

# Download Free Multimedia Computing Communications And Applications Ralf Steinmetz Klara Nahrstedt Free Download Pdf

Multimedia Applications **Multimedia Computing Communications & Applications** **Multimedia Systems** *Peer-to-Peer Systems and Applications* Multimedia **Photoionization and Photo-Induced Processes in Mass Spectrometry** Monte Carlo Methods and Models in Finance and Insurance **Nuclear Condensed Matter Physics with Synchrotron Radiation** **Multimedia Fundamentals, Volume 1** **Ordered Porous Nanostructures and Applications** *Systems Biology in Practice* *Spatial Multimedia and Virtual Reality* *Essentials of Software Testing* Network-Embedded Management and Applications *Multimedia Technologies and Applications for the 21st Century* Handbook on Natural Pigments in Food and Beverages **Electrical Engineering** *Cartesian CFD Methods for Complex Applications* **Planktic Foraminifers in the Modern Ocean** **The Thermodynamics of Quantum Yang-Mills Theory** *Femtosecond Technology for Technical and Medical Applications* *Set Theory* Learning Kernel Classifiers **Optimal Portfolios** *Rapid Miner* **Robot Grippers** **Dynamical Models in Neurocognitive Psychology** *Benchmarking Peer-to-Peer Systems* **Point-of-care testing** **Linked Data Management** *Understanding Artificial Intelligence* *First-Passage Phenomena and Their Applications* **Piriformospora indica** *Urban Freight Transportation Systems* **Fundamentals of Multimedia** **Blending and the Study of Narrative** **Rubber-Clay Nanocomposites** *Dynamic Fracture of Piezoelectric Materials* Materials Characterization Using Nondestructive Evaluation (NDE) Methods **Chemistry of the Non-Metals**

The theory of Blending, or Conceptual Integration, proposed by Gilles Fauconnier and Marc Turner, is one of most promising cognitive theories of meaning production. It has been successfully applied to the analysis of poetic discourse and micro-textual elements, such as metaphor. Prose narrative has so far received significantly less attention. The present volume aims to remedy this situation. Following an introductory discussion of the connections between narrative and the processes of blending, the contributions demonstrate the range of applications of the theory to the study of narrative. They cover issues such as time and space, literary character and perspective, genre, story levels, and fictional minds; some chapters show how such phenomena as metalepsis, counterfactual narration, intermediality, extended metaphors, and suspense can be fruitfully studied from the vantage point of Conceptual Integration. Working within a theoretical framework situated at the intersection of narratology and the cognitive sciences, the book provides both fresh readings for individual literary and film narratives and new impulses for post-classical narratology. Starting with Napster and Gnutella, peer-to-peer systems became an integrated part of the Internet fabric attracting millions of users. This book provides an introduction to the field. It draws together prerequisites from various fields, presents techniques and methodologies, and gives an overview on the applications of the peer-to-peer paradigm. This textbook gives an introduction to axiomatic set theory and examines the prominent questions that are relevant in current research in a manner that is accessible to students. Its main theme is the interplay of large cardinals, inner models, forcing and descriptive set theory. The following topics are covered: • Forcing and constructability • The Solovay-Shelah Theorem i.e. the equiconsistency of 'every set of reals is Lebesgue measurable' with one inaccessible cardinal • Fine structure theory and a modern approach to sharps • Jensen's Covering Lemma • The equivalence of analytic determinacy with sharps • The theory of extenders and iteration trees • A proof of projective determinacy from Woodin cardinals. Set Theory requires only a basic knowledge of mathematical logic and will be suitable for advanced students and researchers. This latest edition enhances the material of the first edition with a derivation of the value of the action for each of the Harrington-Shepard calorons/anticolorons that are relevant for the emergence of the thermal ground state. Also included are discussions of the caloron center versus its periphery, the role of the thermal ground state in U(1) wave propagation, photonic particle-wave duality, and calculational intricacies and book-keeping related to one-loop scattering of massless modes in the deconfining phase of an SU(2) Yang-Mills theory. Moreover, a derivation of the temperature-redshift relation of the CMB in deconfining SU(2)

