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M.D. Alam, U.F. Gühl

**Project-Management in Practice**
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This practice-oriented book explores a variety of cross-project topics and specific aspects of different project phases. It also offers tips, examples, templates and checklists, and discusses concrete problems and solutions from project practice in IT and the automotive industry. The authors combine their extensive practical experience in years of project work with relevant project-management theory. Each chapter begins with a list of the learning objectives and concludes with a summary of the insights provided. Accordingly, the book offers a valuable resource for:

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C. Anslow, P. Campos, J. Jorge (Eds.)

**Collaboration Meets Interactive Spaces**

This book explores the technological advances and social interactions between interactive spaces, surfaces and devices, aiming to provide new insights into emerging social protocols that arise from the experimentation and long-term usage of interactive surfaces. This edited volume brings together researchers from around the world who investigate interactive surfaces and interaction techniques within large displays, wearable devices, software development, security and emergency management. Providing both theory and practical case studies, the authors look at current developments and challenges into 3D visualization, large surfaces, the interplay of mobile phone devices and large...[...]

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A. Altobelli

**Haptic Devices for Studies on Human Grasp and Rehabilitation**

This book presents a new set of devices for accurate investigation of human finger stiffness and force distribution in grasping tasks. The ambitious goal of this research is twofold, the first is to advance the state of the art on human strategies in manipulation tasks and provide tools to assess rehabilitation procedure and the second is to investigate human strategies for impedance control that can be used for human robot interaction and control of myoelectric prosthesis. Part one describes two types of systems that are able to achieve a complete set of measurements on force distribution and contact point locations. The effectiveness of these devices in grasp analysis is...[...]

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Social Sciences (2016. VI, 404 p. 112 illus., 62 illus. in color. (Computational societies as a means of...)

This book presents a unique selection of fully reviewed, extended papers originally presented at the Social Simulation Conference 2014 in Barcelona, Spain. Only papers on the simulation of historical processes have been selected, the aim being to present theories and methods of computer simulation that can be relevant to understanding the past. Applications range from the Paleolithic and the origins of social life up to the Roman Empire and Early Modern societies. Case studies from Europe, America, Africa and Asia have been selected for publication. The extensive introduction offers a thorough review of the computer simulation of social dynamics in past societies as a means of...[...]

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Natural Language Understanding in a Semantic Web Context

This book serves as a starting point for Semantic Web (SW) students and researchers interested in discovering what Natural Language Processing (NLP) has to offer. NLP can effectively help uncover the large portions of data held as unstructured text in natural language, thus augmenting the real content of the Semantic Web in a significant and lasting way. The book covers the basics of NLP, with a focus on Natural Language Understanding (NLU), referring to semantic processing, information extraction and knowledge acquisition, which are seen as the key links between the SW and NLP communities. Major emphasis is placed on mining sentences in search of entities and relations. In the course...[...]

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Forthcoming
D. Battaglia, I. Guyon, V. Lemaire, J. Orlandi, B. Ray, J. Soriano (Eds.)

Neural Connectomics Challenge

This book illustrates the thrust of the scientific community to use machine learning concepts for tackling a complex problem: given time series of neuronal spontaneous activity, which is the underlying connectivity between the neurons in the network? The contributing authors also develop tools for the advancement of neuroscience through machine learning techniques, with a focus on the major open problems in neuroscience. While the techniques have been developed for a specific application, they address the more general problem of network reconstruction from observational time series, a problem of interest in a wide variety of domains, including econometrics, epidemiology, and[...]

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Forthcoming
S. Becker, G. Brataas, S. Lehrig (Eds.)

Engineering Scalable, Elastic, and Cost-Efficient Cloud Computing Applications

The CloudScale Method

This book provides an overview of the problems involved in engineering scalable, elastic, and cost-efficient cloud computing services and describes the CloudScale method — a description of rescuing tools and the required steps to exploit these tools. It allows readers to analyze the scalability problem in detail and identify scalability anti-patterns and bottlenecks within an application. With the CloudScale method, software architects can analyze both existing and planned IT services. The method allows readers to answer questions like: • With an increasing number of users, can my service still deliver acceptable quality of service? • What if each user uses the service more? [...] More on www.springer.com/978-3-319-54285-0

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Data Mining and Constraint Programming

Foundations of a Cross-Disciplinary Approach

A successful integration of constraint programming and data mining has the potential to lead to a new ICT paradigm with far reaching implications. It could change the face of data mining and machine learning, as well as constraint programming technology. It would not only allow one to use data mining techniques in constraint programming to identify and update constraints and optimization criteria, but also to employ constraints and criteria in data mining and machine learning in order to discover models compatible with prior knowledge. This book reports on some key results obtained on this integrated and cross-disciplinary approach within the European FP7 FET Open project...[...]

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Computational Methods for Processing and Analysis of Biological Pathways

This work offers a guided walkthrough of one of the most promising research areas in modern life sciences, enabling a deeper understanding of involved concepts and methodologies via an interdisciplinary view, focusing on both well-established approaches and cutting-edge research. Highlighting what pathway analysis can offer to both the experimentalist and the modeler, the text opens with an introduction to a general methodology that outlines common workflows shared by several methods. This is followed by a review of pathway and sub-pathway based approaches for systems pharmacology. The work then presents an overview of pathway analysis methods developed to model the temporal aspects.[…]

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Semantic Web Technologies for Intelligent Engineering Applications

This is the first book to explore how Semantic Web technologies (SWTs) can be used to create intelligent engineering applications (IEAs). Technology-specific chapters reflect the state of the art in relevant SWTs and offer guidelines on how they can be applied in multi-disciplinary engineering settings characteristic of engineering production systems. In addition, a selection of case studies from various engineering domains demonstrate how SWTs can be used to create IEAs that enable, for example, defect detection or constraint checking. Part I “Background and Requirements of Industrie 4.0 for Semantic Web Solutions” provides the background information needed to understand the book[…]

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Hybrid Soft Computing for Image Segmentation

This book proposes soft computing techniques for segmenting real-life images in applications such as image processing, image mining, video surveillance, and intelligent transportation systems. The book suggests hybrids deriving from three main approaches: fuzzy systems, primarily used for handling real-life problems that involve uncertainty; artificial neural networks, usually applied for machine cognition, learning, and recognition; and evolutionary computation, mainly used for search, exploration, efficient exploitation of contextual information, and optimization. The contributed chapters discuss both the strengths and the weaknesses of the approaches, and the book will be valuable[…]

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An Introduction to Transfer Entropy

Information Flow in Complex Systems

This book considers a relatively new metric in complex systems, transfer entropy, derived from a series of measurements, usually a time series. After a qualitative introduction and a chapter that explains the key ideas from statistics required to understand the text, the authors then present information theory and transfer entropy in depth. A key feature of the approach is the authors’ work to show the relationship between information flow and complexity. The later chapters demonstrate information transfer in canonical systems, and applications, for example in neuroscience and in finance. The book will be of value to advanced undergraduate and graduate students and researchers in the[…]

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Prototyping of User Interfaces for Mobile Applications

