COMPUTER SCIENCE

Rights Title Selection

Fall 2018

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Deformable Registration Techniques for Thoracic CT Images
An Insight into Medical Image Registration
A. Abidi, S.K. Singh

- Helps the scientific community in modeling respiratory motion for a large number of people
- Presents a universal baseline that attracts more and more datasets and their results from all over the world
- Serves as a common repository for related research

This book focuses on novel approaches for thoracic computed tomography (CT) image registration and determination of respiratory motion models in inter- and intra-patient scenarios. It discusses the use of image registration processes to remove [...] 

Contents
Chapter 1. Introduction.- Chapter 2. Theoretical Background.- Chapter 3. A Moving Least Square Based Framework for Thoracic CT Image Registration.- Chapter 4. A Path Tracing and Deformity [...] 

Fields of Interest
Image Processing and Computer Vision; Pattern Recognition; Imaging / Radiology; Computer Appl. in Life Sciences; Health Informatics; Computer Graphics

January 2019
Approx. 180 p. 48 illus., 42 illus. in color. Hardcover.
155 x 235 mm
£ 67.99 | € 76.99 | $ 99.00

All Languages Rights Available

Applications of Big Data Analytics
Trends, Issues, and Challenges
M. M. Alani, H. Tawfik, M. Saeed, O. Anya (Eds)

- Covers a diverse selection of applications of big data
-Addresses the sensitive topic of big data collection and privacy
-Explores the future potential of big data, and how the world can benefit from the large amounts of data being collected

This timely text/reference reviews the state of the art of big data analytics, with a particular focus on practical applications. An authoritative selection of leading international researchers present detailed analyses of existing trends for [...] 

Contents
Big Data Environment for Smart Healthcare Applications over 5G Mobile Network.- Challenges and Opportunities of Using Big Data for Assessing Flood Risks.- A Neural Networks Design Methodology for [...] 

Fields of Interest
Big Data; Pattern Recognition; Information Storage and Retrieval; Computer Communication Networks; Algorithm Analysis and Problem Complexity; Big Data/Analytics

August 2018
XII, 214 p. 96 illus., 70 illus. in color. Hardcover.
155 x 235 mm
£ 83.50 | € 94.99 | $ 109.00
ISBN 978-3-319-76471-9

All Languages Rights Available

Coding Ockham’s Razor
L. Allison

- “Gathers together the minimum necessary MML theory in one place”
- Implemented models and estimators include those for discrete, continuous and multivariate data, mixture models (clustering), regressions, classification trees, models of vectors and directions, linear regression, models of graphs (networks)
- All models are taken from the maths through to computer code and to use

This book explores inductive inference using the minimum message length (MML) principle, a Bayesian method which is a realisation of Ockham’s Razor based on information theory. Accompanied by a library of software, the book can assist an [...] 

Contents

Fields of Interest
Data Structures; Statistics and Computing/Statistics Programs; Artificial Intelligence (incl. Robotics)

June 2018
XIV, 175 p. 46 illus. Hardcover.
155 x 235 mm
£ 84.99 | € 94.99 | $ 109.00
ISBN 978-3-319-76432-0

All Languages Rights Available
Theoretical and Applied Aspects of Systems Biology
F. Alves Barbosa da Silva, N. Carels, F. Paes Silva Junior (Eds)

- Presents theoretical foundations of Systems Biology
- Lists applications in studies on human hosts, pathogens and associated diseases
- Topics discussed include computational modeling of multi-resistant bacteria, systems biology of cancer, systems immunology and networks in systems biology

This book presents the theoretical foundations of Systems Biology, as well as its application in studies on human hosts, pathogens and associated diseases. This book presents several chapters written by renowned experts in the field. […]

Contents
PART I - Fundamentals

Fields of Interest
Computational Biology/Bioinformatics; Bioinformatics; Health Informatics; Cancer Research; Cell Biology

Series Title
Computational Biology

Principles and Structures of FPGAs
H. Amano (Ed)

- Presents comprehensive coverage of the history, fundamental knowledge, architectures, device technologies, CAD technologies, design tools, application examples, and future trends of FPGAs
- Provides complete introductions to FPGAs for beginners
- Includes advanced techniques for engineers and researchers in the field of FPGAs

This comprehensive textbook on the field programmable gate array (FPGA) covers its history, fundamental knowledge, architectures, device technologies, computer-aided design technologies, design tools, examples of application, and future trends. […]

Contents
Chapter 1: Basic knowledge to understand FPGAs.- Chapter 2: What is an FPGA?- Chapter 3: FPGA Structure.- Chapter 4: Design flow and design tools.- Chapter 5: Design Methodology.- Chapter 6: […]

Fields of Interest
Logic Design; Circuits and Systems; Electronic Circuits and Devices; Electronics and Microelectronics, Instrumentation

Emerging Wireless Communication and Network Technologies
Principle, Paradigm and Performance
K. V. Arya, R. S. Bhadoria, N. S. Chaudhari (Eds)

- Provides a detailed survey of a wide range of wireless and network technologies
- A valuable guide for young researchers and practitioners in the area of communications networks
- Addresses wearable sensor technology and cognitive radio networks (CRN), the Internet of things (IoT), and many more

The book covers a wide range of wireless communication and network technologies, and will help readers understand the role of wireless technologies in applications touching on various spheres of human life, e.g., healthcare, agriculture, building […]

Contents
Introduction to Emergence for Wireless Technology and Communications.- Explorations and Trends.- Advancement in Wireless Technologies and Networks.- Cognitive Radio Networks (CRN) Technologies and […]

Fields of Interest
Computer Communication Networks; Communications Engineering, Networks; Mobile Computing; Signal, Image and Speech Processing
3D Visual Content Creation, Coding and Delivery
P. A. Assunção, A. Gotchev (Eds)

- Provides valuable information to engineers developing novel products and services about emerging 3D multimedia technologies
- Presents recent research results supported by a comprehensive set of bibliographic references
- Describes the research problems and challenges identified in the field of immersive visual communications

This book covers the different aspects of modern 3D multimedia technologies by addressing several elements of 3D visual communications systems, using diverse content formats, such as stereo video, video-plus-depth and multiview, and coding [...]
Novel Diffusion-Based Models for Image Restoration and Interpolation
T. Barbu

- Covers both theoretical and applied aspects of image processing and analysis
- Provides valuable teaching and training resources for students and senior researchers in areas such as pattern recognition, computer vision, and computational imaging
- Describes state-of-the-art PDE-based image restoration and inpainting techniques

This book covers two essential PDE-based image processing fields: image denoising and image inpainting. It describes the state-of-the-art PDE-based image restoration and interpolation (inpainting) techniques, focusing on the latest advances in [...]}

Contents

Fields of Interest
Image Processing and Computer Vision; Partial Differential Equations; Computational Intelligence

Series Title
Signals and Communication Technology

Hybrid Metaheuristics for Image Analysis
S. Bhattacharyya (Ed)

- Contributions provide a multidimensional approach
- Useful for researchers in computer science, electrical engineering, and information technology
- Explains various soft computing techniques

This book presents contributions in the field of computational intelligence for the purpose of image analysis. The chapters discuss how problems such as image segmentation, edge detection, face recognition, feature extraction, and image contrast [...]}

Contents

Fields of Interest
Artificial Intelligence (incl. Robotics); Computational Intelligence; Computer Imaging, Vision, Pattern Recognition and Graphics

Series Title
Springer Series in Adaptive Environments

Robotic Building
H. Bier (Ed)

- Treats both theoretical and practical aspects of robotics in architecture
- Focuses on design-to-robotic-production and -operation
- Reviews exhaustively the key recent research into robotic systems, reconfigurable structures and architectured materials

The first volume of the Adaptive Environments series focuses on Robotic Building, which refers to both physically built robotic environments and robotically supported building processes. Physically built robotic environments consist of [...]}

Contents
From Architectured Materials to the Development of Large-scale Additive Manufacturing.- Robotic Fabrication Beyond Factory Settings.- Exploring the Industrial Ramifications of Architectural [...]}

Fields of Interest
Artificial Intelligence (incl. Robotics); Interaction Design; Robotics and Automation; Building Construction and Design

Series Title
Springer Series in Adaptive Environments
Computational Models of Rhythm and Meter
G. Boenn

- Presents new methods for the composition, analysis and transcription of musical rhythms, meter and form
- Demonstrates a new process for the automated transcription of rhythms from musical performances
- Contains algorithms for the measurement of syncopation and metric grouping

