new concepts but also practical technologies and applications ► A set of new database techniques in modeling, indexing, querying and updating locations as well as data mining techniques in clustering analysis of moving objects ► A typical application of moving objects management in intelligent transportation systems

Contents
Introduction.- Modeling of Moving Objects.- Indexing of Moving Objects.- Querying of Moving Objects.- Location Updating of Moving Objects.- Trajectory Prediction of Moving Objects.- Clustering Analysis of Moving Objects.- Uncertainty of Moving Objects.- Location Privacy of Moving Objects.- Application to Intelligent Transportation System.- Conclusions.

Fields of interest
Database Management; Data Mining and Knowledge Discovery; Information Systems and Communication Service

Target groups
Research

Type of publication
Monograph

Due August 2010

Distribution rights in China: Tsinghua University Press.

Jointly published with Tsinghua University Press

2010. 300 p. 50 illus. Hardcover

► **€139,95 | £126.00**
► *** € (D) 149,75 | € (A) 153,94 | sFr 217,50**
ISBN 978-3-642-13198-1

J. Nin, **J. Herranz**, Universitat Politècnica de Catalunya, Spain (Eds.)

Privacy and Anonymity in Information Management Systems

New Techniques for New Practical Problems

The development of information technologies in the last few years has been remarkable. Large amounts of data are collected and stored by both public institutions and private companies every day. There are clear threats to the privacy of citizens if no care is taken when collecting, storing and disseminating data. Ensuring privacy for individuals in a society when dealing with digital information, is a task which involves many agents, including politicians, legal authorities, managers, developers, and system administrators. Privacy and Anonymity in Information Management Systems deals with the more technical parts of this `privacy cycle', those issues that are mostly related to computer science, and discusses the process by which different privacy mechanisms are motivated, designed, analyzed, tested and finally implemented in companies or institutions.

Features
► A snapshot of the research that privacy researchers are currently carrying out ► A book that can be considered as an actual baseline of privacy and anonymity research ► The different profiles of the two editors bring the areas of theoretical cryptography and privacy in real life closer ► A combination of theory and practice; that wills erve as a bridge between rsearchers in cryptography and researchers in other, more aplied, topics such as statistical/medical databases

From the contents
List of Contributors .- Part I Overview.- 1. Introduction to Privacy and Anonymity in Information Management Systems.- 2. Advanced Privacy-Preserving Data Management and Analysis.- Part II Theory of SDC.- 3. Practical Applications in Statistical Disclosure Control Using R.

Fields of interest
Systems and Data Security

Target groups
Research

Type of publication
Reference work

Due July 2010

2010. XVI, 229 p. 62 illus., 31 in color. (Advanced Information and Knowledge Processing) Hardcover

► **€79,95 | £45.00**
► *** € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-1-84996-237-7

C. W. Probst, Technical University of Denmark, Kongens Lyngby, Denmark; **J. Hunker**, Pittsburgh, PA, USA; **D. Gollmann**, Technical University Hamburg-Harburg, Hamburg, Germany; **M. Bishop**, University of California, Davis, CA, USA (Eds.)

Insider Threats in Cyber Security

Insider Threats in Cyber Security is a cutting edge text presenting IT and non-IT facets of insider threats together. This volume brings together a critical mass of well-established worldwide researchers, and provides a unique multidisciplinary overview. Monica van Huystee, Senior Policy Advisor at MCI, Ontario, Canada comments "The book will be a must read, so of course I'll need a copy." Insider Threats in Cyber Security covers all aspects of insider threats, from motivation to mitigation. It includes how to monitor insider threats (and what to monitor for), how to mitigate insider threats, and related topics and case studies. Insider Threats in Cyber Security is intended for a professional audience composed of the military, government policy makers and banking; financing companies focusing on the Secure Cyberspace industry. This book is also suitable for advanced-level students and researchers in computer science as a secondary text or reference book.

Features
► A cutting-edge book bringing together IT and non-IT facets of insider threats ► Covers all aspects of insider threats – from motivation to mitigation ► Provides a unique multidisciplinary overview

From the contents
Aspects of Insider Threats.- Combating Insider Threats.- Insider Threat and Information Security Management.- Information Security Management.- A State of the Art Survey of Fraud Detection Technology.- Combining Traditional Cyber Security Audit Data with Psychosocial.- A Risk Management Approach to the "Insider Threat".- Legally Sustainable Solutions for Privacy Issues in Collaborative Fraud Detection.