This book investigates processes for the prototyping of user interfaces for mobile apps, and describes the development of new concepts and tools that can improve the prototype driven app development in the early stages. It presents the development and evaluation of a new requirements catalogue for prototyping mobile app tools that identifies the most important criteria such tools should meet at different prototype-development stages. This catalogue is not just a good point of orientation for designing new prototyping approaches, but also provides a set of metrics for a comparing the performance of alternative prototyping tools. In addition, the book discusses the development of[…]

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Graphical Simulation of Deformable Models

This book covers dynamic simulation of deformable objects, which is one of the most challenging tasks in computer graphics and visualization. It focuses on the simulation of deformable models with anisotropic materials, one of the less common approaches in the existing research. Both physically-based and geometrically-based approaches are examined. The authors start with transversely isotropic materials for the simulation of deformable objects with fibrous structures. Next, they introduce a fiber-field incorporated computational finite element model (CLFEM) that works directly with a constitutive model of transversely isotropic material. A smooth fiber-field is used to establish the... More on www.springer.com/978-3-319-51030-9

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Introduction to Text Visualization

This book provides a systematic review of many advanced techniques to support the analysis of large collections of documents, ranging from the elementary to the profound, covering all the aspects of the visualization of text documents. Particularly, we start by introducing the fundamental concept of information visualization and visual analysis, followed by a brief survey of the field of text visualization and commonly used data models for converting document into a structured form for visualization. Then we introduce the key visualization techniques including visualizing document similarity, content, sentiments, as well as text corpus exploration system in details with concrete... More on www.springer.com/978-94-6239-185-7

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Instinctive Computing

This book attempts to connect artificial intelligence to primitive intelligence. It explores the idea that a genuinely intelligent computer will be able to interact naturally with humans. To form this bridge, computers need the ability to recognize, understand and even have instincts similar to human. The author organizes the book into three parts. He starts by describing primitive problem-solving, discussing topics like default mode, learning, tool-making, pheromones and foraging. Part two then explores behavioral models of instinctive cognition by looking at the perception of motion and event patterns, appearance and gesture, behavioral dynamics, figurative thinking, and... More on www.springer.com/978-1-4471-7276-5

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T. Cerquitelli, D. Quercia, F. Pasquale (Eds.)

Transparent Data Mining for Big and Small Data

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RFID Technologies for Internet of Things

This book introduces applications of RFID on the Internet of things, under the emerging technologies for tag search, anonymous RFID authentication, and... More on www.springer.com/978-1-4471-7276-5
identification of networked tags. A new technique called filtering vector (a compact data structure that encodes tag IDs) is proposed to enable tag filtration, meeting the stringent delay requirements for real-world applications. Based on filtering vectors, a novel iterative tag search protocol is designed, which progressively improves the accuracy of search result and reduces the time of each iteration by using the information learned from the previous iterations. Moreover, the protocol is extended to work under noisy channel. The [...] More on www.springer.com/978-3-319-47354-3

Hyperconnectivity
A.D. Cheok

This book explores the emerging field of hyperconnectivity looking at technology and systems that allow person-to-person and person-to-machine communication in networked organizations and the social and economic impact of this society. The author begins by presenting literary culture and interaction, focusing on the development of the Poetry Mix-Up platform, before looking at electronic and magnetic user interfaces for multisensory experiences. He then offers insights into the controversial topic of human intimacy with robots, looking at recent developments like the Kissinger device amongst others. The author concludes by exploring the potential social impact of hyperconnectivity and [...] More on www.springer.com/978-1-4471-7309-0

Toward Brain-Computer Interaction in Paralysis
A New Approach Based on Visual Evoked Potentials and Depth-of-Field
A. Cotrina

This book presents up-to-date information on Brain-computer Interfaces (BCI). BCIs are systems that record brain signals, extract features and translate them into computer commands. For instance, in BCIs based on the steady-state visual evoked potentials (SSVEP-BCI), brain potentials evoked by visual stimuli are used for controlling computer-based devices. Inspired by the optical phenomenon of depth of field, this book introduces, describes, and evaluates a novel way of setting visual stimuli for SSVEP-BCI. It employs two stimuli that were placed at different distances from the subjects so that if one stimulus is focused on, the other one is non-focused. This assessment allows [...] More on www.springer.com/978-3-319-52297-5

Digital Preservation Metadata for Practitioners
Implementing PREMIS
A. Dappert, R.S. Guenther, S. Peyrard (Eds.)

This book begins with an introduction to fundamental issues related to digital preservation metadata before proceeding to in-depth coverage of issues concerning its practical use and implementation. It helps readers to understand which options need to be considered in specifying a digital preservation metadata profile to ensure it matches their individual content types, technical infrastructure, and organizational needs. Further, it provides practical guidance and examples, and raises important questions. It does not provide full-fledged implementation solutions, as such solutions can, by definition, only be specific to a given preservation context. As such, the book effectively [...] More on www.springer.com/978-3-319-43761-3

Hybrid Soft Computing for Multilevel Image and Data Segmentation
S. De, S. Bhattacharyya, S. Chakraborty, P. Dutta

This book explains efficient solutions for segmenting the intensity levels of different types of multilevel images. The authors present hybrid soft computing techniques, which have advantages over conventional soft computing solutions as they incorporate data heterogeneity into the clustering/segmentation procedures. This is a useful introduction and reference for researchers and graduate students of computer science and electronics engineering, particularly in
Resource Management for Internet of Things

This book investigates the pressing issue of resource management for Internet of Things (IoT). The unique IoT ecosystem poses new challenges and calls for unique and bespoke solutions to deal with these challenges. Using a holistic approach, the authors present a thorough study into the allocation of the resources available within IoT systems to accommodate application requirements. This is done by investigating different functionalities and architectural approaches involved in a basic workflow for managing the lifecycle of resources in an IoT system. Resource Management for the Internet of Things will be of interest to researchers and students as well as professional developers[...]

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Privately and Publicly Verifiable Computing Techniques

This book presents the first comprehensive overview of various verifiable computing techniques, which allow the computation of a function on outsourced data to be delegated to a server. It provides a brief description of all the approaches and highlights the properties each solution achieves. Further, it analyzes the level of security provided, how efficient the verification process is, who can act as a verifier and check the correctness of the result, which function class the verifiable computing scheme supports, and whether privacy with respect to the input and/or output data is provided. On the basis of this analysis the authors then compare the different approaches and outline[...]

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Ten Laws for Security

In this book the author presents ten key laws governing information security. He addresses topics such as attacks, vulnerabilities, threats, designing security, identifying key IP assets, authentication, and social engineering. The informal style draws on his experience in the area of video protection and DRM, while the text is supplemented with introductions to the core formal technical ideas. It will be of interest to professionals and researchers engaged with information security.

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Semantics of the Probabilistic Typed Lambda Calculus

Markov Chain Semantics, Termination Behavior, and Denotational Semantics

This book takes a foundational approach to the semantics of probabilistic programming. It elaborates a rigorous Markov chain semantics for the probabilistic typed lambda calculus, which is the typed lambda calculus with recursion plus probabilistic choice. The book starts with a recapitulation of the basic mathematical tools needed throughout the book, in particular Markov chains, graph theory and domain theory, and also explores the topic of inductive definitions. It then defines the syntax and establishes the Markov...
chain semantics of the probabilistic lambda calculus and, furthermore, both a graph and a tree semantics. Based on that, it investigates the termination behavior of [...] More on www.springer.com/978-3-642-55197-0

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C. Elsenbroich, D. Anzola, N. Gilbert (Eds.)