This book presents the latest computational models of rhythm and meter that are based on number theory, combinatorics and pattern matching. Two computational models of rhythm and meter are evaluated: The first one explores a relatively new field [...] Contents
Pattern Recognition; Simulation and Modeling; Mathematics in Music

Foraging-Inspired Optimisation Algorithms
A. Brabazon, S. McGarraghy

- Understanding foraging strategies improves search processes
- No prior knowledge of natural computing assumed
- Valuable for graduate students, academics and practitioners in computer science, informatics, data science, and management science

This book is an introduction to relevant aspects of the foraging literature for algorithmic design, and an overview of key families of optimization algorithms that stem from a foraging metaphor. [...] Contents
Theory of Computation; Computational Intelligence; Artificial Intelligence (incl. Robotics); Operations Research, Management Science; Operations Research/Decision Theory

Health Informatics on FHIR: How HL7’s New API is Transforming Healthcare
M. L. Braunstein

- Ten detailed, innovative health informatics Case Studies by commercial and other organizations
- Five detailed descriptions of actual FHIR apps
- Hands on activities and exercises

This textbook begins with an introduction to the US healthcare delivery system, its many systemic challenges and the prior efforts to develop and deploy informatics tools to help overcome those problems. [...] Contents
Health Informatics; Management of Computing and Information Systems; Health Administration; Computer Appl. in Life Sciences; Popular Computer Science
Deep Learning Techniques for Music Generation
J. Briot, G. Hadjeres, F. Pachet

- Authors’ analysis based on four dimensions: objective, representation, architecture, strategy
- Interesting application of deep learning, for AI researchers and composers
- Research was conducted within the EU Flow Machines project

This book describes how deep learning techniques can be used to generate musical content of various types, including melodies, accompaniment, and chords.

Contents

Fields of Interest
Artificial Intelligence (incl. Robotics); Music; Computer Appl. in Arts and Humanities; Mathematics in Music

Series Title
Computational Synthesis and Creative Systems

January 2019
Approx. 125 p. Hardcover. 155 x 235 mm
ISBN 978-3-319-70162-2

All Languages Rights Available

Explorations in Art and Technology
L. Candy, E. Edmonds, F. Poltronieri

- Reviews the history of art and technology collaborations
- Shares expert visions of technology inspired new art forms
- Reveals digital art making through research in practice

This edition revises the original core chapters and adds 15 contributions from artists who shed new light on the progress made in the early decades of the 21st Century. Explorations in Art and Technology is about the creative process in action, [...]

Contents

Fields of Interest
User Interfaces and Human Computer Interaction; Computer Appl. in Arts and Humanities

Series Title
Springer Series on Cultural Computing

September 2018
XLII, 390 p. 77 illus., 51 illus. in color. Hardcover. 155 x 235 mm
£ 109.99 | € 129.99 | $ 159.99

All Languages Rights Available

Heritage Preservation
A Computational Approach
B. Chanda, S. Chaudhuri, S. Chaudhury (Eds)

- Provides a lucid description of various state-of-the-art tools and technologies for data acquisition, processing, and analysis
- Presents useful methods and algorithms for audio, visual, and tactile signals related to heritage preservation
- Includes case studies mostly drawn from India's rich tangible and non-tangible heritage

This book presents a unique guide to heritage preservation problems and the corresponding state-of-the-art digital techniques to achieve their plausible solutions. It covers various methods, ranging from data acquisition and digital imaging to [...]

Contents

Fields of Interest
Information Systems Applications (incl. Internet); Computer Imaging, Vision, Pattern Recognition and Graphics

June 2018
XII, 345 p. Hardcover. 155 x 235 mm
£ 96.50 | € 109.99 | $ 129.00
ISBN 978-981-10-7220-8

All Languages Rights Available
Virtual Taste and Smell Technologies for Multisensory Internet and Virtual Reality
A. D. Cheok, K. Karunanayaka

- Presents cutting-edge developments in the areas of digital taste and digital smell interfaces through the latest research works
- The first book to discuss in detail about digital taste and smell interfaces and their applications, together with notes on technical implementation of devices and software
- Digital controllability of the sensation of taste and smell provides a useful platform for engineers, interaction designers, and media artists, so this is a useful research book for the above-mentioned professionals

Currently, Internet and virtual reality communication is essentially audio-visual. The next important breakthrough of the Internet will be the communication [...]
It's All About Coordination
Essays to Celebrate the Lifelong Scientific Achievements of Farhad Arbab
F. de Boer, M. Bonsangue, J. Rutten (Eds)
• Unique collection of articles on coordination languages and models
• Honorary volume dedicated to Farhad Arbab on occasion to his 65 birthday
• Formal methods in software engineering
This Festschrift volume has been published to celebrate the lifelong scientific achievements of Farhad Arbab on the occasion of his retirement from the Centre of Mathematics and Computer Science (CWI).

Contents
Discovering the “Glue” Connecting Activities: Exploiting Monotonicity to Learn Places Faster.- Self-Stabilization Through the Lens of Game Theory.- Energy-Utility Analysis of Probabilistic Systems […]

Fields of Interest
Software Engineering; Programming Languages, Compilers, Interpreters; Programming Techniques; Simulation and Modeling; Artificial Intelligence (incl. Robotics); Mathematical Logic and Formal Languages

Series Title
Lecture Notes in Computer Science

May 2018
XII, 245 p. 52 illus. Softcover. 155 x 235 mm
£ 44.99 | € 50.00 | $ 72.00
ISBN 978-3-319-90088-9

All Languages Rights Available

Cyber Threat Intelligence
A. Dehghantanha, M. Conti, T. Dargahi (Eds)
• Focuses on cyber threat intelligence of recent threats (i.e. ransomware) within emerging IT environments (i.e. IoT, Cloud, Mobile devices)
• One of the first books that focuses on cyber threat intelligence and how different machine learning and data science techniques can be used in this field
• Provides an inter-disciplinary view of cyber threat intelligence and paves the way for future research in the field
This book provides readers with up-to-date research of emerging cyber threats and defensive mechanisms, which are timely and essential. It covers cyber threat intelligence concepts against a range of threat actors and threat tools (i.e. […]

Contents
1 Introduction.- 2 Machine Learning Aided Static Malware Analysis.- 3 Application of Machine Learning Techniques to Detecting Anomalies in Communication Networks: Datasets and Feature Selection.- […]

Fields of Interest
Security; Artificial Intelligence (incl. Robotics); Information Systems and Communication Service; Computer Communication Networks

Series Title
Advances in Information Security

May 2018
VI, 334 p. 105 illus., 77 illus. in color. Hardcover. 155 x 235 mm
£ 84.99 | € 94.99 | $ 109.00
ISBN 978-3-319-73950-2

All Languages Rights Available

Refinement
Semantics, Languages and Applications
J. Derrick, E. Boiten
• This book is the first comprehensive introduction to refinement for the researcher or graduate student
• Introduces refinement in all the major semantic models
• Shows how different formal methods (Z, CSP, Event-B etc) use different models of refinement
Refinement is one of the cornerstones of a formal approach to software engineering. Refinement is all about turning an abstract description (of a soft or hardware system) into something closer to implementation. It provides that essential bridge […]

Contents

Fields of Interest
Software Engineering; Logics and Meanings of Programs

September 2018
XIX, 269 p. 39 illus. Hardcover. 155 x 235 mm
£ 54.99 | € 59.99 | $ 74.99
ISBN 978-3-319-92709-1

All Languages Rights Available
Social Networks Science: Design, Implementation, Security, and Challenges
From Social Networks Analysis to Social Networks Intelligence
N. Dey, R. Babo, A. S. Ashour, V. Bhatnagar, M. S. Bouhlel (Eds)

- Explains the different protocols, models, and approaches used in the design of the social networks
- Offers flexible and sophisticated solutions for the security problems in the social network systems
- Presents the different types of the social networking systems including the internet and mobile devices

The main target of this book is to raise the awareness about social networking systems design, implementation, security requirements, and approaches. The book entails related issues including computing, engineering, security, management, and [...]
Algorithmic Intelligence
Towards an Algorithmic Foundation for Artificial Intelligence
S. Edelkamp
- Demonstrates the algorithmic foundations of computer intelligence
- Offers an integrated understanding of programming, theoretical computer science, optimization, machine learning, data mining, and data analytics

In this book the author argues that the basis of what we consider computer intelligence has algorithmic roots, and he presents this with a holistic view, showing examples and explaining approaches that encompass theoretical computer science and […]

Contents

Fields of Interest
Artificial Intelligence (incl. Robotics); Data Mining and Knowledge Discovery; Big Data/Analytics; Control, Robotics, Mechatronics; Computational Biology/Bioinformatics