Yang-Mills thermodynamics and its application to explaining an apparent early re-ionization of the Universe are given. Finally, a mechanism of mass generation for cosmic neutrinos is proposed. Contents: Theory: The Classical Yang-Mills Action The Perturbative Approach at Zero Temperature Aspects of Finite-Temperature Field Theory Selfdual Field Configurations The Deconfining Phase The Preconfining Phase The Confining Phase Applications: The Approach of Thermal Lattice Gauge Theory Black-Body Anomaly Astrophysical and Cosmological Implications of SU(2)CMB Readership: Advanced students, postdocs and researchers in theoretical physics and mathematics, as well as experimentalists. The state-of-the-art in multimedia content analysis, media foundations, and compression Covers digital audio, images, video, graphics, and animation Includes real-world project sets that help you build and test your expertise By two of the world's leading experts in advanced multimedia systems development The practical, example-rich guide to media coding and content processing for every multimedia developer. From DVDs to the Internet, media coding and content processing are central to the effective delivery of high-quality multimedia. In this book, two of the field's leading experts introduce today's state-of-the-art, presenting realistic examples and projects designed to help implementers create multimedia systems with unprecedented performance. Ralf Steinmetz and Klara Nahrstedt introduce the fundamental characteristics of digital audio, images, video, graphics, and animation; demonstrate powerful new approaches to content analysis and compression; and share expert insights into system and end-user issues every advanced multimedia professional must understand. Coverage includes: Generic characteristics of multimedia and data streams, and their impact on multimedia system design Essential audio concepts and representation techniques: sound perception, psychoacoustics, music, MIDI, Speech signals, and related I/O and transmission issues Graphics and image characteristics: image formats, analysis, synthesis, reconstruction, and output Video signals, television formats, digitization, and computer-based animation issues Fundamental compression methods: run-length, Huffman, and subband coding Multimedia compression standards: JPEG, H.232, and various MPEG techniques Optical storage technologies and techniques: CD-DA, CD-ROM, DVD, and beyond Content processing techniques: Image analysis, video processing, cut detection, and audio analysis First in an authoritative 3-volume set on tomorrow's robust multimedia desktop: real-time audio, video, and streaming media. Multimedia Fundamentals offers a single, authoritative source for the knowledge and techniques you need to succeed with any advanced multimedia development project. Look for Volume 2 focusing on networking and operating system-related issues, and Volume 3 focusing on service and application issues. The focus of the book is the construction of optimal investment strategies in a security market model where the prices follow diffusion processes. It begins by presenting the complete Black-Scholes type model and then moves on to incomplete models and models including constraints and transaction costs. The models and methods presented will include the stochastic control method of Merton, the martingale method of Cox-Huang and Karatzas et al., the log optimal method of Cover and Jamshidian, the value-preserving model of Hellwig etc. Despite the explosion of networking services and applications in the past decades, the basic technological underpinnings of the Internet have remained largely unchanged. At its heart are special-purpose appliances that connect us to the digital world, commonly known as switches and routers. Now, however, the traditional framework is being increasingly challenged by new methods that are jostling for a position in the "next-generation" Internet. The concept of a network that is becoming more programmable is one of the aspects that are taking center stage. This opens new possibilities to embed software applications inside the network itself and to manage networks and communications services with unprecedented ease and efficiency. In this edited volume, distinguished experts take the reader on a tour of different facets of programmable network infrastructure and applications that exploit it. Presenting the state of the art in network embedded management and applications and programmable network infrastructure, the book conveys fundamental concepts and provides a glimpse into various facets of the latest technology in the field. The book contains review articles on recent