Social Dimensions of Organised Crime

Modelling the Dynamics of Extortion Rackets

This book presents a multi-disciplinary investigation into extortion rackets with a particular focus on the structures of criminal organisations and their collapse, societal processes in which extortion rackets strive and fail and the impacts of bottom-up and top-down ways of fighting extortion racketeering. Through integrating a range of disciplines and methods the book provides an extensive case study of empirically based computational social science. It is based on a wealth of qualitative data regarding multiple extortion rackets, such as the Sicilian Mafia, an international money laundering organisation and a predatory extortion case in Germany. Computational methods are used for [...] More on www.springer.com/978-3-319-45167-1

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C. Elsenbroich, D. Anzola, N. Gilbert (Eds.)

Visual Attributes

This unique text/reference provides a detailed overview of the latest advances in machine learning and computer vision related to visual attributes, highlighting how this emerging field intersects with other disciplines, such as computational linguistics and human-machine interaction. Topics and features: presents attribute-based methods for zero-shot classification, learning using privileged information, and methods for multi-task attribute learning; describes the concept of relative attributes, and examines the effectiveness of modeling relative attributes in image search applications; reviews state-of-the-art methods for estimation of human attributes, and describes their use in a [...] More on www.springer.com/978-3-319-50075-1

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S. Fernandes

Performance Evaluation for Network Services, Systems and Protocols

This book provides a comprehensive view of the methods and approaches for performance evaluation of computer networks. It offers a clear and logical introduction to the topic, covering both fundamental concepts and practical aspects. It enables the reader to answer a series of questions regarding performance evaluation in modern computer networking scenarios, such as 'What, where, and when to measure? ', 'Which time scale is more appropriate for a particular measurement and analysis?', 'Experimentation, simulation or emulation? Why?', and 'How do I best design a sound performance evaluation plan?'. The book includes concrete examples and applications in the important aspects of [...] More on www.springer.com/978-3-319-54519-6

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D.M. Gabbay, K. Schlechta

A New Perspective on Nonmonotonic Logics

In this book the authors present new results on interpolation for nonmonotonic logics, abstract (function) independence, the Talmudic Kal Vachomer rule, and an equational solution of contrary-to-duty obligations. The chapter on formal construction is the conceptual core of the book, where the authors combine the ideas of several types of nonmonotonic logics and their analysis of ‘natural’ concepts into a formal logic, a special preferential construction that combines formal clarity with the intuitive advantages of Reiter defaults, defeasible inheritance, theory revision, and epistemic considerations. It is suitable for researchers
Concurrency, Security, and Puzzles

Essays Dedicated to Andrew William Roscoe on the Occasion of His 60th Birthday

This festschrift was written in honor of Andrew William (Bill) Roscoe on the occasion of his 60th birthday, and features tributes by Sir Tony Hoare, Stephen Brookes, and Michael Wooldridge. Bill Roscoe is an international authority in process algebra, and has been the driving force behind the development of the FDR refinement checker for CSP. He is also world renowned for his pioneering work in analyzing security protocols, modeling information flow, human-interactive security, and much more. Many of these areas are reflected in the 15 invited research articles in this festschrift, and in the presentations at the "BILL-60" symposium held in Oxford, UK, on January 9 and 10, 2017. More on www.springer.com/978-3-319-51045-3

K.-D. Gronwald

Global Communication and Collaboration

Global Project Management, Global Sourcing, Cross-Cultural Competencies

Speed, social change, historical inheritance and cultural gaps are key factors which have significant impact on global collaboration and global sourcing. The author explains how working in virtual teams in a global, multicultural environment requires a significant amount of organizational and behavioral change of people and organizations. Understanding cultural differences in working styles is important for successful global project management. Major theories of international management, company internationalization, cultural dimensions and distances will be discussed to develop cross-cultural competencies and conflict management styles for international project managers. They will [...] More on www.springer.com/978-3-662-53149-5

F. Guillet, B. Pinaud, G. Venturini (Eds.)

Advances in Knowledge Discovery and Management

Volume 6

This book presents a collection of representative and novel work in the field of data mining, knowledge discovery, clustering and classification, based on expanded and reworked versions of a selection of the best papers originally presented in French at the EGC 2014 and EGC 2015 conferences held in Rennes (France) in January 2014 and Luxembourg in January 2015. The book is in three parts: The first four chapters discuss optimization considerations in data mining. The second part explores specific quality measures, dissimilarities and ultrametrics. The final chapters focus on semantics, ontologies and social networks. Written for PhD and MSc students, as well as researchers working in [...] More on www.springer.com/978-3-319-45762-8

A. Hameurlain, J. Küng, R. Wagner (Eds.)

Transactions on Large-Scale Data and Knowledge-Centered Systems XXIX

The LNCS journal Transactions on Large-Scale Data and Knowledge-Centered Systems focuses on data management, knowledge discovery, and knowledge processing, which are core and hot topics in computer science. Since the 1990s, the Internet has become the main driving force behind application development in all domains. An increase in the demand for resource sharing across different sites connected through networks has led to an evolution of data- and knowledge-management systems from centralized systems to decentralized systems enabling large-scale distributed applications providing high scalability. Current decentralized systems still focus on data and knowledge as their main resource. [...] More on www.springer.com/978-3-662-54036-7
Multiple Instance Learning
Foundations and Algorithms
This book provides a general overview of multiple instance learning (MIL), defining the framework and covering the central paradigms. The authors discuss the most important algorithms for MIL such as classification, regression and clustering. With a focus on classification, a taxonomy is set and the most relevant proposals are specified. Efficient algorithms are developed to discover relevant information when working with uncertainty. Key representative applications are included. This book carries out a study of the key related fields of distance metrics and alternatives are included. This book carries out a study of the key related fields of distance metrics and alternative modeling, and security-critical systems.