Series Title
Artificial Intelligence: Foundations, Theory, and Algorithms

Structure and Interpretation of the SMB Protocol
S. Engineer, A. Engineer
- Is the most up-to-date book on server message block (SMB) 3 protocol in all forms from version 2 to version 3.1.1
- Provides both theory and practical applications, with detailed models including next-generation systems
- Covers modern, high-performance storage systems, such as non-volatile memory express/NVMe-over-fabrics (NVMe/NVMf) and their relation to distributed file system protocols

This book discusses the theory and applications of the server message block (SMB) 3 protocol used for distributed remote file access. It covers the protocol from its genesis to the present structure and the future enhancements, and includes […]

Contents
Chapter 1. Introduction.- Chapter 2. The Structure of the Protocol.- Chapter 3. The Entities in the Interaction.- Chapter 4. The Exchange of Messages.- Chapter 5. Interpretation of Messages.[…]

Fields of Interest
Computer Communication Networks; Computer System Implementation; Microsoft and .NET

Advanced Social Interaction with Agents
8th International Workshop on Spoken Dialog Systems
M. Eskenazi, L. Devillers, J. Mariani (Eds)
- Discusses how automated dialog systems became active social partners
- Assesses human–robot/agent assessment mechanisms
- Presents lectures given at the 8th International Workshop on Spoken Dialog Systems

This book presents lectures given at the 8th International Workshop on Spoken Dialog Systems. As agents evolve in terms of their ability to carry on a dialog with users, several qualities are emerging as essential components of a successful […]

Contents

Fields of Interest
User Interfaces and Human Computer Interaction; Signal, Image and Speech Processing; Robotics and Automation

Series Title
Lecture Notes in Electrical Engineering
Designing Usable and Secure Software with IRIS and CAIRIS
S. Faily

- Explains how to use the IRIS framework to devise processes for designing secure and usable systems
- Introduces readers to the open-source CAIRIS platform, and how it can be used to support a range of security and usability design activities from creating personas through to analysing architectural risk
- Includes case studies that illustrate how both security and usability can be incorporated into the initial stages of a system's design

Everyone expects the products and services they use to be secure, but 'building security in' at the earliest stages of a system's design also means designing for use as well. Software that is unusable to end-users and unwieldy to developers and [...]
Online Harassment
J. Golbeck (Ed)

- A human-computer interaction perspective on online harassment
- Integrating socio-technical theories, algorithms, and interface design to provide a comprehensive look at the problem
- A study of the impacts of online harassment, how to detect it, and how to prevent it

Online Harassment is one of the most serious problems in social media. To address it requires understanding the forms harassment takes, how it impacts the targets, who harasses, and how technology that stands between users and social media can […]

Contents
Human-Computer Interaction and Online Harassment: Detection, Analysis, and Prevention.- Weak Supervision and Machine Learning for Online Harassment Detection.- Bridging the Gaps: Multi-Task […]

Fields of Interest
User Interfaces and Human Computer Interaction; Computational Linguistics; Social Media

Series Title
Human–Computer Interaction Series

Align Client and Provider Perspectives
Best Practices in IT Outsourcing
L. Haas

- Develops a common understanding between the client and the provider in each of the four stages of strategic outsourcing: offer – plan – build – run
- Highlights the dos and don’ts both parties should bear in mind at each stage of the process in order to establish a balanced relationship
- Includes numerous real-world case studies from the last ten years

This book develops a common understanding between the client and the provider in each of the four stages of strategic outsourcing. […]

Contents

Fields of Interest
Management of Computing and Information Systems; Software Management; Legal Aspects of Computing; Project Management

Compiler Design
Code Generation and Machine-Level Optimization
S. Hack, R. Wilhelm, H. Seidl

- Written by established experts
- Illustrated with many examples, exercises and program fragments
- Third book in a 4-volume set
While compilers for high-level programming languages are large complex software systems, they have particular characteristics that differentiate them from other software systems. Their functionality is almost completely well-defined – ideally […]

Contents
Introduction.- Program Semantics.- Transformations.- Static Analysis.- Imperative Programs.- Functional Programs.- References.- Index.

Fields of Interest
Programming Techniques; Programming Languages, Compilers, Interpreters
Efficient Algorithms for Elliptic Curve Cryptosystems using Endomorphisms
K. Hakuta

- The first book which focuses on fast algorithms for computing scalar multiplication (or point multiplication) on elliptic curves
- Provides both the theory and implementation of fast scalar multiplication algorithms
- Contributes to a better understanding of a theoretical perspective on the use of low Hamming weight Frobenius expansion on those curves

This book focuses on fast algorithms for computing scalar multiplication (or point multiplication) on certain types of elliptic curves, as scalar multiplication is the most time-consuming operation in elliptic curve cryptography (ECC). [..]

Contents
Introduction.- Mathematical Background.- Groups, Rings, Fields.- Elliptic Curves.- Scalar Multiplication.- Fast Computation Methods of Scalar Multiplication.- Efficient Arithmetic on Subfield [..]

Fields of Interest
Data Encryption; Mathematical and Computational Engineering; Security Science and Technology; Quantum Computing

Series Title
Mathematics for Industry

Privacy and Identity Management. The Smart Revolution
12th IFIP WG 9.2, 9.5, 9.6/11.7, 11.6/SIG 9.2.2 International Summer School, Ispra, Italy, September 4-8, 2017, Revised Selected Papers
M. Hansen, E. Kosta, I. Nai-Fovino, S. Fischer-Hübner (Eds)

- Thoroughly revised tutorials from the 12th Annual IFIP Summer School on Privacy and Identity Management
- Made for students, researchers and practitioners interested in various aspects of privacy and identity management
- Provides a broad range of perspectives by combining interdisciplinary approaches

This book contains selected papers presented at the 12th IFIP WG 9.2, 9.5, 9.6/11.7, 11.6/SIG 9.2.2 International Summer School on Privacy and Identity Management, [..]

Contents
The Smart World.- Towards Organizing the Growing Knowledge on Privacy Engineering.- Data Protection by Design: [..]

Fields of Interest
Systems and Data Security; Security; Computers and Society; User Interfaces and Human Computer Interaction

Series Title
IFIP Advances in Information and Communication Technology

How to Build a Talking Robot
Linguistics, Philosophy, and Artificial Intelligence
R. Hausser

- Interdisciplinary work involving computer science, linguistics, philosophy, psychology, artificial intelligence, and cybernetics
- Author’s approach, Database Semantics (DBS), provides the cycle of natural language communication
- Valuable for researchers in linguistics, artificial intelligence, and cybernetics

This book explains how to use ideas from computer science, linguistics, philosophy, psychology, artificial intelligence, and cybernetics to build a talking robot. The author’s own system, Database Semantics (DBS), provides the required cycle of [..]

Contents
Basic Constructs of Database Semantics (DBS).- The Cycle of Natural Language Communication.- A Computational Reconstruction of Reference.- Autonomous Control.- Inferences Deriving Blueprints for [..]

Fields of Interest
Artificial Intelligence (incl. Robotics); Computational Linguistics; Language Translation and Linguistics; User Interfaces and Human Computer Interaction
Semantic Applications
Methodology, Technology, Corporate Use
T. Hoppe, B. Humm, A. Reibold (Eds)

- Proven methodologies for developing semantic applications
- Includes technological and architectural best practices: from data to applications
- Written by practitioners for practitioners

This book describes methodologies for developing semantic applications. Semantic applications are software applications which explicitly or implicitly use the semantics, i.e. the meaning of a domain terminology, in order to improve usability, [...] 

Contents
Introduction.- Ontology Development.- Compliance using Metadata.- Variety Management for Big Data.- Text Mining in Economics.- Generation of Natural Language Texts.- Sentiment Analysis.- Building [...] 

Fields of Interest
Information Systems Applications (incl. Internet); Artificial Intelligence (incl. Robotics); Data Mining and Knowledge Discovery; Management of Computing and Information Systems; Information Storage and Retrieval

Evolutionary Approach to Machine Learning and Deep Neural Networks

H. Iba

- Begins with the essentials of evolutionary algorithms and covers state-of-the-art research methodologies in the field as well as growing research trends
- Presents concepts to promote and facilitate effective research in evolutionary algorithm approaches both in theory and in practice
- Inspires readers to explore the rapidly developing fields of artificial intelligence and evolutionary algorithms, actively introducing research topics in those areas

This book provides theoretical and practical knowledge about a methodology for evolutionary algorithm-based search strategy with the integration of several machine learning and deep learning techniques. [...] 

Contents
Introduction.- Meta-heuristics, machine learning and deep learning methods.- Evolutionary approach to deep learning. [...] 