advances in first-passage phenomena and applications contributed by leading international experts. It is intended for graduate students and researchers who are interested in learning about this intriguing and important topic. Contents:Arrival Statistics and Exploration Properties of Mortal Walkers (S B Yuste, E Abad and K Lindenberg)First Passage of a Randomly Accelerated Particle (T W Burkhardt)First Passage Problems in Anomalous Diffusion (A Rosso and A Zoia)First-Passage Times of Intermittent Random Walks (O Bénichou and R Voituriez)First-Passage Phenomena on Finite Inhomogeneous Networks (E Agliari and D Cassi)Effective Spectral Dimension in Scale-Free Networks (S Hwang, D-S Lee and B Kahng)First-Passage Statistics for Random Walks in Bounded Domains (R Voituriez and O Bénichou)First Passage Behavior of Multi-Dimensional Fractional Brownian Motion and Application to Reaction Phenomena (J-H Jeon, A V Chechkin and R Metzler)Trajectory-to-Trajectory Fluctuations in First-Passage Phenomena in Bounded Domains (T G Mattos, C Mejía-Monasterio, R Metzler, G Oshanin and G Schehr)Exact Record and Order Statistics of Random Walk via First-Passage Ideas (G Schehr and S N Majumdar)First Passage in a Conical Geometry and Ordering of Brownian Particles (E Ben-Naim and P L Krapivsky)First Passage Time Problems in Biophysical Jump Processes with Fast Kinetics (P C Bressloff and J M Newby)First Passage Problems in Biology (T Chou and M R D'Orsogna)The Effect of Detection Mechanisms on Spatial Search and Foraging (D Campos and V Méndez)Search in Random Media with Lévy Flights (E Gelenbe and O H Abdelrahman)Exit Strategies: Visual Search and the Quitting Time Problem (T S Horowitz)Statistical Physics of Evolutionary Trajectories on Fitness Landscapes (M Manhart and A V Morozov)Some Applications of First-Passage Ideas to Finance (R Chicheportiche and J-P Bouchaud)First-Passage and Extremes in Socio-Economic Systems (J Masoliver and J Perelló)Transport and the First-Passage Time Problem with Application to Cold Atoms in Optical Traps (E Barkai and D A Kessler)The Excursion Set Theory in Cosmology (M Maggiore and A Riotto)Self-Organized Escape Processes of Linear Chains in Nonlinear Potentials (T Gross, D Hennig and L Schimansky-Geier)Efficient Monte Carlo Methods for Simulating Diffusion-Reaction Processes in Complex Systems (D S Grebenkov) Readership: Researchers in stochastic processes, statistical physics, and mathematical physics. Key Features:Comprehensive update of the classical book by Sidney RednerApplications to wide-ranging and active fields of researchWell-known authors in the fieldKeywords:First Passage;Stochastic Processes;Diffusion;Biophysics;Non-Equilibrium Statistical Mechanics;Complex Systems;Econophysics A comprehensive overview of the principles and applications of femtosecond lasers, especially applied to medicine and to production technology. The advantages and problems of ultrashort laser pulses are discussed in more detail in the context of applications in the micro-machining of technical materials such as drilling, surface structuring and cutting, in medical use like dental, ophthalmologic, neurological and otolaryngological applications, in metrology, and in the generation of x-rays. Safety aspects are also considered. Artificial Intelligence (AI) will change the lives of people and businesses more fundamentally than many people can even imagine today. This book illustrates the importance of AI in an era of digitalization. It introduces the foundations of AI and explains its benefits and challenges for companies and entire industries. In this regard, AI is approached not just as yet another technology, but as a fundamental innovation, which will spread into all areas of the economy and life, and will disrupt business processes and business models in the years to come. In turn, the book assesses the potential that AI holds, and clarifies the framework that is necessary for pursuing a responsible approach to AI. In a series of best-practice cases, the book subsequently highlights a broad range of sectors and industries, from production to services; from customer service to marketing and sales; and in industries like retail, health care, energy, transportation and many more. In closing, a dedicated chapter outlines a roadmap for a specific corporate AI journey. No one can ignore intensive work with AI today - neither as a private person, let alone as a top performer in companies. This book offers a thorough, carefully crafted, and easy to understand entry into the field of AI. The central terms used in the AI context are given a very good explanation. In addition, a number of cases show what AI can do today and where the journey is heading. An important book that you should not miss! Professor Dr. Harley Krohmer University of Bern "Inspiring, thought provoking and comprehensive, this book is wittingly designed to be a catalyst for your individual and corporate AI journey." Avo Schönbohm, Professor at the Berlin School of Economics and Law, Enterprise Game Designer at LUDEO and Business Punk Peer-to-peer