Fields of interest
Systems and Data Security; Computer Communication Networks; Data Encryption

Target groups
Professional/practitioner

Type of publication
Contributed volume

Due August 2010

2010. XII, 244 p. 40 illus., 20 in color. (Advances in Information Security, Volume 49) Hardcover

► **approx. € 73,40 | £66.99**
► **approx. * € (D) 78,54 | € (A) 80,74 | sFr 114,00**
ISBN 978-1-4419-7132-6

M. Rusiñol, **J. Lladós**, Universitat Autònoma de Barcelona, Bellaterra, Barcelona, Spain

Symbol Spotting in Digital Libraries

Focused Retrieval over Graphic-rich Document Collections

The specific problem of symbol recognition in graphical documents requires additional techniques to those developed for character recognition. The most well-known obstacle is the so-called Sayre paradox: Correct recognition requires good segmentation, yet improvement in segmentation is achieved using information provided by the recognition process. This dilemma can be avoided by techniques that identify sets of regions containing useful information. Such symbol-spotting methods allow the detection of symbols in maps or technical drawings without having to fully segment or fully recognize the entire content. This unique text/reference provides a complete, integrated and large-scale solution to the challenge of designing a robust symbol-spotting method for collections of graphic-rich documents. The book examines a number of features and descriptors, from basic photometric descriptors commonly used in computer vision techniques to those specific to graphical shapes, presenting a methodology which can be used in a wide variety of applications. Additionally, readers are supplied with an insight into the problem of performance evaluation of spotting methods. Some very basic knowledge of pattern recognition, document image analysis and graphics recognition is assumed.

Features
► The first book to address the particular problem of symbol spotting in graphics/document image analysis and recognition. ► Supplies an insight into performance evaluation of spotting methods. ► With a Foreword by Professor Karl Tombre, Director of INRIA Nancy - Grand Est Research Centre

Field of interest
Pattern Recognition

Target groups
Research

Type of publication
Monograph

Due July 2010

2010. XIV, 188 p. 140 illus., 70 in color. Hardcover

► **€79,95 | £59.99**
► *** € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-1-84996-207-0

A. Sadeghi, Ruhr-Universität Bochum, Bochum, Germany; **D. Naccache**, École normale supérieure, Cedex, Paris, France

Towards Hardware-Intrinsic Security

Foundations and Practice

Foreword by: **P. Tuyls**, Intrinsic-ID, Eindhoven, The Netherlands

Hardware-intrinsic security is a young field dealing with secure secret key storage. By generating the secret keys from the intrinsic properties of the silicon, e.g., from intrinsic Physical Unclonable Functions (PUFs), no permanent secret key storage is required anymore, and the key is only present in the device for a minimal amount of time. The field is extending to hardware-based security primitives and protocols such as block ciphers and stream ciphers entangled with the hardware, thus improving IC security. While at the application level there is a growing interest in hardware security for RFID systems and the necessary accompanying system architectures. This book brings together contributions from researchers and practitioners in academia and industry, an interdisciplinary group with backgrounds in physics, mathematics, cryptography, coding theory and processor theory. It will serve as important background material for students and practitioners, and will stimulate much further research and development.

Features
► First book on this topic ► Contains important background material for students and practitioners ► Many contributions from interdisciplinary teams

Fields of interest
Data Structures, Cryptology and Information Theory; Computer Hardware; Electrical Engineering

Target groups
Research

Type of publication
Monograph

Due September 2010

2010. Approx. 780 p. (Information Security and Cryptography) Hardcover

► **approx. € 99,95 | £90.00**
► **approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-3-642-14451-6

M. E. Schuckers, St Lawrence University, Canton, NY, USA

Computational Methods in Biometric Authentication

Statistical Methods for Performance Evaluation

Biometrics, the science of using physical traits to identify individuals, is playing an increasing role in our security-conscious society and across the globe. Biometric authentication, or bioauthentication, systems are being used to secure everything from amusement parks to bank accounts to military installations. Yet developments in this field have not been matched by an equivalent improvement in the statistical methods for evaluating these systems.
Compensating for this need, this unique text/reference provides a basic statistical methodology for practitioners and testers of bioauthentication devices, supplying a set of rigorous statistical methods for evaluating biometric authentication systems. This framework of methods can be extended and generalized for a wide range of applications and tests.