Fields of Interest
Artificial Intelligence (incl. Robotics); Bioinformatics; Mathematical and Computational Biology; Computational Intelligence

Intelligent Transport System in Smart Cities
Aspects and Challenges of Vehicular Networks and Cloud
R. I. Meneguette, R. E. De Grande, A. A. F. Loureiro

- This book describes the technologies involved with the infrastructure to create and manage intelligent transportation systems in the context of large cities
- This book describes concepts and technologies that address the challenges of urban environments

This book presents a timely description of currently used and proposed technologies that involve the intelligent transport system to assist the manager of large cities. Therefore, it describes all concepts and technologies that address the [...] 

Contents
1 Intelligent Transportation Systems.- 2 Vehicular Networks.- 3 Autonomous Vehicles.- 4 Vehicle-to-Infrastructure.- 5 Vehicle-to-vehicle Communication.- 6 Vehicular Cloud.- 7 Applications and [...] 

Fields of Interest
Computer Systems Organization and Communication Networks; Computing Milieux

Series Title
Urban Computing
Crossbar-Based Interconnection Networks
Blocking, Scalability, and Reliability
M. Jahanshahi, F. Bistouni

- Discusses in detail the latest important research in the area of interconnection networks
- Reviews efficient topological designs of crossbar-based interconnection networks
- Examines the relationships between the key parameters of blocking, scalability, fault tolerance, and reliability

This unique text/reference provides an overview of crossbar-based interconnection networks, offering novel perspectives on these important components of high-performance, parallel-processor systems. A particular focus is placed on solutions to [...]
Deep Learning in Object Detection and Recognition
X. Jiang, A. Hadid, Y. Pang, E. Granger, X. Feng (Eds)

- Discusses recent developments in deep learning and its applications in object detection and recognition
- Covers key tasks of computer vision, including object detection, face detection, face recognition, 3D object recognition and image retrieval
- Includes contributions written by leading experts in the respective fields

This book discusses recent advances in object detection and recognition using deep learning methods, which have achieved great success in the field of computer vision and image processing. […]

Contents

Fields of Interest
Image Processing and Computer Vision; Data Mining and Knowledge Discovery; Pattern Recognition

Non-Cooperative Target Tracking, Fusion and Control
Algorithms and Advances
Z. Jing, H. Pan, Y. Li, P. Dong

- Contains a wide survey of models and algorithmic aspects of non-cooperative target tracking, fusion and control
- Features theoretical background for aerospace applications or remote sensing
- Provides many illustrative and computational examples

This book gives a concise and comprehensive overview of non-cooperative target tracking, fusion and control. […]

Contents
Introduction.- Part I Multi-Target Tracking.- Gaussian mixture CPHD filter with gating technique.- Detection-guided multi-target Bayesian filter.- On the sensor order in sequential integrated […]

Fields of Interest
Image Processing and Computer Vision; Signal, Image and Speech Processing; Remote Sensing/Photogrammetry; Aerospace Technology and Astronautics; Control

Series Title
Information Fusion and Data Science

Multimedia Tools and Applications for Environmental & Biodiversity Informatics
A. Joly, S. Vrochidis, K. Karatzas, A. Karppinen, P. Bonnet (Eds)

- Demonstrates how multimedia research and technological innovation impact the wide range of environmental and biodiversity studies
- Provides an introduction to the leading content analysis and machine learning techniques in an easily accessible expression, based on various and concrete examples of implementations
- Illustrates the increasing capabilities of multimedia tools & applications for the characterization of living organisms

This edited volume focuses on the latest and most impactful advancements of multimedia data globally available for environmental and earth biodiversity. […]

Contents
1 Introduction.- 2 Developing mobile applications for environmental and biodiversity citizen science: considerations and recommendations. […]

Fields of Interest
Multimedia Information Systems; Database Management; Artificial Intelligence (incl. Robotics); Environmental Engineering/Biotechnology; Pattern Recognition

Series Title
Multimedia Systems and Applications
Smart Micro-Grid Systems
Security and Privacy
A. V. D. M. Kayem, S. D. Wolthusen, C. Meinel (Eds)

- Covers Smart Micro-Grids for Resource Constrained Environments which is neglected in existing books
- Provides Reference Models for Attacks Smart Grids and Micro-grids
- Unique emphasis on attack models and countermeasures in smart grids, smart micro-grids, and resource constrained smart micro-grids from a modelling perspective

This book is centered on Smart grids and micro-grids, as a cost-effective method of ensuring fair and equitable access to power in urban areas. It also considers scenarios where deploying smart grids can be both cost-prohibitively expensive and [...]”

Contents

Fields of Interest
Security; Power Electronics, Electrical Machines and Networks; Communications Engineering, Networks

Series Title
Advances in Information Security

Random Numbers and Computers
R. T. Kneusel

- Practical presentation and analysis of existing and historic pseudorandom number generation techniques. The hands-on presentation and descriptions give readers a practical knowledge to apply directly to their own work. Skipping the step of translating theoretical results into something directly applicable, it also lowers the bar for enjoying the book by not requiring a sophisticated math background. This is particularly beneficial to undergraduate students
- Implementations, with walk-through, in C and Python, that includes descriptions of an algorithm followed by an implementation in a familiar and commonly used programming language with its own description. This reinforces the ideas behind the algorithm and provides code that can be used as-is or adapted intelligently

This book covers pseudorandom number generation algorithms, […]

Contents
1 Random and Pseudorandom Sequences.- 2 Generating Uniform Random Numbers.- 3 Generating Nonuniform Random Numbers. […]

Fields of Interest
Numeric Computing; Algorithm Analysis and Problem Complexity; Algorithms; Data Encryption; […]

Real-Time C++
Efficient Object-Oriented and Template Microcontroller Programming
C. Kormanyos

- Step-by-step introduction to using real-time C++ for microcontrollers
- Accompanied by extensive sample code and online material (including more than ten introductory projects and one reference application)
- Uses the most recent specification of C++17 in ISO/IEC 14882:2017

With this book, Christopher Kormanyos delivers a highly practical guide to programming real-time embedded microcontroller systems in C++. It is divided into three parts plus several appendices. Part I provides a foundation for real-time C++ by […]

Contents

Fields of Interest
Special Purpose and Application-Based Systems; System Performance and Evaluation; Computer System Implementation; Software Engineering; Control Structures and Microprogramming
Designing Immersive Video Games Using 3DUI Technologies

Improving the Gamer’s User Experience

A. K. Kulshreshth, J. J. LaViola Jr.

- The book presents state of the art research in video game design which utilizes 3D user interfaces (an interface which allows a user to interact in three dimensions)
- The book presents recent research on utilizing various 3D interaction technologies for improving the gaming experience of a user. The guidelines presented in the book will help game designers to design better games
- The book benefits both game designers as well as researchers by providing them knowledge of recent research work in the field of video game research

A 3D user interface (3DUI) is an interface in which the user performs tasks in three dimensions. For example, interactions using hand/body gestures, […]

Contents
Introduction.- 3D User Interface (3DUI) Technologies.- Games and 3DUI Technologies. […]

Fields of Interest
User Interfaces and Human Computer Interaction; Computer Graphics; Game Development

Series Title
Human–Computer Interaction Series

June 2018
XIII, 114 p. 46 illus., 45 illus. in color. Hardcover. 155 x 235 mm
£ 99.99 | € 109.99 | $ 139.99
ISBN 978-3-319-77952-2
All Languages Rights Available

Contactless 3D Fingerprint Identification

A. Kumar

- The first dedicated book on contactless 3D fingerprint identification
- Presents a special chapter on contactless 2D/3D to contact-based 2D or conventional fingerprint matching
- Includes a tutorial explanation on recovering and matching the most popular minutiae features in 3D space

This important text/reference presents the first dedicated review of techniques for contactless 3D fingerprint identification, including novel and previously unpublished research. […]

Contents
Introduction to Trends in Fingerprint Identification.- 3D Fingerprint Image Acquisition Methods.- Contactless and Live 3D Fingerprint Imaging.- 3D Fingerprint Acquisition Using Colored Photometric […]

Fields of Interest
Biometrics; Artificial Intelligence (incl. Robotics); Computational Intelligence; Legal Aspects of Computing

Series Title
Advances in Computer Vision and Pattern Recognition

January 2019
X, 102 p. 65 illus., 55 illus. in color. Hardcover. 155 x 235 mm
£ 83.50 | € 94.99 | $ 119.00
ISBN 978-3-319-67680-7
All Languages Rights Available