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Machine Learning for Health Informatics
State-of-the-Art and Future Challenges
Machine learning (ML) is the fastest growing field in computer science, and Health Informatics (HI) is amongst the greatest application challenges, providing future benefits in improved medical diagnoses, disease analyses, and pharmaceutical development. However, successful ML for HI needs a concerted effort, fostering integrative research between experts ranging from diverse disciplines from data science to visualization. Tackling complex challenges needs both disciplinary excellence and cross-disciplinary networking without any boundaries. Following the HCI-KDD approach, in combining the best of two worlds, it is aimed to support human intelligence with machine intelligence. This [...] More on www.springer.com/978-3-319-50477-3

Introduction to Data Science
A Python Approach to Concepts, Techniques and Applications
This accessible and classroom-tested textbook/reference presents an introduction to the fundamentals of the emerging and interdisciplinary field of data science. The coverage spans key concepts adopted from statistics and machine learning, useful techniques for graph analysis and parallel programming, and the practical application of data science for such tasks as building recommender systems or performing sentiment analysis. Topics and features: provides numerous practical case studies using real-world data throughout the book; supports understanding through hands-on experience of solving data science problems using Python; describes techniques and tools for statistical analysis. [...] More on www.springer.com/978-3-319-50016-4

Provably Correct Systems
As computers increasingly control the systems and services we depend upon within our daily lives like transport, communications, and the media, ensuring these systems function correctly is of utmost importance. This book consists of twelve chapters and one historical account that were presented at a workshop in London in 2015, marking the 25th anniversary of the European ESPRIT Basic Research project ‘ProCoS’ (Provably Correct Systems). The ProCoS I and II projects pioneered and accelerated the automation of verification techniques, resulting in a wide range of applications within many trades and sectors such as aerospace, electronics, communications, and retail. The following [...] More on www.springer.com/978-3-319-48627-7

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2017, XVIII, 328 p. 84 illus., 48 illus. in color. (NASA Monographs in Systems and Software Engineering)
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Erscheinungstermin: March 8, 2017

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Cyber Deception
Building the Scientific Foundation

This edited volume features a wide spectrum of the latest computer science research relating to cyber deception. Specifically, it features work from the areas of artificial intelligence, game theory, programming languages, graph theory, and more. The work presented in this book highlights the complex and multi-faceted aspects of cyber deception, identifies the new scientific problems that will emerge in the domain as a result of the complexity, and presents novel approaches to these problems. This book can be used as a text for a graduate-level survey/seminar course on cutting-edge computer science research relating to cyber-security, or as a supplemental text for a regular [...]

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R.C. Joshi, E.S. Pilli

Fundamentals of Network Forensics
A Research Perspective

This timely text/reference presents a detailed introduction to the essential aspects of computer network forensics. The book considers not only how to uncover information hidden in email messages, web pages and web servers, but also what this reveals about the functioning of the Internet and its core protocols. This, in turn, enables the identification of shortcomings and highlights where improvements can be made for a more secure network. Topics and features: provides learning objectives in every chapter, and review questions throughout the book to test understanding; introduces the basic concepts of network process models, network forensics frameworks and network forensics tools; [...]

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2016. XV, 214 p. 82 illus., 1 illus. in color. (Computer Communications and Networks)
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ISBN 978-1-4471-7297-0
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An Introduction to Data Analysis using Aggregation Functions in R

This textbook helps future data analysts comprehend aggregation function theory and methods in an accessible way, focusing on a fundamental understanding of the data and summarization tools. Offering a broad overview of recent trends in aggregation research, it complements any study in statistical or machine learning techniques. Readers will learn how to program key functions in R without obtaining an extensive programming background. Sections of the textbook cover background information and context, aggregating data with averaging functions, power means, and weighted averages including the Borda count. It explains how to transform data using normalization or scaling and [...]

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2016. X, 199 p. 29 illus., 20 illus. in color.
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Subjective Logic
A Formalism for Reasoning Under Uncertainty

This is the first comprehensive treatment of subjective logic and all its operations. The author developed the approach, and in this book he first explains subjective opinions, opinion representation, and decision-making under vagueness and uncertainty, and he then offers a full definition of subjective logic, harmonising the key notations and formalisms, concluding with chapters on trust networks and subjective Bayesian networks, which when combined form general subjective networks. The author shows how real-world situations can be realistically modelled with regard to how situations are perceived, with conclusions that more correctly reflect the ignorance and uncertainties that [...]

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Guide to 3D Vision Computation
Geometric Analysis and Implementation

This classroom-tested and easy-to-understand textbook/reference describes the state of the art in 3D reconstruction from multiple images, taking into consideration all aspects of programming and implementation. Unlike other computer vision textbooks, this guide takes a unique approach in which the initial focus is on practical application and the procedures necessary to actually build a computer vision system. The theoretical background is then briefly explained afterwards, highlighting how one can quickly and simply obtain the desired result without knowing the derivation of the mathematical detail. Features:
Developing Modular-Oriented Simulation Models Using System Dynamics Libraries

This SpringerBrief introduces the development and practical application of a module-oriented development framework for domain specific system-dynamic libraries (SDL approach), which can be used in the simulation of multi-causal and dynamic relationships on different levels of an industry, as an example the construction industry. Multidisciplinary research and development teams, scientists from different domains as well as practitioners can develop SDL units from varying perspectives based on this approach. For example, the explanation of the risk situation of a company, the identification and evaluation of project risks, endangered operational procedures on various functional levels. [...] More on www.springer.com/978-3-319-33167-6

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Prediction and Inference from Social Networks and Social Media

This book addresses the challenges of social network and social media analysis in terms of prediction and inference. The chapters collected here tackle these issues by proposing new analysis methods and by examining mining methods for the vast amount of social content produced. Social Networks (SNs) have become an integral part of our lives; they are used for leisure, business, government, medical, educational purposes and have attracted billions of users. The challenges that stem from this wide adoption of SNs are vast. These include generating realistic social network topologies, awareness of user activities, topic and trend generation, estimation of user attributes from their [...] More on www.springer.com/978-3-319-51048-4

Hardcover
2017. VII, 209 p. 75 illus., 54 illus. in color. (Lecture Notes in Social Networks)
► 101,64 €
ISBN 978-3-319-51048-4
Erscheinungstermin: March 30, 2017

From Social Data Mining and Analysis to Prediction and Community Detection

This book presents the state-of-the-art in various aspects of analysis and mining of online social networks. Within the broader context of online social networks, it focuses on important and upcoming topics of social network analysis and mining such as the latest in sentiment trends research and a variety of techniques for community detection and analysis. The book collects chapters that are expanded versions of the best papers presented at the IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM’2015), which was held in Paris, France in August 2015. All papers have been peer reviewed and checked carefully for overlap with the literature. [...] More on www.springer.com/978-3-319-51366-9

Hardcover
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Erscheinungstermin: March 23, 2017

Algorithm Engineering
Selected Results and Surveys

Algorithm Engineering is a methodology for algorithmic research that combines theory with implementation and experimentation in order to obtain better algorithms with high practical impact. Traditionally, the study of algorithms was dominated by mathematical (worst-case) analysis. In Algorithm Engineering, algorithms are also implemented and experiments conducted in a systematic way, sometimes resembling the experimentation processes known from fields such as biology, chemistry, or physics. This helps in counteracting an otherwise growing gap between theory and practice. More on www.springer.com/978-3-319-49486-9

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Numbers and Computers

This is a book about numbers and how those numbers are represented in and operated on by computers. It is crucial that developers understand this area
because the numerical operations allowed by computers, and the limitations of those operations, especially in the area of floating point math, affect virtually everything people try to do with computers. This book aims to fill this gap by exploring, in sufficient but not overwhelming detail, just what it is that computers do with numbers. Divided into two parts, the first deals with standard representations of integers and floating point numbers, while the second examines several other number representations. Details are explained.