systems are now widely used and have become the focus of attention for many researchers over the past decade. A number of algorithms for decentralized search, content distribution, and media streaming have been developed. This book provides fundamental concepts for the benchmarking of those algorithms in peer-to-peer systems. It also contains a collection of characteristic benchmarking results. The chapters of the book have been organized in three topical sections on: Fundamentals of Benchmarking in P2P Systems; Synthetic Benchmarks for Peer-to-Peer Systems; and Application Benchmarks for Peer-to-Peer Systems. They are preceded by a detailed introduction to the subject. Presenting the main concepts, this book leads students as well as advanced researchers from different disciplines to an understanding of current ideas in the complex field of comprehensive experimental investigation of biological objects, analysis of data, development of models, simulation, and hypothesis generation. It provides readers with guidance on how a specific complex biological question may be tackled: - How to formulate questions that can be answered - Which experiments to perform - Where to find information in databases and on the Internet - What kinds of models are appropriate - How to use simulation tools - What can be learned from the comparison of experimental data and modeling results - How to make testable predictions. The authors demonstrate how mathematical concepts can illuminate the principles underlying biology at a genetic, molecular, cellular and even organism level, and how to use mathematical tools for analysis and prediction. The underlying technology and the range of test parameters available are evolving rapidly. The primary advantage of POCT is the convenience of performing the test close to the patient and the speed at which test results can be obtained, compared to sending a sample to a laboratory and waiting for results to be returned. Thus, a series of clinical applications are possible that can shorten the time for clinical decision-making about additional testing or therapy, as delays are no longer caused by preparation of clinical samples, transport, and central laboratory analysis. Tests in a POC format can now be found for many medical disciplines including endocrinology/diabetes, cardiology, nephrology, critical care, fertility, hematology/coagulation, infectious disease and microbiology, and general health screening. Point-of-care testing (POCT) enables health care personnel to perform clinical laboratory testing near the patient. The idea of conventional and POCT laboratory services presiding within a hospital seems contradictory; yet, they are, in fact, complementary: together POCT and central laboratory are important for the optimal functioning of diagnostic processes. They complement each other, provided that a dedicated POCT coordination integrates the quality assurance of POCT into the overall quality management system of the central laboratory. The motivation of the third edition of the POCT book from Lippa/Junker, which is now also available in English, is to explore and describe clinically relevant analytical techniques, organizational concepts for application and future perspectives of POCT. From descriptions of the opportunities that POCT can provide to the limitations that clinician's must be cautioned about, this book provides an overview of the many aspects that challenge those who choose to implement POCT. Technologies, clinical applications, networking issues and quality regulations are described as well as a survey of future technologies that are on the future horizon. The editors have spent considerable efforts to update the book in general and to highlight the latest developments, e.g., novel POCT applications of nucleic acid testing for the rapid identification of infectious agents. Of particular note is also that a cross-country comparison of POCT quality rules is being described by a team of international experts in this field. Provides comprehensive coverage of laser-induced ionization processes for mass spectrometry analysis Drawing on the expertise of the leading academic and industrial research groups involved in the development of photoionization methods for mass spectrometry, this reference for analytical scientists covers both the theory and current applications of photo-induced ionization processes. It places widely used techniques such as MALDI side by side with more specialist approaches such as REMPI and RIMS, and discusses leading edge developments in ultrashort laser pulse desorption, to give readers a complete picture of the state of the technology. Photoionization and Photo-Induced Processes in Mass Spectrometry: Fundamentals and Applications starts with a complete overview of the fundamentals of the technique, covering the basics of the gas phase ionization as well as those of laser desorption and ablation, pulse photoionization, and single particle ionization. Numerous application examples from different analytical fields are described that showcase the power and the wide scope of photo ionization in mass spectrometry. -The first general reference book on photoionization

techniques for mass spectrometry -Examines technologies and applications of gas phase resonance-enhanced multiphoton ionization mass spectrometry (REMPI-MS) and gas phase resonance ionization mass spectrometry (RIMS) -Provides complete coverage of popular techniques like MALDI -Discusses the current and potential applications of each technology, focusing on process and environmental analysis

Photoionization and Photo-Induced Processes in Mass Spectrometry: Fundamentals and Applications is an excellent book for spectroscopists, analytical chemists, photochemists, physical chemists, and laser specialists. This textbook introduces the “Fundamentals of Multimedia”, addressing real issues commonly faced in the workplace. The essential concepts are explained in a practical way to enable students to apply their existing skills to address problems in multimedia. Fully revised and updated, this new edition now includes coverage of such topics as 3D TV, social networks, high-efficiency video compression and conferencing, wireless and mobile networks, and their attendant technologies.