Software Languages

Syntax, Semantics, and Metaprogramming

R. Lämmel

- The first textbook on software language engineering, with a strong focus on application areas such as domain-specific languages, software composition, and software reverse engineering
- Covers a wide range of languages, from functional languages like Haskell to mainstream programming languages like Java and modeling languages like UML
- Complemented by a website providing additional teaching material such as lecture slides, software artifacts, and videos

This book identifies, defines and illustrates the fundamental concepts and engineering techniques relevant to applications of software languages in software development. […]

Contents
1 The Notion of a Software Language.- 2 A Story of a Domain-Specific Language.- 3 Foundations of Tree- and Graph-Based Abstract Syntax.- 4 Representation of Object Programs in Metaprograms.- 5 A […]

Fields of Interest
Software Engineering

June 2018
XXX, 424 p. 49 illus., 32 illus. in color. Hardcover. 155 x 235 mm
£ 54.99 | € 59.99 | $ 74.99
ISBN 978-3-319-90798-7
All Languages Rights Available
Introduction to Diagnosis of Active Systems

G. Lamperti, M. Zanella, X. Zhao

- Up-to-date, self-contained compendium on model-based diagnosis of active systems
- Suitable for researchers, professionals, and graduate students in artificial intelligence and control theory
- Diagnosis of discrete-event systems essential for hybrid systems

This book is an up-to-date self-contained compendium of the research carried out by the authors on model-based diagnosis of a class of discrete-event systems called active systems. After defining the diagnosis problem, the book copes with a […]

Contents
Introduction.- Finite Automata.- Active Systems.- Diagnosis Problems.- Monolithic Diagnosis.- Modular Diagnosis.- Reactive Diagnosis.- Monotonic Diagnosis.- Reusable Diagnosis.- Sensitive […]

Fields of Interest
Artificial Intelligence (incl. Robotics); Algorithm Analysis and Problem Complexity; Control, Robotics, Mechatronics

Clinical Rehabilitation Experience Utilizing Serious Games

Rehabilitation Technology and a Technical Concept for Health Data Collection

M. Lawo, P. Knackfuß (Eds)

- Study in the field of technical sciences
- Wearable and pervasive computing
- Serious games for rehabilitation

This book emerged out of research done during the period between 2004 and 2016 on the topic of mobile and wearable computing. It did not solely focus on technical solutions and the search for a general approach but also on the question how people […]

Contents
Wearable and Pervasive Computing for Healthcare and towards Serious Games.- Reference Rehabilitation Platform for Serious Games in Neuro-Rehabilitation.- Technical Concept of Health Data […]

Fields of Interest
Computing Methodologies; Computer Imaging, Vision, Pattern Recognition and Graphics; Mathematics of Computing

Series Title
Advanced Studies Mobile Research Center Bremen

Computational Studies on Cultural Variation and Heredity

J. Lee (Ed)

- Comprehensively describes four different perspectives of Cultural DNA research
- Offers interesting topics including theories, analysis and synthesis of Cultural DNA artefacts
- Provides extensive information to the reader on the grammar-based Cultural DNA methodologies

This book explores the emerging concept of cultural DNA, considering its application across different fields and examining commonalities in approach. It approaches the subject from four different perspectives, in which the topics include […]

Contents
THEME 1 Theories for Cultural DNA Research.- a) Research for Cultural DNA in Design.- b) A Design Gallery System.- c) Underlying Principles and Emerging Designs Based on Magic Squares.- THEME 2 […]

Fields of Interest
Computer Appl. in Social and Behavioral Sciences; Urban Geography / Urbanism (inc. megacities, cities, towns); Cultural Theory; Computational Social Sciences

Series Title
KAIST Research Series

June 2018
XV, 353 p. Hardcover.
155 x 235 mm
ISBN 978-3-319-92731-2

All Languages Rights Available

May 2018
VI, 241 p. 72 illus., 12 illus. in color. Softcover.
148 x 210 mm
£ 79.99 | € 89.99 | $ 109.99
ISBN 978-3-658-21956-7

All Languages Rights Available

May 2018
VI, 225 p. 116 illus., 40 illus. in color. Hardcover.
155 x 235 mm
£ 83.50 | € 94.99 | $ 109.00
ISBN 978-981-10-8188-0

All Languages Rights Available
Wireless Communications under Hostile Jamming: Security and Efficiency
T. Li, T. Song, Y. Liang

- Particularly focuses on physical layer security in wireless communications
- Provides a comprehensive reference of jamming patterns, and anti-jamming solutions in wireless communication systems

This monograph is intended for the designers and would-be designers of secure and efficient wireless communication systems under intentional interference. Along with the widespread of wireless devices, especially reconfigurable software defined [...]

Contents
Chapter 1 Introduction.- Chapter 2 Enhanced CDMA System with Secure Scrambling.- Chapter 3 Message-Driven Frequency Hopping Systems.- Chapter 4 Collision-Free Frequency Hopping and OFDM.- Chapter [...]
Knowledge Computing and its Applications

Knowledge Computing in Specific Domains: Volume II
S. Margret Anouncia, U. K. Wil (Eds)

- Serves as an essential reference work for scholars and practitioners engaged in the knowledge engineering process
- Presents ideas and processes involved in forming knowledge-based applications
- Provides valuable insights into applications where knowledge computing is a key factor

This book highlights technical advances in knowledge management and their applications across a diverse range of domains. It explores the applications of knowledge computing methodologies in image processing, pattern recognition, health care and […]

Contents

Fields of Interest
Information Systems Applications (incl. Internet); Computational Intelligence; Artificial Intelligence (incl. Robotics)

Big Data Processing Using Spark in Cloud
M. Mittal, V. E. Balas, L. M. Goyal, R. Kumar (Eds)

- Describes the current landscape of big data processing and analysis in the cloud
- Defines the underlying concepts of available analytical tools and techniques
- Covers the complete data science workflow in the cloud

The book describes the emergence of big data technologies and the role of Spark in the entire big data stack. It compares Spark and Hadoop and identifies the shortcomings of Hadoop that have been overcome by Spark. […]

Contents

Fields of Interest
Big Data; Systems and Data Security; Big Data/Analytics

Series Title
Studies in Big Data

Translation Quality Assessment
From Principles to Practice
J. Moorkens, S. Castilho, F. Gaspari, S. Doherty (Eds)

- The first book-length discussion of crucial issues surrounding human and machine translation quality and evaluation
- Contains a comprehensive collection of specially invited papers by leading experts in the field
- Offers insights that are critical to the successful integration of translation technologies in the industry today

This is the first volume that brings together research and practice from academic and industry settings and a combination of human and machine translation evaluation. Its comprehensive collection of papers by leading experts in human and machine […]

Contents

Fields of Interest
Language Translation and Linguistics; Computational Linguistics

Series Title
Machine Translation: Technologies and Applications

May 2018
XX, 346 p. 75 illus., 55 illus. in color. Hardcover. 155 x 235 mm
£ 99.99 | € 109.99 | $ 129.00

All Languages Rights Available

August 2018
XIII, 264 p. 89 illus., 62 illus. in color. Hardcover. 155 x 235 mm
£ 109.99 | € 119.99 | $ 149.99

All Languages Rights Available

August 2018
XII, 287 p. 40 illus. Hardcover. 155 x 235 mm
£ 99.99 | € 109.99 | $ 139.99
ISBN 978-3-319-91240-0

All Languages Rights Available
Lai-Massey Cipher Designs
History, Design Criteria and Cryptanalysis
J. Nakahara Jr.

- First extensive survey of block ciphers following the Lai-Massey design paradigm
- Explains IDEA, MESH and other related ciphers, and attacks on these
- Comprehensive reference for researchers and graduate students

This book provides the first extensive survey of block ciphers following the Lai-Massey design paradigm. After the introduction, with historical remarks, the author structures the book into a chapter on the description of the PES, IDEA and other [...]

Contents
Electronic Institutions and Their Applications
N. Osman (Ed)

- Electronic institutions (EIs), the computational analog of conventional institutions, coordinate the interactions of software agents
- Techniques popular in open mixed human-agent communities
- Features contributions from leading researchers in the area of agent technologies and artificial intelligence

This book introduces electronic institutions (EIs) and illustrates three real-life applications that focus on mixed human-software agent communities:
- uHelp, users find help within their social network for their day-to-day activities;
- WeCurate, ...

Contents
Part I. Introduction to Electronic Institutions.
- A Naive View of Electronic Institutions.
- An Abstract View of Electronic Institutions.
- Part II: Applications of Electronic Institutions.