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**Forthcoming**

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**An Introduction to Online Computation**

D. Komm

**Determinism, Randomization, Advice**

This textbook explains online computation in different settings, with particular emphasis on randomization and advice complexity. These settings are analyzed for various online problems such as the paging problem, the k-server problem, job shop scheduling, the knapsack problem, the bit guessing problem, and problems on graphs. This book is appropriate for undergraduate and graduate students of computer science, assuming a basic knowledge in algorithmics and discrete mathematics. Also researchers will find this a valuable reference for the recent field of advice complexity.

More on www.springer.com/978-3-319-42747-8

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2017. Xlll, 346 p. 68 illus., 12 illus. in color.

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**Erscheinungstermin: April 8, 2017**

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**Game Dynamics**

**Best Practices in Procedural and Dynamic Game Content Generation**

D. Kroening, O. Strichman

**Decision Procedures**

**An Algorithmic Point of View**

J. Krogstie

**Quality in Business Process Modeling**

O. Korn, N. Lee (Eds.)

This book offers a compendium of best practices in game dynamics. It covers a wide range of dynamic game elements ranging from player behavior over artificial intelligence to procedural content generation. Such dynamics make virtual worlds more lively and realistic and they also create the potential for moments of amazement and surprise. In many cases, game dynamics are driven by a combination of random seeds, player records and procedural algorithms. Games can even incorporate the player’s real-world behavior to create dynamic responses. The best practices illustrate how dynamic elements improve the user experience and increase the replay value. The book draws upon interdisciplinary...

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This is the first book to seriously address the disconnection between nimble Agile teams and other groups in the enterprise, including enterprise architecture, the program management office (PMO), human resources, and even business executives. When an enterprise experiments with practice improvements, software development teams often jump on board with excitement, while other groups are left to wonder how they will fit in. We address how these groups can adapt to Agile teams. More importantly, we show how many Agile teams cause their own problems, damaging scalability and sustainability, by requiring special treatment, and by failing to bridge the gaps between themselves and other...

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This book covers the whole spectrum of modeling goals to achieve optimal quality in the process model developed. It focuses on how to balance quality considerations across all semantic levels when models are used for different purposes, and is based on SEQUAL, a framework for understanding the quality of models and modeling languages, which can take into account all main aspects relating to the quality of models. Chapter 1 focuses on the theoretical foundations, introducing readers to the topics of business processes and business process modeling, as well as the most important concept underlying the modeling of business processes. In turn, Chapter 2 addresses the quality of models in...

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The problem of using low-order dynamics clarifies the process of data assimilation via 4D-Var and FSM. The equivalence of data assimilation strategy called Forecast Sensitivity (FSM) is proven and applies the well-known four-dimensional variational (4D-Var) data assimilation method. 4D-Var works with a forward in time tangent linear model (TLM). The equivalence of data assimilation via 4D-Var and FSM is proven and addresses the challenges of integrating these methods.

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**Multimodal Neuroimaging Computing for the Characterization of Neurodegenerative Disorders**

This thesis covers various facets of brain image computing methods and illustrates the scientific understanding of neurodegenerative disorders based on four general aspects of multimodal neuroimaging computing: neuroimaging data pre-processing, brain feature modeling, pathological pattern analysis, and translational model development. It demonstrates how multimodal neuroimaging computing techniques can be integrated and applied to neurodegenerative disease research and management, highlighting relevant examples and case studies. Readers will also discover a number of interesting extension topics in longitudinal neuroimaging studies, subject-centered analysis, and the brain connectome.


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- 2017. XXV, 136 p. 35 illus., 14 illus. in color. (Springer Theses)
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Crowd-Powered Mobile Computing and Smart Things

This SpringerBrief provides a synergistic overview of technology trends by emphasizing five linked perspectives: crowd+cloud machines, extreme cooperation with smart things, scalable context-awareness, drone services for mobile crowds and social links in mobile crowds. The authors also highlight issues and challenges at the intersection of these trends. Topics covered include cloud computing, Internet of Things, mobile and wearable computing, crowd computing, the culture of thing sharing, collective computing, and swarm dynamics. The brief is a useful resource and a starting point for researchers, students or anyone interested in the contemporary computing landscape.

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Erscheinungstermin: March 31, 2017

Physical Play and Children’s Digital Games

Play engages humans cognitively, emotionally, and physically at all ages. Using a historical framework, and focusing on play as represented by material artifacts such as toys and games, this book explores play as a form of somatic engagement that reflects cultural attitudes about development and learning as these have evolved over time in western culture. Theorists in the twentieth century such as Klein and Winnicott, Huizinga and Callois, Piaget, Bruner and Vygotsky brought different perspectives to our understanding of play’s role in our society. In particular, Vygotsky’s theories about process provide insight into how children attend to learning and assimilate new information.

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Cool Math for Hot Music
A First Introduction to Mathematics for Music Theorists

This textbook is a first introduction to mathematics for music theorists, covering basic topics such as sets and functions, universal properties, numbers and recursion, graphs, groups, rings, matrices and modules, continuity, calculus, and gestures. It approaches these abstract themes in a new way: Every concept or theorem is motivated and illustrated by examples from music theory (such as harmony, counterpoint, tuning), composition (e.g., classical combinaticks, dodecaphonic composition), and gestural performance. The book includes many illustrations, and exercises with solutions.

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Guide to Unconventional Computing for Music

This pioneering text/reference explores how innovative new modes of computation may provide exciting new directions for future developments in the music industry, guiding the reader through the latest research in this emerging, interdisciplinary field. This work includes coverage of electronic music compositions and performances that incorporate unconventional interfacing, hacking and circuit bending. Features: presents an introduction to unconventional computing in music; discusses initiatives involving biophysical electronic music, the work of self-styled silicon luthiers, and the intersection of music and...
Diagnosis in Process Mining

J. Munoz-Gama

Conformance Checking and Diagnosis in Process Mining
Comparing Observed and Modeled Processes

Process mining techniques can be used to discover, analyze and improve real processes, by extracting models from observed behavior. The aim of this book is conformance checking, one of the main areas of process mining. In conformance checking, existing process models are compared with actual observations of the process in order to assess their quality. Conformance checking techniques are a way to visualize the differences between assumed process represented in the model and the real process in the event log, pinpointing possible problems to address, and the business process management results that rely on these models. This book combines both application and research perspectives. It [...] More on www.springer.com/978-3-319-49450-0

Feistel Ciphers

V. Nachef, J. Patarin, E. Volte

Feistel Ciphers
Security Proofs and Cryptanalysis

This book provides a survey on different kinds of Feistel ciphers, with their definitions and mathematical/computational properties. Feistel ciphers are widely used in cryptography in order to obtain pseudorandom permutations and secret-key block ciphers. In Part 1, we describe Feistel ciphers and their variants. We also give a brief story of these ciphers and basic security results. In Part 2, we describe generic attacks on Feistel ciphers. In Part 3, we give results on DES and specific Feistel ciphers. Part 4 is devoted to improved security results. We also give results on indifferentiability and indistinguishability. More on www.springer.com/978-3-319-49528-6

Introduction to Mathematica® with Applications

M. Mureşan

Introduction to Mathematica® with Applications

Starting with an introduction to the numerous features of Mathematica®, this book continues with more complex material. It provides the reader with lots of examples and illustrations of how the benefits of Mathematica® can be used. Composed of eleven chapters, it includes the following: A chapter on several sorting algorithms, a chapter on functions (planar and solid) with many interesting examples, ordinary differential equations, an introduction to Mathematica® with applications will appeal to researchers, professors and students requiring a computational tool. More on www.springer.com/978-3-319-53419-0