Features: presents an overview of the key concepts in multimedia, including color science; reviews lossless and lossy compression methods for image, video and audio data; examines the demands placed by multimedia communications on wired and wireless networks; discusses the impact of social media and cloud computing on information sharing and on multimedia content search and retrieval; includes study exercises at the end of each chapter; provides supplementary resources for both students and instructors at an associated website. The development of cognitive models is a key step in the challenging research program to advance our understanding of human cognition and behavior. Dynamical models represent a general and flexible approach to cognitive modeling. This introduction focuses on applications of stochastic processes and dynamical systems to model cognition. The dynamical approach is particularly useful to emphasize the strong link between experimental research (and its paradigms), data analysis, and mathematical models including their computer implementation for numerical simulation. Most of specific examples are from the domain of eye movement research, with concepts being applicable to a broad range of problems in cognitive modeling. The textbook aims at the graduate and/or advanced undergraduate level for students in Cognitive Science and related disciplines such as Psychology and Computer Science. Joint introduction of the theory of cognitive processes and mathematical models, their underlying mathematical concepts, numerical simulation, and analysis; The focus on eye movements provide a theoretically coherent, but very general application area; Computer code in R Programming Language for Statistical Computing is available for all examples, figures, and solutions to exercises. This volume collects the most important contributions from four minisymposia from ICIAM 2019. The papers highlight cutting-edge applications of Cartesian CFD methods and describe the employed algorithms and numerical schemes. An emphasis is laid on complex multi-physics applications like magnetohydrodynamics, combustion, aerodynamics with fluid-structure interaction, solved with various discretizations, e.g. finite difference, finite volume, multiresolution or lattice Boltzmann CFD schemes. Software design aspects and parallelization challenges are also considered. The book is addressed to graduate students and scientists in the fields of applied mathematics and computational engineering.

Powerful, Flexible Tools for a Data-Driven World As the data deluge continues in today’s world, the need to master data mining, predictive analytics, and business analytics has never been greater. These techniques and tools provide unprecedented insights into data, enabling better decision making and forecasting, and ultimately the solution of increasingly complex problems. Learn from the Creators of the RapidMiner Software Written by leaders in the data mining community, including the developers of the RapidMiner software, RapidMiner: Data Mining Use Cases and Business Analytics Applications provides an in-depth introduction to the application of data mining and business analytics techniques and tools in scientific research, medicine, industry, commerce, and diverse other sectors. It presents the most powerful and flexible open source software solutions: RapidMiner and RapidAnalytics. The software and their extensions can be freely downloaded at [www.RapidMiner.com](http://www.RapidMiner.com).

Understand Each Stage of the Data Mining Process The book and software tools cover all relevant steps of the data mining process, from data loading, transformation, integration, aggregation, and visualization to automated feature selection, automated parameter and process optimization, and integration with other tools, such as R packages or your IT infrastructure via web services. The book and software also extensively discuss the analysis of unstructured data, including text and image mining. Easily Implement Analytics Approaches

Using RapidMiner and RapidAnalytics Each chapter describes an application, how to approach it with data mining methods, and how to implement it with RapidMiner and RapidAnalytics. These application-oriented chapters give you not only the necessary analytics to solve problems and tasks, but also reproducible, step-by-step descriptions of using RapidMiner and RapidAnalytics. The case studies serve as blueprints for your own data mining applications, enabling you to effectively solve similar problems. An overview of the theory and application of kernel classification methods. Linear classifiers in kernel spaces have emerged as a major topic within the field of machine learning. The kernel technique takes the linear classifier—a limited, but well-established and comprehensively studied model—and extends its applicability to a wide range of nonlinear pattern-recognition tasks such as natural language processing, machine vision, and biological sequence analysis. This book provides the first comprehensive overview of both the theory and algorithms of kernel classifiers, including the most recent developments. It begins by describing the major algorithmic advances: kernel perceptron learning, kernel Fisher discriminants, support vector machines, relevance vector machines, Gaussian processes, and Bayes point machines. Then follows a detailed introduction to learning theory, including VC and PAC-Bayesian theory, data-dependent structural risk minimization, and compression bounds. Throughout, the book emphasizes the interaction between theory and algorithms: how learning algorithms work and why. The book includes many examples, complete pseudo code of the algorithms presented, and an extensive source code library.