Fields of Interest
Artificial Intelligence (incl. Robotics); e-Commerce/e-business; e-Business/e-Commerce

Mining Over Air: Wireless Communication Networks Analytics
Y. Ouyang, M. Hu, A. Huet, Z. Li

- Leverages the power of machine learning and data mining for studying problems in telecommunication networks that cannot be addressed by the traditional methods in telecom space
- Includes methods, solutions, and algorithms that smoothly bridge data science to wireless technologies
- Uses analytics methods and case studies based on state-of-the-art research and applications in 4/5G wireless technologies, machine learning, and data mining

This book introduces the concepts, applications and development of data science in the telecommunications industry by focusing on advanced machine learning and data mining methodologies in the wireless networks domain.

Contents
Wireless Networks.- Artificial Intelligence.- Big Data.- Machine Learning.- Long Term Evolution (LTE).- The 5th Generation (5G).- Self-Organizing Networks (SON).- Quality of Experience (QoE).-

Fields of Interest
Computer Communication Networks; Data Mining and Knowledge Discovery; Algorithm Analysis and Problem Complexity

Constrained Markov Sequence Generation
Applications to Music and Text
F. Pachet, A. Papadopoulos, P. Roy

- Deals with the problem of generating sequences in the style of a given corpus, in text or music
- Overcomes limitation of Markov models, they capture only local information, by formulating them as constraint satisfaction problems (CSPs)
- Valuable for practitioners, researchers, and graduate students engaged with algorithmic composition and constraint satisfaction

This book deals with the problem of generating sequences in the style of a given corpus, in text or music.

Contents
Introduction.- Part I - Results.- Markov Constraints: Steerable Generation of Variable-Order Markovian Sequences.- Unary Constraints.- Min Order and 

Fields of Interest
Artificial Intelligence (incl. Robotics); Mathematics in Music; Mathematics of Computing; Computer Appl. in Arts and Humanities; Probability Theory and Stochastic Processes; Music

Series Title
Computational Synthesis and Creative Systems
Spatial Visualization and Professional Competence
The Development of Proficiency Among Digital Artists
A. Paquette

- Explains why experience or practice isn’t always enough to develop proficiency
- Demonstrates flaws in current spatial visualisation testing
- Enriches understanding of domain differences in the development of proficiency and expertise

The computer graphics (CG) industry is an attractive field for undergraduate students, but employers often find that graduates of CG art programmes are not proficient. The result is that many positions are left vacant, despite large numbers of [...] Contents
Introduction.- Literature Review.- Methodology.- Quantitative Findings.- Qualitative Findings.- Discussion.- Conclusion.

Fields of Interest
Computer Graphics; Creativity and Arts Education; Learning and Instruction; Professional and Vocational Education

Guide to Vulnerability Analysis for Computer Networks and Systems
An Artificial Intelligence Approach
S. Parkinson, A. Crampton, R. Hill (Eds)

- Highlights the strong requirement for expert knowledge, and how a lack of this is preventing businesses from performing their own vulnerability assessments
- Approaches the challenges of IT vulnerability assessment from both technical and business perspectives, taking into consideration the latest IT trends
- Helps the reader to improve their understanding of the challenges and issues covered, through case studies suitable for readers of different abilities (e.g., both students and practitioners)

This professional guide and reference examines the challenges of assessing security vulnerabilities in computing infrastructure. [...] Contents
Computer Communication Networks; Systems and Data Security; [...] Series Title
Computer Communications and Networks

Tangible Modeling with Open Source GIS
A. Petrasova, B. Harmon, V. Petras, P. Tabrizian, H. Mitasova

- The first book to introduce a tangible interface for geospatial analysis and simulations
- Includes a new chapter on coupling tangible interaction with 3D rendering engine enhances the modeling and design process through interactive, realistic rendering of modeled landscape in Blender, an open source 3D modeling and rendering engine
- Explains how to create 3D landscape models from GIS data using technologies such as casting polymeric sand, CNC routing, and 3D printing, and how to interact with these models with near-real-time feedback on resulting processes and analyses

This book provides an overview of the latest developments in the fast growing field of tangible user interfaces. [...] Contents
Introduction.- System Configuration.- Building physical 3D models.- Basic landscape analysis.- Surface water flow and soil erosion modeling.- Viewshed analysis.- Trail planning.- Solar radiation [...] Fields of Interest
User Interfaces and Human Computer Interaction; Geographical Information Systems/Cartography; Computer Imaging, Vision, Pattern Recognition and Graphics
IT Management
The art of managing IT based on a solid framework leveraging the company’s political ecosystem
L. Pilorget, T. Schell

- Gives an overview of current theories and business practices
- Promotes an easy and quick understanding of IT management
- Provides questions to reflect on typical situations concerning IT management within companies

This book focuses on the art of managing IT. A simple and robust framework is proposed to describe and to structure the essential elements of IT management. The authors pay particular attention to didactic aspects in order to facilitate the [...]

Contents
IT Processes.- IT Strategy.- IT Services.- IT Portfolio and Project Management.- IT Reporting.- IT Governance.

Fields of Interest
Information Systems and Communication Service; IT in Business; Management of Computing and Information Systems

Logical Foundations of Cyber-Physical Systems
A. Platzer

- Supported with detailed lecture notes, lecture videos, homework assignments, and lab assignments
- Cornerstone of author’s course is hybrid programs (HPs), capturing dynamical aspects of cyber-physical systems (CPSs) in a simple programming language
- Teaches skills required to formally analyze ubiquitous CPSs, such as power plants and pacemakers

Cyber-physical systems (CPSs) combine cyber capabilities, such as computation or communication, with physical capabilities, such as motion or other physical processes. Cars, aircraft, and robots are prime examples, because they move physically in [...]

Contents
Architectural Coordination of Enterprise Transformation
H. A. Proper, R. Winter, S. Aier, S. de Kinderen (Eds)

- Explores the challenges of ACET from a theoretical perspective
- Includes an empirical analysis of the status quo of corporate ACET practice
- Offers a toolbox of method fragments to tailor an individual ACET approach

Architectural coordination of enterprise transformation (ACET) integrates and aggregates local information and provides different viewpoints, such as financial, structural, or skill perspectives to the respective stakeholder groups, with the aim [...] 

Contents
1 Introduction.- 2 A major transformation at a global insurance company.- 3 Centralised monitoring of pensions in Greece.- 4 Enterprise coherence in the public sector.- 5 Public services opening [...] 

Fields of Interest
Information Systems Applications (incl. Internet); Enterprise Architecture; Computer Appl. in Administrative Data Processing; Business Information Systems; Software Engineering

Series Title
The Enterprise Engineering Series

Set Phasers to Teach!
Star Trek in Research and Teaching

- No other academic book has focused on the practical use of Star Trek in research and teaching
- Each chapter features an original cartoon
- The book is the first academic publication to list of every Star Trek episode (by series) and film

For 50 years, Star Trek has been an inspiration to its fans around the world, helping them to dream of a better future. This inspiration has entered our culture and helped to shape much of the technology of the early 21st Century. [...] 

Contents
Preface.- Introduction.- “Where Many Books Have Gone Before”: Using Star Trek to Teach Literature.- From ‘Shalom’ Aleichem’ to ‘Live Long and Prosper’: Engaging with Post-War American Jewish [...] 

Fields of Interest
Computers and Education; Philosophy of Education; Learning and Instruction

Software-Defined Cloud Centers
Operational and Management Technologies and Tools
P. Raj, A. Raman

- Provides comprehensive coverage of the technologies and platforms involved in setting up software-defined data centers
- Presents industry-specific examples and frameworks, as well as real-world case studies
- Offers insights from authors with extensive experience in cloud and data center technologies

This practical text/reference provides an exhaustive guide to setting up and sustaining software-defined data centers (SDDCs). Each of the core elements and underlying technologies are explained in detail, often supported by real-world examples. [...] 

Contents
The Distinct Trends and Transitions in the Information Technology (IT) Space.- Demystifying Software-Defined Cloud Environments.- Software-Defined Storage (SDS) for Storage Virtualization.- [...] 