Normally-Off Computing

T. Nakada, H. Nakamura (Eds.)

Normally-Off Computing
As a step toward ultimate low-power computing, this book introduces normally-off computing, which involves inactive components of computer systems being aggressively powered off with the help of new non-volatile memories (NVMs). Because the energy consumption of modern information devices strongly depends on both hardware and software, co-design and co-optimization of hardware and software are indispensable to improve energy efficiency. The book discusses various topics including (1) details of low-power technologies including power gating, (2) characteristics of several new-generation NVMs, (3) normally-off computing architecture, (4) important technologies for implementing [...] More on www.springer.com/978-4-431-56503-1

Probability Logics

Z. Ognjanović, M. Rašković, Z. Marković

Probability Logics
Probability-Based Formalization of Uncertain Reasoning
The aim of this book is to provide an introduction to probability logic-based formalization of uncertain reasoning. The authors’ primary interest is mathemat-
ical techniques for infinitary probability logics used to obtain results about proof-theoretical and model-theoretical issues such as axiomatizations, completeness, compactness, and decidability, including solutions of some problems from the literature. An extensive bibliography is provided to point to related work, and this book may serve as a basis for further research projects, as a reference for researchers using probability logic, and also as a textbook for graduate courses in logic.

More on [www.springer.com/978-3-319-47011-5](http://www.springer.com/978-3-319-47011-5)

**Hardcover**
2016. XI, 215 p. 5 illus.
► 101,64 €
ISBN 978-3-319-47011-5
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**Generalizations of Fuzzy Information Measures**
A. Ohlan, R. Ohlan

This book develops applications of novel generalizations of fuzzy information measures in the field of pattern recognition, medical diagnosis, multi-criteria and multi-attribute decision making and suitability in linguistic variables. The focus of this presentation lies on introducing consistently strong and efficient generalizations of information and information-theoretic divergence measures in fuzzy and intuitionistic fuzzy environment covering different practical examples. The target audience comprises primarily researchers and practitioners in the involved fields but the book may also be beneficial for graduate students.

More on [www.springer.com/978-3-319-45927-1](http://www.springer.com/978-3-319-45927-1)

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**Gewöhnlich versandfertig in 3-5 Werktagen.**

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**Evolutionary Computer Vision**
G. Olague

This book explains the theory and application of evolutionary computer vision, a new paradigm where challenging vision problems can be approached using the techniques of evolutionary computing. This methodology achieves excellent results for defining fitness functions and representations for problems by merging evolutionary computation with mathematical optimization to produce automatic creation of emerging visual behaviors. In the first part of the book the author surveys the literature in concise form, defines the relevant terminology, and offers historical and philosophical motivations for the key research problems in the field. For researchers from the computer vision community, he[...]

More on [www.springer.com/978-3-662-43692-9](http://www.springer.com/978-3-662-43692-9)

**Hardcover**
2016. XXII, 411 p. 155 illus., 103 illus. in color. (Natural Computing Series)
► 90,94 €
ISBN 978-3-662-43692-9
**Gewöhnlich versandfertig in 3-5 Werktagen.**

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**Software Architecture in Action**
F. Oquendo, J. Leite, T. Batista

This book presents a systematic model-based approach for software architecture according to three complementary viewpoints: structure, behavior, and execution. It covers a unified modeling approach and consolidates theory and practice with well-established learning outcomes. The authors cover the fundamentals of software architecture description and presents SysADL, a specialization of the OMG Standard Systems Modeling Language (SysML) with the aim of bringing together the expressive power of an Archi-
Exploiting Linked Data and Knowledge Graphs in Large Organisations

This book addresses the topic of exploiting enterprise-linked data with a particular focus on knowledge construction and accessibility within enterprises. It identifies the gaps between the requirements of enterprise knowledge consumption and "standard" data consuming technologies by analysing real-world use cases, and proposes the enterprise knowledge graph to fill such gaps. It provides concrete guidelines for effectively deploying linked-data graphs within and across business organizations. It is divided into three parts, focusing on the key technologies for constructing, understanding and employing knowledge graphs. Part 1 introduces basic background information and technologies, and [...] More on www.springer.com/978-3-319-45652-2

J.Z. Pan, G. Vetere, J.M. Gomez-Perez, H. Wu (Eds.)

Real-World Decision Support Systems
Case Studies

This book presents real-world decision support systems, i.e., systems that have been running for some time and as such have been tested in real environments and complex situations; the cases are from various application domains and highlight the best practices in each stage of the system's life cycle, from the initial requirements analysis and design phases to the final stages of the project. Each chapter provides decision-makers with recommendations and insights into lessons learned so that failures can be avoided and successes repeated. For this reason unsuccessful cases, which at some point of their life cycle were deemed as failures for one reason or another, are also included. [...] More on www.springer.com/978-3-319-43915-0

J.F. Peters, A. Skowron (Eds.)

Transactions on Rough Sets XX

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. Volume XX in the series is a continuation of a number of research streams that have grown out of the seminal work of Zdzislaw Pawlak during the first decade of the 21st century. More on www.springer.com/978-3-662-53610-0

A. Pilny, M.S. Poole (Eds.)

Group Processes
Data-Driven Computational Approaches

This volume introduces a series of different data-driven computational methods for analyzing group processes through didactic and tutorial-based examples. Group processes are of central importance to many sectors of society, including government, the military, health care, and corporations. Computational methods are better suited to handle (potentially huge) group process data than traditional methodologies because of their more flexible assumptions and capability to handle real-time trace data. Indeed, the use of methods under the name of computational social science have exploded over the years. However, attention has been focused on original research rather than pedagogy, leaving [...] More on www.springer.com/978-3-319-48940-7

J. Papathanasiou, N. Ploskas, I. Linden (Eds.)

Advanced Model-Based Engineering of Embedded Systems
Extensions of the SPES 2020 Methodology

This book provides a comprehensive introduction into the SPES XT modeling framework. Moreover, it shows the applicability of the framework for the development of embedded systems in different industry domains and reports on the lessons learned. It also describes how the SPES XT modeling framework can be tailored to meet domain and project-specific needs. The book is structured into four parts: Part 1 “Starting Situation” discusses the status quo of the development of embedded systems with specific focus on model-based engineering and summarizes key chal-
Data Visualisation with R
100 Examples
This book introduces readers to the fundamentals of creating presentation graphics using R, based on 100 detailed and complete scripts. It shows how bar and column charts, population pyramids, Lorenz curves, box plots, scatter plots, time series, radial polygons, Gantt charts, heat maps, bump charts, mosaic and balloon charts, and a series of different thematic map types can be created using R’s Base Graphics System. Every example uses real data and includes step-by-step explanations of the figures and their programming. The open source software R is an established standard and a powerful tool for various visualizing applications, integrating nearly all technologies relevant for data science.