Materials Characterization Using Nondestructive Evaluation (NDE) Methods discusses NDT methods and how they are highly desirable for both long-term monitoring and short-term assessment of materials, providing crucial early warning that the fatigue life of a material has elapsed, thus helping to prevent service failures. Materials Characterization Using Nondestructive Evaluation (NDE) Methods gives an overview of established and new NDT techniques for the characterization of materials, with a focus on materials used in the automotive, aerospace, power plants, and infrastructure construction industries. Each chapter focuses on a different NDT technique and indicates the potential of the method by selected examples of applications. Methods covered include scanning and transmission electron microscopy, X-ray microtomography and diffraction, ultrasonic, electromagnetic, microwave, and hybrid techniques. The authors review both the determination of microstructure properties, including phase content and grain size, and the determination of mechanical properties, such as hardness, toughness, yield strength, texture, and residual stress. Gives an overview of established and new NDT techniques, including scanning and transmission electron microscopy, X-ray microtomography and diffraction, ultrasonic, electromagnetic, microwave, and hybrid techniques. Reviews the determination of microstructural and mechanical properties. Focuses on materials used in the automotive, aerospace, power plants, and infrastructure construction industries. Serves as a highly desirable resource for both long-term monitoring and short-term assessment of materials. This book provides a comprehensive overview of the taxonomy, biology, sedimentation, and carbonate geochemistry of modern species. Students, early career and advanced scientists alike will profit from a broad synthesis of the current understanding of planktic foraminifers as an ecological indicator, biogeochemical factories, and proxies in paleoceanography. The classification of modern species is amply illustrated with electron and light microscope images of morphotypes, addresses the state-of-the-art of molecular genetics of species, and provides a detailed guide for any laboratory analyses. The biology of planktic foraminifers is extensively discussed in chapters dedicated to the cellular ultrastructure, nutrition, symbionts, reproduction, ontogeny, and test architecture. Building on the biological prerequisites, the distribution of planktic foraminifers is discussed at regional to global scale. The geochemistry and sedimentation of tests are considered in relation to the ecology of the living animal. In the final chapter, which examines the most common methods in planktic foraminifer research, hands-on information is provided on sampling, processing and analyzing samples in the laboratory, as well as selected established methods for data interpretation. The various topics discussed in this book are aimed at the application of planktic foraminifers as sensitive indicators of the changing climate and marine environment.

Prentice Hall Urban Freight Transportation Systems offers new insights into the complexities of today’s urban freight transport system. It provides a much needed multidisciplinary perspective from researchers in not only transportation, but also engineering, business management, planning and the law. The book examines numerous