Fields of Interest
Computer Communication Networks; Input/Output and Data Communications; Software Engineering; Database Management; Industrial Organization

Series Title
Computer Communications and Networks
Principles in Noisy Optimization
Applied to Multi-agent Coordination
P. Rakshit, A. Konar

• Reviews the existing principles of noisy optimization in a lucid and insightful manner
• Presents the latest techniques for noisy evolutionary optimization and their applications in agent coordination
• A high-school level background in mathematics is sufficient to understand most of the chapters

This book extends traditional evolutionary optimization algorithms in the contexts of noisy single and multi-objective optimization. It also demonstrates the scope of noisy optimization algorithms in real-world multi-agent coordination problems. […]

Contents
Chapter 1. Foundations in Evolutionary Optimization Algorithms.
Chapter 2. Multi-agent Coordination.
Chapter 4. Learning based Noisy […]

Fields of Interest
Artificial Intelligence (incl. Robotics); Optimization; Theory of Computation

Series Title
Cognitive Intelligence and Robotics

Signal Processing and Machine Learning with Applications
M. M. Richter, S. Paul

• Signal processing results in data sets with relations of varying, probabilistic strength, and engineers use learning algorithms to determine these probabilities
• Valuable for advanced undergraduate and graduate students of computer science and engineering
• Real applications examined include speech processing and biomedical signal processing

The authors offer a comprehensive guide to machine learning applied to signal processing and recognition problems, and then discuss real applications in domains such as speech processing and biomedical signal processing, with a focus on handling […]

Contents
Introduction.
Signal Processing Background.
Digital Filters.
Adaptive Filters.
Spectral Analysis.
General Learning.
Stochastic Processes.
Feature Extractions.
Probability for Signal […]

Fields of Interest
Artificial Intelligence (incl. Robotics); Data Mining and Knowledge Discovery; Signal, Image and Speech Processing

TraceME: A Traceability-Based Method for Conceptual Model Evolution
Model-Driven Techniques, Tools, Guidelines, and Open Challenges in Conceptual Model Evolution
M. Ruiz

• Revised PhD dissertation
• Received the CAiSE PhD award for an outstanding thesis in the field of Information Systems Engineering
• Reports the research experience of the design and evaluation of the method TraceME

This book presents TraceME, a traceability-based method for conceptual model evolution whose general purpose is to support the evolution of information systems. […]

Contents
1.1 Problem statement.
1.2 Research method.
1.2.1 Research goals and research questions.
1.2.2 Engineering, design and empirical cycles.
1.3 Means to achieve the main research goal.
1.4 The […]

Fields of Interest
Software Engineering; Information Systems Applications (incl. Internet); Computer Appl. in Administrative Data Processing

Series Title
Lecture Notes in Business Information Processing
Formal Methods for Nonmonotonic and Related Logics
Vol I: Preference and Size
K. Schlechta

- Emphasis not on motivation or context but on formal methods
- Suitable for graduate students and researchers
- Supported with exercises

The two volumes in this advanced textbook present results, proof methods, and translations of motivational and philosophical considerations to formal constructions. In this Vol. I the author explains preferential structures and abstract size. In […]

Contents
Preferential Structures.- Higher Preferential Structures.- Abstract Size.

Fields of Interest
Mathematical Logic and Formal Languages; Logic; Philosophy of Science; Mathematical Logic and Foundations; Artificial Intelligence (incl. Robotics)

Translation, Brains and the Computer
A Neurolinguistic Solution to Ambiguity and Complexity in Machine Translation
B. Scott

- Addresses fundamental issues to solve the classic problems with machine translation
- Recounts the little known background of early events affecting the history of machine translation
- Identifies complexity as principal reason why machine translation has had limited success

This book is about machine translation (MT) and the classic problems associated with this language technology. It examines the causes of these problems and, for linguistic, rule-based systems, attributes the cause to language's ambiguity and […]

Contents
1 Introduction.- 2 Background.- Logos Model Beginnings.- Advent of Statistical MT.- Overview of Logos Model Translation Process.- Psycholinguistic and Neurolinguistic Assumptions.- On Language […]

Fields of Interest
Language Translation and Linguistics; Computational Linguistics; Psycholinguistics

Series Title
Machine Translation: Technologies and Applications

Network Data Analytics
A Hands-On Approach for Application Development
K. G. Srinivasa, S. G. M., S. H.

- Introduces tools for data analytics, machine learning for data analytics, and for exploring and visualizing data
- Suitable as both a practical guide and a reference for researchers and students
- Provides supplementary material, in the form of working source code, on an associated website

In order to carry out data analytics, we need powerful and flexible computing software. However the software available for data analytics is often proprietary and can be expensive. This book reviews Apache tools, which are open source and easy to […]

Contents
Part I: Data Analytics and Hadoop.- Chapter 1. Introduction to Data Analytics.- Chapter 2. Introduction to Hadoop.- Chapter 3. Data Analytics with Map Reduce.- Part II: Tools for Data Analytics.- […]

Fields of Interest
Data Mining and Knowledge Discovery; Big Data; Visualization; Artificial Intelligence (incl. Robotics)

Series Title
Computer Communications and Networks

November 2018
Approx. 330 p. 16 illus. Hardcover. 155 x 235 mm
£ 58.99 | € 66.99 | $ 79.99
ISBN 978-3-319-89652-6

All Languages Rights Available

July 2018
XVI, 241 p. 55 illus. Hardcover. 155 x 235 mm
£ 67.99 | € 76.99 | $ 89.99
ISBN 978-3-319-76628-7

All Languages Rights Available

May 2018
XXV, 398 p. 155 illus., 117 illus. in color. Hardcover. 155 x 235 mm
£ 79.99 | € 109.99 | $ 129.00
ISBN 978-3-319-77799-3

All Languages Rights Available
Software Development Measurement Programs
Development, Management and Evolution
M. Staron, W. Meding

- Combines academic research with industrial practice to support companies in their journey from manual reporting to automated decision support
- Organized as a gradual progression from theories of measurement to practical and organizational aspects of maintaining measurement systems
- Based on the authors’ experiences introducing over 40,000 measurement systems at more than a dozen companies

This book seeks to promote the structured, standardized and accurate use of software measurement at all levels of modern software development companies. To do so, it focuses on seven main areas: sound scientific foundations, cost-efficiency, [...] Contents
1 Introduction.- 2 Fundamentals.- 3 Measurement Program.- 4 Quality of measurement programs.- 5 Tooling in Measurement Programs.- 6 Examples of Measures in Measurement Systems.- 7 New techniques.- [...] Fields of Interest
Software Engineering; Software Management; Management of Computing and Information Systems

August 2018
XIX, 258 p. 120 illus., 40 illus. in color. Hardcover.
155 x 235 mm
£ 54.99 | € 64.99 | $ 79.99
ISBN 978-3-319-91835-8

All Languages Rights Available

Computational Matter
S. Stepney, S. Rasmussen, M. Amos (Eds)

- As the silicon chip approaches its eighth decade, researchers are actively seeking alternative substrates on which to implement computations
- Each chapter synthesizes current understanding, bringing together researchers from related research projects
- Useful for graduate students, researchers in the field, and the general scientific reader

This book is concerned with computing in materio: that is, unconventional computing performed by directly harnessing the physical properties of materials. It offers an overview of the field, covering four main areas of interest: theory, practice, [...] Contents
Encoding and Representation.- Formalisms.- Mathematical Aspects of Evolvability.- Autonomy, Programming and Programmability.- Non-Boolean Algebras.- Complexity Issues.- Amorphous Substrates.- [...] Fields of Interest
Theory of Computation; Artificial Intelligence (incl. Robotics)

Series Title
Natural Computing Series

July 2018
155 x 235 mm
£ 109.99 | € 129.99 | $ 159.99
ISBN 978-3-319-65824-7

All Languages Rights Available

Smart STEM-Driven Computer Science Education
Theory, Methodology and Robot-based Practices
V. Štukys, R. Burbaitė

- Reviews exhaustively trends and challenges of the STEM paradigm in the context of K-12 education
- Provides a framework of integrating STEM into Computer Science (CS) education based on using robotics
- Treats from the automation perspective theoretical, methodological and practical aspects in designing, preparing and using of smart components to support STEM-driven CS education effectively

At the centre of the methodology used in this book is STEM learning variability space that includes STEM pedagogical variability, learners’ social variability, technological variability, CS content variability and interaction variability. [...] Contents
Special Purpose and Application-Based Systems; Educational Technology; Artificial Intelligence (incl. Robotics)

July 2018
XVII, 368 p. 118 illus. Hardcover.
155 x 235 mm
£ 99.99 | € 109.99 | $ 129.00
ISBN 978-3-319-78484-7

All Languages Rights Available
Computational Artifacts
Towards a Philosophy of Computer Science
R. Turner

- Essential contribution to the philosophy of computer science
- Advances the notion of a technical artifact
- Appeals to computer scientists and philosophers

The philosophy of computer science is concerned with issues that arise from reflection upon the nature and practice of the discipline of computer science. This book presents an approach to the subject that is centered upon the notion of [...]