Features
► The first single resource on statistical methods for estimation and comparison of the performance of biometric authentication systems ► Supplies decision-makers with the tools needed to choose the appropriate biometric device for an application ► With more than 120 examples

Contents
Part I: Introduction.- Introduction.- Statistical Background.- Part II: Primary Matching and Classification Measures.- False Non-Match Rate.- False Match Rate.- Receiver Operating Characteristic Curve and Equal Error Rate.- Part III: Biometric Specific Measures.- Failure to Enrol.- Failure to Acquire.- Part IV: Additional Topics and Appendices.- Additional Topics and Discussion.- Tables.

Fields of interest
Biometrics; Math Applications in Computer Science; Computational Mathematics and Numerical Analysis

Target groups
Research

Type of publication
Monograph

Due July 2010

2010. XXV, 317 p. (Information Science and Statistics) Hardcover

► **€99,95 | £90.00**
► *** € (D) 106,95 | € (A) 109,95 | sFr 155,50**
ISBN 978-1-84996-201-8

L. Shao, University of Sheffield, UK; **C. Shan**, Philips Research Laboratories, Eindhoven, The Netherlands; **J. Luo**, Kodak Research Laboratories, Rochester, NY, USA; **M. Etoh**, NTT Docomo, Yokosuka, Kanagawa, Japan (Eds.)

Multimedia Interaction and Intelligent User Interfaces

Principles, Methods and Applications

Consumer electronics (CE) devices, providing multimedia entertainment and enabling communication, have become ubiquitous in daily life. However, consumer interaction with such equipment currently requires the use of devices such as remote controls and keyboards, which are often inconvenient, ambiguous and non-interactive. An important challenge for the modern CE industry is the design of user interfaces for CE products that enable interactions which are natural, intuitive and fun. As many CE products are supplied with microphones and cameras, the exploitation of both audio and visual information for interactive multimedia is a growing field of research.

Features
► Describes recent advances in multimedia interaction and intelligent user interfaces, with applications for consumer electronics ► Covers different techniques in computer vision, machine learning, audio and speech processing, communications, artificial intelligence and media technology ► Contains contributions from leading researchers in industry, with an emphasis on practical issues of multimedia interaction ► Uniquely combines multimedia content analysis and human-machine interaction

Contents
Retrieving Human Actions Using Spatio-temporal Features and Relevance Feedback.- Computationally Efficient Clustering of Audio-Visual Meeting Data.- Cognitive-aware Modality Allocation in Intelligent Multimodal Information Presentation.- Natural Human-Computer Interaction.- Gesture Control for Consumer Electronics.

Fields of interest
Multimedia Information Systems; User Interfaces and Human Computer Interaction; Artificial Intelligence (incl. Robotics)

Target groups
Research

Type of publication
Contributed volume

Due November 2010

2010. X, 304 p. 300 illus., 150 in color. (Advances in Pattern Recognition) Hardcover

► **approx. € 79,95 | £59.95**
► **approx. * € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-1-84996-506-4

Y. Q. Shi, New Jersey Institute of Technology, Newark, NJ, USA (Ed.)

Transactions on Data Hiding and Multimedia Security V

Since the mid 1990s, data hiding has been proposed as an enabling technology for securing multimedia communication, and is now used in various applications including broadcast monitoring, movie fingerprinting, steganography, video indexing and retrieval, and image authentication. Data hiding and cryptographic techniques are often combined to complement each other, thus triggering the development of a new research field of multimedia security. Besides, two related disciplines, steganalysis and data forensics, are increasingly attracting researchers and becoming another new research field of multimedia security. This journal, LNCS Transactions on Data Hiding and Multimedia Security, aims to be a forum for all researchers in these emerging fields, publishing both original and archival research results.
This issue contains a special section on forensic image analysis for crime prevention including two papers. The additional four papers deal with collusion-resistant fingerprinting systems;

Fields of interest
Systems and Data Security; Computer Communication Networks; Data Encryption

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. XI, 129 p. (Lecture Notes in Computer Science / Transactions on Data Hiding and Multimedia Security, Volume 6010) Softcover

► **€46,00 | £41.99**
► *** € (D) 49,22 | € (A) 50,60 | sFr 71,50**
ISBN 978-3-642-14297-0

R. Slowinski, Poznań University of Technology, Poland; **P. Lingras**, Saint Mary's University, Halifax, NS, Canada; **S. Tsumoto**, Shimane University, Izumo, Japan; **D. Miao**, Tongji University, Shanghai, China (Eds.)