More on www.springer.com/978-3-319-49750-1

Hardcover
2017. XV, 385 p. 181 illus., 162 illus. in color.
► 53,49 €
ISBN 978-3-319-49750-1
Gewöhnlich versandfertig in 3-5 Werktagen. March 2, 2017

Basic Graph Theory
This undergraduate textbook provides an introduction to graph theory, which has numerous applications in modeling problems in science and technology, and has become a vital component to computer science, computer science and engineering, and mathematics curricula of universities all over the world. The author follows a methodical and easy to understand approach. Beginning with the historical background, motivation and applications of graph theory, the author first explains basic graph theoretic terminologies. From this firm foundation, the author goes on to present paths, cycles, connectivity, trees, matchings, coverings, planar graphs, graph coloring and digraphs as well as some advanced graph theoretical topics.

More on www.springer.com/978-3-319-49474-6

Softcover
2016. XII, 159 p. 147 illus. (Undergraduate Topics in Computer Science)
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Erscheinungstermin: February 12, 2017

Secure Data Deletion
This book is the first to develop a systematized approach for the comparison and evaluation of secure deletion solutions. The book focuses on novel secure deletion solutions targeting specific real-world environments where secure deletion is problematic: mobile storage and remote storage. The author surveys related work, organizes existing solutions in terms of their interfaces, presents a taxonomy of adversaries differing in their capabilities, and then builds a system and adversarial model based on the survey of related work. The book is useful for both academics, researchers and graduate students, and for practitioners who may integrate its results into deployed systems.

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Requirements Engineering for Service and Cloud Computing
This authoritative text/reference describes the state of the art in requirements engineering for software systems for distributed computing. A particular focus is placed on integrated solutions, which take into account the requirements of scalability, flexibility, sustainability and operability for distributed environments. Topics and features: discusses the latest developments, tools, technologies and trends in software requirements engineering; reviews the relevant theoretical frameworks, practical approaches and methodologies for service requirements; examines the three key components of the requirements engineering process, namely requirements elicitation, requirements...
Large-Scale Graph Processing Using Apache Giraph

This book takes its reader on a journey through Apache Giraph, a popular distributed graph processing platform designed to bring the power of big data processing to graph data. Designed as a step-by-step self-study guide for everyone interested in large-scale graph processing, it describes the fundamental abstractions of the system, its programming models and various techniques for using the system to process graph data at scale, including the implementation of several popular and advanced graph analytics algorithms. The book is organized as follows: Chapter 1 starts by providing a general background of the big data phenomenon and a general introduction to the Apache Giraph system, [...] More on www.springer.com/978-3-319-47430-4

Forthcoming

J. Seevinck

Emergence in Interactive Art

This book is concerned with emergence, interaction, art, and computing. It introduces a new focus for emergence in interactive art: the emergent experience. Emergence literature is discussed and an organising framework, the Taxonomy of Emergence in Interactive Art (TEIA) is provided together with case studies of digital, interactive art systems that facilitate emergence. Evidence from evaluations of people interacting with the works is analysed using the TEIA. Artworks from across the world are also reviewed to further illustrate the potential for emergence. Interactive art is, itself, still a young domain where audience influence, or interaction with the work is a defining aspect. [...] More on www.springer.com/978-3-319-45199-2

Claudio Moraga: A Passion for Multi-Valued Logic and Soft Computing

The book is an authoritative collection of contributions by leading experts on the topics of fuzzy logic, multi-valued logic and neural network. Originally written as an homage to Claudio Moraga, seen by his colleagues as an example of concentration, discipline and passion for science, the book also represents a timely reference guide for advance students and researchers in the field of soft computing, and multiple-valued logic. More on www.springer.com/978-3-319-48316-0

Smart Textiles Fundamentals, Design, and Interaction

From a holistic perspective, this handbook explores the design, development and production of smart textiles and textile electronics, breaking with the traditional silo-structure of smart textile research and development. Leading experts from different domains including textile production, electrical engineering, interaction design and human-computer interaction (HCI) address production processes in their entirety by exploring important concepts and topics like textile manufacturing, sensor and actuator development for textiles, the integration of electronics into textiles and the interaction with textiles. In addition, different application scenarios, where smart textiles play a...
R.R. Selmic, V.V. Phoha, A. Serwadda

**Wireless Sensor Networks**

Security, Coverage, and Localization

This book presents a comprehensive overview of wireless sensor networks (WSNs) with an emphasis on security, coverage, and localization. It offers a structural treatment of WSN building blocks including hardware and protocol architectures and also provides a systems-level view of how WSNs operate. These building blocks will allow readers to program specialized applications and conduct research in advanced topics. A brief introductory chapter covers common applications and communication protocols for WSNs. Next, the authors review basic mathematical models such as Voroni diagrams and Delaunay triangulations. Sensor principles, hardware structure, and medium access protocols are [...] More on www.springer.com/978-3-319-46767-2

**Metaheuristics**

Metaheuristics exhibit desirable properties like simplicity, easy parallelizability, and ready applicability to different types of optimization problems. After a comprehensive introduction to the field, the contributed chapters in this book include explanations of the main metaheuristics techniques, including simulated annealing, tabu search, evolutionary algorithms, artificial ants, and particle swarms, followed by chapters that demonstrate their applications to problems such as multiobjective optimization, logistics, vehicle routing, and air traffic management. The authors are leading researchers in this domain, with considerable teaching and applications experience, and the book [...] More on www.springer.com/978-3-319-45401-6

L.F. Sikos

**Description Logics in Multimedia Reasoning**

This book illustrates how to use description logic-based formalisms to their full potential in the creation, indexing, and reuse of multimedia semantics. To do so, it introduces researchers to multimedia semantics by providing an in-depth review of state-of-the-art standards, technologies, ontologies, and software tools. It draws attention to the importance of formal grounding in the knowledge representation of multimedia objects, the potential of multimedia reasoning in intelligent multimedia applications, and presents both theoretical discussions and best prac-
Pervasive Computing: Engineering Smart Systems

This book provides a concise introduction to Pervasive Computing, otherwise known as Internet of Things (IoT) and Ubiquitous Computing (Ubicomp), which addresses the seamless integration of computing systems within everyday objects. By introducing the core topics and exploring assistive pervasive systems which infer their context through pattern recognition, the author provides readers with a gentle yet robust foundation of knowledge to this growing field of research. The author explores a range of topics including data acquisition, signal processing, control theory, machine learning, and system engineering explaining, with the use of simple mathematical concepts, the core principles..

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Descriptive Set Theoretic Methods in Automata Theory

Decidability and Topological Complexity

The book is based on the PhD thesis "Descriptive Set Theoretic Methods in Automata Theory," awarded the E.W. Beth Prize in 2015 for outstanding dissertations in the fields of logic, language, and information. The thesis reveals unexpected connections between advanced concepts in logic, descriptive set theory, topology, and automata theory and provides many deep insights into the interplay between these fields. It opens new perspectives on central problems in the theory of automata on infinite words and trees and offers very impressive advances in this theory from the point of view of topology. "...the thesis of Michal Skrzypczak offers certainly what we expect from excellent mathematics..."