critical issues, such as strategies for delivery, logistics and freight transport spatial patterns, urban policy assessment, innovative transportation technologies, urban hubs, and the role factories play in the urban freight transport system. The book offers a novel conceptual approach for addressing the problems of production, logistics and traffic in an urban context. As most of the world's population now live in cities, thus significantly increasing commercial traffic, there are numerous challenges for efficiently and sustainably delivering goods into cities. This book provides solutions and tactics to those challenges. Includes interdisciplinary contributors from around the globe Provides never-before-published original research to help users stay current and develop a deeper understanding of the field Presents the methods and results of research that is useful for both academics and practitioners This accessible introduction demonstrates a range of testing techniques in the context of a single worked example that runs throughout. Students can easily see the strengths and limitations of progressively more complex approaches in theory and practice. Test automation and the process of testing are emphasised. The current textbook is an excellent introduction to the chemistry of the non-metallic elements. The book begins by reviewing the key theoretical concepts of chemical bonding and the properties of different bonding types. Subsequent chapters are focused on reactions, structures and applications of the non-metallic compounds. Combining careful pedagogy and clear writing style, the textbook is a must-have for students studying inorganic chemistry. Sebaciales have emerged as a fascinating order with mutualistic plant-fungal symbionts that consists of exclusively beneficial fungi. This volume of Soil Biology presents an overview of the current results in Sebaciales research with a focus on the potential of these fungi in crop improvement and stress tolerance. The authors demonstrate that Sebaciales are not only extremely versatile in their associations with roots, but are also almost universally present as symptomless endophytes. With this extraordinary diversity, Sebaciales with the key fungus *Piriformospora indica* might possess remarkable significance in natural ecosystems. Their biotechnological applications are expected to improve the quality of crops while maintaining ecologically and economically sustainable production systems. Multimedia Applications discusses the basic characteristics of multimedia document handling, programming, security, human computer interfaces, and multimedia application services. The overall goal of the book is to provide a broad understanding of multimedia systems and applications in an integrated manner: a multimedia application and its user interface must be developed in an integrated fashion with underlying multimedia middleware, operating systems, networks, security, and multimedia devices. Fundamental information and properties of hypermedia document handling, multimedia security and various aspects of multimedia applications are presented, especially about document handling and their standards, programming of multimedia applications, design of multimedia information at human computer interfaces, multimedia security challenges such as encryption and watermarking, multimedia in education, as well as multimedia applications to assist preparation, processing and application of multimedia content. Offering a unique balance between applications and calculations, Monte Carlo Methods and Models in Finance and Insurance incorporates the application background of finance and insurance with the theory and applications of Monte Carlo methods. It presents recent methods and algorithms, including the multilevel Monte Carlo method, the statistical Romberg method, and the Heath-Platen estimator, as well as recent financial and actuarial models, such as the Cheyette and dynamic mortality models. The authors separately discuss Monte Carlo techniques, stochastic process basics, and the theoretical background and intuition behind financial and actuarial mathematics, before bringing the topics together to apply the Monte Carlo methods to areas of finance and insurance. This allows for the easy identification of standard Monte Carlo tools and for a detailed focus on the main principles of financial and insurance mathematics. The book describes high-level Monte Carlo methods for standard simulation and the simulation of stochastic processes with continuous and discontinuous paths. It also covers a wide selection of popular models in finance and insurance, from Black-Scholes to stochastic volatility to interest rate to dynamic mortality. Through its many numerical and graphical illustrations and simple, insightful examples, this book provides a deep understanding of the scope of Monte Carlo methods and their use in various financial situations. The intuitive presentation encourages readers to implement and further develop the simulation methods. Multimedia Systems discusses the basic characteristics of multimedia operating systems, networking and

communication, and multimedia middleware systems. The overall goal of the book is to provide a broad understanding of multimedia systems and applications in an integrated manner: a multimedia application and its user interface must be developed in an integrated fashion with underlying multimedia middleware, operating systems, networks, security, and multimedia devices. Fundamental characteristics of multimedia operating and distributed communication systems are presented, especially scheduling algorithms and other OS supporting approaches for multimedia applications with soft-real-time deadlines, multimedia file systems and servers with their decision algorithms for data placement, scheduling and buffer management, multimedia communication, transport, and streaming protocols, services with their error control, congestion control and other Quality of Service aware and adaptive algorithms, synchronization services with their skew control methods, and group communication with their group coordinating algorithms and other distributed services. Multimedia Technologies and Applications for the 21st Century: Visions of World Experts presents contributions from leading researchers and experts describing their current research and their views of the future trends in the field. The book consists of thirteen chapters in five parts. These chapters tackle a number of critical issues in distributed multimedia systems and applications - from VLSI processors that support multimedia and multimedia servers, through multimedia databases and multimedia networks and communications, to merging multimedia applications. Only a few years ago multimedia seemed like a brand new research field and an emerging new industry. Today, at the edge of the 21st century, multimedia research is coming of age, and the multimedia industry has significantly grown with the total market estimated to be about \$50 billion. Several years ago it was felt that the digital media revolution had just started; however, the seeds had been sown long before. Fundamental technologies, such as interactive laser disks, video games, and electronic encyclopedias were invented in the 1970s and 80s. They represented the seeds for current 'hot' applications, such as digital libraries, video-on-demand, interactive television, and videoconferencing. Another aspect of the digital media revolution is the formation of a new media industry composed of computer, entertainment, communication, and consumer electronics companies. Many industry segments are currently involved in creating new products and services, positioning themselves for the 21st century. They include telephone, cable, and satellite TV companies, communication equipment companies, TV and radio broadcasters, on-line Internet service providers, cable channels, movie studios, record companies, book publishers, CD-ROM title creators, Internet tool vendors, multimedia software tools companies, computer companies, general software tools companies, computer add-on vendors, semiconductor vendors, and consumer electronics vendors. Multimedia Technologies and Applications for the 21st Century: Visions of World Experts should stimulate the curiosity of its readers and inspire new technological breakthroughs in this exciting field. It serves as a valuable reference for system designers, engineers, programmers, and managers who are involved in multimedia systems, the Internet, and their applications. This book can also be used as a textbook for advanced courses on multimedia in engineering curricula. Dynamic Fracture of Piezoelectric Materials focuses on the Boundary Integral Equation Method as an efficient computational tool. The presentation of the theoretical basis of piezoelectricity is followed by sections on fundamental solutions and the numerical realization of the boundary value problems. Two major parts of the book are devoted to the solution of problems in homogeneous and inhomogeneous solids. The book includes contributions on coupled electro-mechanical models, computational methods, its validation and the simulation results, which reveal different effects useful for engineering design and practice. The book is self-contained and well-illustrated, and it serves as a graduate-level textbook or as extra reading material for students and researchers. This is a superb source of quickly accessible information on the whole area of electrical engineering and electronics. It serves as a concise and quick reference, with self-contained chapters comprising all important expressions, formulas, rules and theorems, as well as many examples and applications. Handbook on Natural Pigments: Industrial Applications for Improving Food Colour is unique in its approach to the improvement of food colors. The book is written with industrial applications in mind, with each chapter focusing on a color solution for a specific commodity that will provide food scientists with a one-stop, comprehensive reference on how to improve the color of a particular food product. The first section of the book looks at the legal frameworks which underpin natural food colorings, also investigating the consumer expectations of food color. The