Transactions on Rough Sets XII

Editors-in-chief: **J. F. Peters**, University of Manitoba, Winnipeg, MB, Canada; **A. Skowron**, Warsaw University, Poland

The LNCS journal Transactions on Rough Sets is devoted to the entire spectrum of rough sets related issues, from logical and mathematical foundations, through all aspects of rough set theory and its applications, such as data mining, knowledge discovery, and intelligent information processing, to relations between rough sets and other approaches to uncertainty, vagueness, and incompleteness, such as fuzzy sets and theory of evidence.
This volume contains 8 revised selected papers from 11 submissions to the Rough Set and Knowledge Technology Conference (RSKT 2008), together with 5 papers introducing advances in rough set theory and its applications. The topics covered are: perceptually near Pawlak partitions, hypertext classification, topological space versus rough set theory in terms of lattice theory, feature extraction in interval-valued information systems, jumping emerging patterns (JEP), and rough set theory.

Features
► The twelfth title in the LNCS series Transactions on Rough Sets ► Includes extended versions of papers accepted for presentation at the Rough Set and Knowledge Technology Conference (RSKT) 2008, which are part of a special issue on rough set structuring of knowledge ► With 8 selected and reviewed submission papers and 5 papers introducing advances in rough set theory

Fields of interest
Mathematical Logic and Formal Languages; Computation by Abstract Devices; Theory of Computation

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. X, 339 p. 5 illus. in color. (Lecture Notes in Computer Science / Transactions on Rough Sets, Volume 6190) Softcover

► **approx. € 73,00 | £65.99**
► **approx. * € (D) 78,11 | € (A) 80,30 | sFr 113,50**
ISBN 978-3-642-14466-0

G. Viscusi, University of Milano-Bicocca, Italy; **M. Mecella**, University of Rome, Italy; **C. Batini**, University of Milano-Bicocca, Italy

Information Systems for eGovernment

A Quality-of-Service Perspective

The success of public sector investment in eGovernment initiatives strongly depends on effectively exploiting all aspects of ICT systems and infrastructures. The related objectives are hardly reachable without methodological frameworks that provide a holistic perspective and knowledge on the contexts of eGovernment initiatives. Yet public administrators usually have a mix of legal and administrative knowledge, while lacking an information systems background. With this book, Viscusi, Batini and Mecella provide a comprehensive methodology for service-oriented information systems planning, with special emphasis on eGovernment initiatives. They present the eG4M methodology which structurally supports the development of optimal eGovernment plans, considering technological, organizational, legal, economic and social aspects alike. The approach is focused on two pillars: the quality of the provided services and related processes, and the quality of the data managed in the administrative processes and services.

Features
► Takes into account all aspects of eGovernment systems planning: technology, public law, and economics, and social issues ► Emphasizes the quality of services, processes, and data ► Proof of concept in several case studies

From the contents
Part I eGovernment: a complex challenge.- 1 The different facets of eGovernment initiatives: paradigms and approaches.- 2 Data Governance.- 3 The eG4M methodology at a glance.- Part II Strategic planning.- 4 eGovernment vision elicitation.- 5 State Reconstruction.-6 eReadiness Assessment.- 7 Quality Assessment.

Fields of interest
Information Systems Applications (incl.Internet); Information Systems; Management of Computing and Information Systems

Target groups
Professional/practitioner

Type of publication
Professional book

Due September 2010

2010. 319 p. Hardcover

► **€54,95 | £49.99**
► *** € (D) 58,80 | € (A) 60,45 | sFr 85,50**
ISBN 978-3-642-13570-5

S. Yekhanin, Microsoft Research, Mountain View, CA, USA

Locally Decodable Codes and Private Information Retrieval Schemes

Locally decodable codes (LDCs) are codes that simultaneously provide efficient random access retrieval and high noise resilience by allowing reliable reconstruction of an arbitrary bit of a message by looking at only a small number of randomly chosen codeword bits. Local decodability comes with a certain loss in terms of efficiency – specifically, locally decodable codes require longer codeword lengths than their classical counterparts. Private information retrieval (PIR) schemes are cryptographic protocols designed to safeguard the privacy of database users. They allow clients to retrieve records from public databases while completely hiding the identity of the retrieved records from database owners.

Features
► First book on this topic ► A fresh look at the theory ► Related thesis won the ACM Dissertation Award in 2007

Contents
Introduction.- Locally Decodable Codes via the the Point Removal Method.- Limitations of the Point Removal Method.- Private Information Retrieval.- References.- Index.