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Transactions on Foundations for Mastering Change I

The LNCS Transactions on Foundations for Mastering Change, FoMaC, aims to establish a forum for formal-methods-based research, dealing with the nature of today’s agile system development, which is characterized by unclear premises, unforeseen change, and the need for fast reaction, in a context of hard-to-control frame conditions, such as third-party components, network problems, and attacks. Submissions are evaluated according to these goals. This book, the first volume in the series, contains contributions by the members of the editorial board. These contributions indicate the envisioned style and range of papers of topics covered by the transactions series. They cross-cut various...

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this book summarize some open problems and future research.[...]
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**Being Really Virtual**

**Immersive Natives and the Future of Virtual Reality**

This book focuses on the recent developments of virtual reality (VR) and immersive technologies, what effect they are having on our modern, digitised society and explores how current developments and advancements in this field are leading to a virtual revolution. Using Ivan Sutherland’s ‘The Ultimate Display’ and Moore’s law as a springboard, the author discusses both popular scientific and technological accounts of the past, present and possible futures of VR, looking at current research trends, developments, challenges and ethical considerations to the coming age of differing realities. Being Really Virtual is for researchers, designers and developers of VR and immersive[...]

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**Matrix and Tensor Factorization Techniques for Recommender Systems**

This book presents the algorithms used to provide recommendations by exploiting matrix factorization and tensor decomposition techniques. It highlights well-known decomposition methods for recommender systems, such as Singular Value Decomposition (SVD), UV-decomposition, Non-negative Matrix Factorization (NMF), etc. and describes in detail the pros and cons of each method for matrices and tensors. This book provides a detailed theoretical mathematical background of matrix/tensor factorization techniques and a step-by-step analysis of each method on the basis of an integrated toy example that runs throughout all its chapters and helps the reader to understand the key differences among[...]

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**Modeling and Optimization for Mobile Social Networks**

This book investigates the modeling and optimization issues in mobile social networks (MSNs). Firstly, the architecture and applications of MSNs are examined. The existing works on MSNs are reviewed by specifying the critical challenges and research issues. Then, with the introduction of MSN-based social graph and information dissemination mechanisms, the analytical model for epidemic information dissemination with opportunistic links in MSNs is discussed. In addition, optimal resource allocation is studied based on a heterogeneous architecture, which provides mobile social services with high capacity and low latency. Finally, are examined, along with their disruptive innovations. Further, the book analyzes how these phenomena capitalize on the economies of scale provided by the[...]

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ISBN 978-3-319-50659-3
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**Cybersecurity for Industry 4.0**

**Analysis for Design and Manufacturing**

This book introduces readers to cybersecurity and its impact on the realization of the Industry 4.0 vision. It covers the technological foundations of cybersecurity within the scope of the Industry 4.0 landscape and details the existing cybersecurity threats faced by Industry 4.0, as well as state-of-the-art solutions with regard to both academic research and practical implementations. Industry 4.0 and its associated technologies, such as the Industrial Internet of Things and cloud-based design and manufacturing systems
Digital Fingerprinting

This is the first book on digital fingerprinting that comprehensively covers the major areas of study in a range of information security areas including authentication schemes, intrusion detection, forensic analysis and more. Available techniques for assurance are limited and authentication schemes are potentially vulnerable to the theft of digital tokens or secrets. Intrusion detection can be thwarted by spoofing or impersonating devices, and forensic analysis is incapable of demonstrably tying a particular device to specific digital evidence. This book presents an innovative and effective approach that addresses these concerns. This book introduces the origins and scientific...
Discriminative Learning in Biometrics

This monograph describes the latest advances in discriminative learning methods for biometric recognition. Specifically, it focuses on three representative categories of methods: sparse representation-based classification, metric learning, and discriminative feature representation, together with their applications in palmprint authentication, face recognition and multibiometrics. The ideas, algorithms, experimental evaluation and underlying rationales are also provided for a better understanding of these methods. Lastly, it discusses several promising research directions in the field of discriminative biometric recognition.

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Android Application Security
A Semantics and Context-Aware Approach

This SpringerBrief explains the emerging cyber threats that undermine Android application security. It further explores the opportunity to leverage the cutting-edge semantics and context-aware techniques to defend against such threats, including zero-day Android malware, deep software vulnerabilities, privacy breach and insufficient security warnings in app descriptions. The authors begin by introducing the background of the field, explaining the general operating system, programming features, and security mechanisms. The authors capture the semantic-level behavior of mobile applications and use it to reliably detect malware variants and zero-day malware. Next, they propose an [...] More on www.springer.com/978-3-319-47811-1

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Tongue Image Analysis

This is the first book offering a systematic description of tongue image analysis and processing technologies and their typical applications in computerized tongue diagnostic (CTD) systems. It features the most current research findings in all aspects of tongue image acquisition, preprocessing, classification, and diagnostic support methodologies, from theoretical and algorithmic problems to prototype design and development of CTD systems. The book begins with a very in-depth description of CTD on a need-to-know basis which includes an overview of CTD systems and traditional Chinese medicine (TCM) in order to provide the information on the context and background of tongue image [...] More on www.springer.com/978-981-10-2166-4

Contract Theory for Wireless Networks

This book presents theoretical research between wireless communications, networking, and economics using the framework of contract theory. This work fills a void in the literature by closely combining contract theoretical approaches with wireless networks design problems. Topics covered include classification in contract theory, reward design, adverse selection, and moral hazard. The authors also explore incentive mechanisms for device-to-device communication in cellular networks, insurance plans for service assurance in cloud computing markets with incomplete information, multi-dimensional incentive mechanisms and tournament based incentive mechanisms in mobile crowdsourcing [...] More on www.springer.com/978-3-319-53287-5

Cloud Based 5G Wireless Networks

This SpringerBrief introduces key techniques for 5G wireless networks. The authors cover the development of wireless networks that led to 5G, and how 5G mobile communication technology (5G) can no longer be defined by a single business model or a typical technical characteristic. The discussed networks functions and services include Network Foundation Virtualization (N-FV), Cloud Radio Access Networks (Cloud-RAN), and Mobile Cloud Networking (MCN). The benefits of cloud platforms are examined, as are definable networking and green wireless networking. Other related and representative projects on 5G are mobile and wireless communications enablers for the Twenty-Twenty Information [...] More on www.springer.com/978-3-319-47342-0

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formulations, algorithms and performance of three forms of MAB problems, namely, stochastic, Markov and adversarial. Covering all three forms of MAB problems makes this book unique in the field. Part II of the book provides detailed discussions of representative applications of the sequential learning framework in cognitive radio networks, wireless LANs and wireless mesh networks. Both individuals in industry and those in the wireless research community will benefit from this[...]

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Wisdom Web of Things

This book provides a thorough overview of the Wisdom Web of Things (W2T), a holistic framework for computing and intelligence in an emerging hyper-world with a social-cyber-physical space. Fast-evolving Web intelligence research and development initiatives are now moving toward understanding the multifaceted nature of intelligence and incorporating it at the Web scale in a ubiquitous environment with data, connection and service explosion. The book focuses on the framework and methodology of W2T, as well as its applications in different problem domains, such as intelligent businesses, urban computing, social computing, brain informatics and healthcare. From the researcher and[...]

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