Contents
Part I, Introduction.- Computer Science.- Towards a Philosophy of Computer Science.- Part II, Ontology.- Computational Artifacts.- Logic Machines as Technical Artifacts.- The Ontology of [...]

Fields of Interest
Theory of Computation; Philosophy of Science; Mathematical Logic and Foundations

Applied Scientific Computing
With Python
P. R. Turner, T. Arildsen, K. Kavanagh

- Provides practical programming examples and exercises in the increasingly popular, free and open-source Python language
- Presents a project-oriented approach that helps readers practice the introduced concepts and methods to improve understanding and practical applicability
- Introduces realistic modeling applications and projects to further aid in making connections across disciplines to motivate the need for numerical methods

This easy-to-understand textbook presents a modern approach to learning numerical methods (or scientific computing), with a unique focus on the modeling and applications of the mathematical content. Emphasis is placed on the need for, and methods [...]

Contents
Motivation and Background.- Number Representations and Errors.- Numerical Calculus.- Linear Equations. [...]

Fields of Interest
Numeric Computing; Simulation and Modeling; Mathematical and Computational Engineering; Computational Science and Engineering

Series Title
Texts in Computer Science

CABoology: Value of Cloud, Analytics and Big Data Trio Wave
N. Upadhyay

- Provides reliable, concise information on the real-world benefits, usage, and operationalization aspects of utilizing the Trio Wave
- Discusses the art and science of delivering true value and benefits to the customer through cloud, analytic and big data
- Illustrates the discipline of CABoology through realistic vignettes, case studies, insights, and recommendations

This uniquely accessible book helps readers use CABoology to solve real-world business problems and drive real competitive advantage. It provides reliable, concise information on the real benefits, usage and operationalization aspects of utilizing [...]

Contents

Fields of Interest
Big Data; Information Systems Applications (incl.Internet); Big Data/Analytics; Probability and Statistics in Computer Science

August 2018
XV, 255 p. Hardcover. 178 x 254 mm
£ 109.99 | € 119.99 | $ 149.99
ISBN 978-3-662-55564-4

All Languages Rights Available

June 2018
X, 272 p. 56 illus., 7 illus. in color. Hardcover. 155 x 235 mm
£ 39.99 | € 44.99 | $ 49.99
ISBN 978-3-319-89574-1

All Languages Rights Available

August 2018
XIX, 151 p. 44 illus. in color. Hardcover. 155 x 235 mm
£ 59.99 | € 69.99 | $ 84.99
ISBN 978-981-10-8674-8

All Languages Rights Available
Semantic Modeling and Enrichment of Mobile and WiFi Network Data
A. Uzun

- Presents a platform for providing estimated and semantically enriched mobile and WiFi network topology data based on the principles of Linked Data
- Introduces a crowdsourced dataset combining static location data with dynamic context information
- Highlights the applicability and added value of semantically enriched mobile and WiFi network data for providing innovative context-aware services in the telecommunications domain

This book discusses the fusion of mobile and WiFi network data with semantic technologies and diverse context [...]
Systems Programming in Unix/Linux
K.C. Wang

- Provides students with the needed background and skills to do advanced programming through detailed development steps
- Introduces parallel computing and concurrent programming, and explains the concept of threads and their advantages over processes; covers Pthreads programming in detail
- Explains process concept and process management using a simple C program together with a piece of assembly code to show real processes in action

Covering all the essential components of Unix/Linux, including process management, concurrent programming, timer and time service, file systems and network programming, this textbook emphasizes programming practice in the Unix/Linux environment.

Contents
Chapter 1. Introduction to Unix/Linux.- Chapter 2. Programming Background.- Chapter 3 Process Management in Unix/Linux.- Chapter 4 Concurrent Programming.- Chapter 5 Timers and Time Service.- […]

Fields of Interest
Programming Techniques; Programming Languages, Compilers, Interpreters; Data Structures; Operating Systems

July 2018
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Pathological Brain Detection
S. Wang, Y. Zhang, Z. Dong, P. Phillips

- Illustrates the complete process of developing a pathological brain detection system
- Provides Matlab codes and Functions for most functions
- Summarizes and reviews the state-of-the-art in the field of pathological brain detection

This book provides detailed practical guidelines on how to develop an efficient pathological brain detection system, reflecting the latest advances in the computer-aided diagnosis of structural magnetic resonance brain images. Matlab codes are […]

Contents
1 Basics of Pathological Brain Detection (PBD).- 2 Neuroimaging Modalities: Strengths and Weaknesses.- 3 Image Preprocessing for Pathological Brain Detection: A Summary.- 4 Canonical Feature […]

Fields of Interest
Image Processing and Computer Vision; Pattern Recognition; Diagnostic Radiology; Neuroradiology

Series Title
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Logics for Computer Science
Classical and Non-Classical
A. Wasilewska

- Offers a comprehensive, intuitive understanding of different logics and discusses some of their applications to Computer Science, and also makes readers understand the need of, and existence of Symbolic Logic as a scientific field
- Book chapters are as self-contained as possible so that they can be combined in different sequences depending on the level of a course one wants to teach it and of material one wants to teach, whether in Computer Science, Mathematics, or Artificial Intelligence
- Includes long intuitive introductions to each chapter, many detailed examples explaining each of the introduced notions and definitions, and well-chosen sets of exercises with carefully written solutions. It also contains samples of quizzes and tests after each chapter

Providing an in-depth introduction to fundamental classical and non-classical logics, this textbook […]

Contents

Fields of Interest
Logics and Meanings of Programs; Mathematical Logic and Foundations; Artificial Intelligence (incl. Robotics)

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A. Wierzbicki

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- Exemplifies results in various social media like Twitter or Wikipedia

This book introduces readers to Web content credibility evaluation and evaluation support. It highlights empirical research and establishes a solid foundation for future research by presenting methods of supporting credibility evaluation of [...] 

Contents

Fields of Interest
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A Crowdsourcing Approach
C. Wu, Z. Yang, Y. Liu

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- Reports the cutting-edge findings of world’s leading research lab on indoor localization
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This book provides a comprehensive and in-depth understanding of wireless indoor localization for ubiquitous applications. The past decade has witnessed a flourishing of WiFi-based indoor localization, which has become one of the most popular [...] 

Contents
Part I Getting Started.- Chapter 1 Background and Overview.- Chapter 2 Mobile Crowdsourcing and Inertial Sensing.- Part II: Boosting Deployment: Making It Available.- Chapter 3 Radio Map [...] 

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C. Xu

- Games classified into text-based, event-driven based, and sprite-animation based, so that every game could be incrementally built up
- Lets teachers and students easily recognize and schedule their projects. The Java language elements are introduced accordingly, from static to dynamic

This innovative approach to teaching Java language and programming uses game design development as the method to applying concepts. Instead of teaching game design using Java, projects are designed to teach Java in a problem-solving approach that [...] 

Contents
1 Java programming and game development: a project HelloWorld 2 Basics of Java programming: a project PrintXmasCard3 Java operators: a game GuessInt in text 4 UML and its usage: a game [...] 

Fields of Interest
Programming Languages, Compilers, Interpreters; Java; Programming Techniques; Game Development

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L. Xu, C. Jiang, Y. Qian, Y. Ren

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- This book presents a formalized analysis of the privacy preserving strategies. Specifically, game theory and contract theory, which are widely used in the study of economics, are applied in this book to analyze users' strategies

With the growing popularity of “big data”, the potential value of personal data has attracted more and more attention. Applications built on personal data can create tremendous social and economic benefits. Meanwhile, they bring serious threats [...] 

Contents
1 The Conflict between Big Data and Individual Privacy.- 2 Privacy-Preserving Data Collecting: A Simple Game Theoretic Approach.- 3 Contract-based Private Data Collecting.- 4 Dynamic Privacy [...] 

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S. Yan

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Contents
1 Mathematical Preliminaries.- 2 Secret-Key Cryptography.- 3 Public-Key Cryptography.- 4 Key Management and Applications.

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D. Zhang, W. Zuo, P. Wang

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- Provides an interdisciplinary reference for researchers and professionals in computer science and medical research
This book describes the latest advances in pulse signal analysis and their applications in classification and diagnosis. First, it provides a comprehensive introduction to useful techniques for pulse signal acquisition based on different kinds of [...] 

Contents

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J. Zhou, F. Chen (Eds)

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With an evolutionary advancement of Machine Learning (ML) algorithms, a rapid increase of data volumes and a significant improvement of computation powers, machine learning becomes hot in different applications. […]

Contents

Fields of Interest
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Series Title
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B. Zygelman

- Introduces beginning undergraduate students to Quantum Theory and developments in QIC, without exposure to upper-level physics and mathematics
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