Field of interest
Data Structures, Cryptology and Information Theory

Target groups
Research

Type of publication
Monograph

Due September 2010

2010. VIII, 82 p. (Information Security and Cryptography) Hardcover

► **approx. € 79,95 | £72.00**
► **approx. * € (D) 85,55 | € (A) 87,95 | sFr 124,50**
ISBN 978-3-642-14357-1

Y. Yin, Yamagata University, Yamagata, Japan; **I. Kaku**, Akita Prefectural University, Yulihonjo, Japan; **J. Tang**, Northeastern University, Shenyang, China; **J. Zhu**, Central University of Finance and Economics, Beijing, China

Data Mining

Concepts, Methods and Applications in Management and Engineering Design

Data Mining introduces in clear and simple ways how to use existing data mining methods to obtain effective solutions for a variety of management and engineering design problems.
Data Mining is organised into two parts: the first provides a focused introduction to data mining and the second goes into greater depth on subjects such as customer analysis. It covers almost all managerial activities of a company.

Features
► Introduces data mining methods for the solution of design issues ► Presents methods for preprocessing data prior to mining ► Written by experts

Contents
1. Decision Analysis and Cluster Analysis.- 2. Association Rules Mining in Inventory Data Base.- 3. Fuzzy Modeling and Optimization: Theory and Methods.- 4. Genetic Algorithm Based Fuzzy Nonlinear Programming.- 5. Neural Network and Self Organizing Maps.- 6. Privacy Preserving Data Mining.- 7. Supply Chain Design by Using Decision Analysis.- 8. Product Architecture and Product Development Process for Global Performance.- 9. Application of Cluster Analysis to Cellular Manufacturing.- 10. Manufacturing Cells Design by Cluster Analysis.- 11. Fuzzy Approach to Quality Function Deployment-based Product Planning.- 12. Decision Making with Consideration of Association in Supply Chains.- 13. Applying Self Organizing Maps to Master Data Making in Automatic Exterior Inspection.- 14. Application for Privacy Preserving Data Mining.

Fields of interest
Data Mining and Knowledge Discovery; Engineering Economics, Organization, Logistics, Marketing; Operations Research/Decision Theory

Target groups
Research

Type of publication
Monograph

Due November 2010

2010. IX, 369 p. 68 illus. (Decision Engineering) Hardcover

► **approx. € 104,95 | £70.00**
► **approx. * € (D) 112,30 | € (A) 115,45 | sFr 174,50**
ISBN 978-1-84996-337-4

X. Zhang, IACAS, Beijing, China; **K. Wong**, Murdoch University, Perth, WA, Australia (Eds.)

Transactions on Edutainment IV

Editors-in-chief: **Z. Pan**, Zhejiang University, China; **A. D. Cheok**, NUS, Singapore; **W. Müller**, University of Education, Weingarten, Germany

This journal subline serves as a forum for stimulating and disseminating innovative research ideas, theories, emerging technologies, empirical investigations, state-of-the-art methods, and tools in all different genres of edutainment, such as game-based learning and serious games, interactive storytelling, virtual learning environments, VR-based education, and related fields. It covers aspects from educational and game theories, human-computer interaction, computer graphics, artificial intelligence, and systems design.

Features
► Fourth volume in the Transactions on Edutainment series ► Outstanding contributions from EDUTAINMENT 2010 are presented together with regular papers collected for this issue
► Rich overview of how edutainment technologies can be creatively used for training and education purposes

From the contents
The Study and Design of Adaptive Learning System Based on Fuzzy. Set Theory.-Modeling Personalized Learning Styles in a Web-Based Learning. System.-An Emotional Agent in Virtual Learning Environment.-Lunar Surface Collaborative Browsing System for Science Museum Exhibitions.-Towards a Structural Model for Intention to Play a Digital Educational Game.-Case Study of FISS: Digital Game Based Learning for a Broad Range of Ages .-Woodment: Web-Based Collaborative Multiplayer Serious Game.-Learning with Virtual Reality: Its Effects on Students with Different Learning Styles .-Automatic Motion Generation Based on Path Editing from Motion Capture Data.

Fields of interest
Computers and Education

Target groups
Research

Type of publication
Contributed volume

Due July 2010

2010. X, 277 p. (Lecture Notes in Computer Science / Transactions on Edutainment, Volume 6250) Softcover

► **€63,00 | £56.99**
► *** € (D) 67,41 | € (A) 69,30 | sFr 98,00**
ISBN 978-3-642-14483-7