second section of the book focuses on specific industrial applications of natural colorants with chapters covering the use of natural colorants in aqueous food products, cereal-based foods, and meat products, amongst many other topics. The various pigments which can be used to effectively color these commodities are presented with information on safety and testing included throughout. The final section in the book looks at recent developments and future perspectives in natural food colorings. There are chapters which cover the health benefits of natural pigments, the use of novel fruits and vegetables in pigments, and stable natural solutions for blue colorings. Presents recent advances in consumer demand and worldwide legislation regarding natural food colorants Discusses the use of natural food colorants for one specific product category per chapter rather than one pigment class per chapter - this makes the book extremely useable for industrialists working in a specific sector Contains a comprehensive array of product-specific coloration approaches, from using pigment-enriched feed additives to the direct addition of color formulations Since robotic prehension is widely used in all sectors of manufacturing industry, this book fills the need for a comprehensive, up-to-date treatment of the topic. As such, this is the first text to address both developers and users, dealing as it does with the function, design and use of industrial robot grippers. The book includes both traditional methods and many more recent developments such as micro grippers for the optoelectronics industry. Written by authors from academia, industry and consulting, it begins by covering the four basic categories of robotic prehension before expanding into sections dealing with endeffector design and control, robotic manipulation and kinematics. Later chapters go on to describe how these various gripping techniques can be used for a common industrial aim, with details of related topics such as: kinematics, part separation, sensors, tool exchange and compliance. The whole is rounded off with specific examples and case studies. With more than 570 figures, this practical book is all set to become the standard for advanced students, researchers and manufacturing engineers, as well as designers and project managers seeking practical descriptions of robot endeffectors and their applications. The intersection of two disciplines and technologies which have become mature academic research topics in the 1990s was destined to be a dynamic area for collaboration and publication. However, until now no significant book-length treatment of the meeting of GIS and Virtual Reality has been available. This volume puts that situation to rights by bringing these together to cement some common understanding and principles in a potentially highly promising area for technological collaboration and cross-fertilisation. The result is a volume which ranges in subject matter from studies of a Virtual GIS Room to Spatial Agents, and from an Environmental Multimedia System to Computer-Assisted 3D Geographic Education. All the contributors are well-known international scientists, principally from the computational side of GIS. It will be a valuable resource for any GIS researcher or professional looking to understand the leading edge of this fertile field. This book provides a comprehensive introduction to the growing field of nuclear solid state physics with synchrotron radiation, a technique that is finding a number of unique applications in fields such as magnetism, surface science, and lattice dynamics. Due to the remarkable brilliance of modern synchrotron radiation sources, the method is particularly suited for the study of thin films, nanoparticles and clusters. Its high isotopic specificity can be employed to measure magnetic or vibrational properties with very high spatial resolution. The book is written on an introductory level and is thus suited for newcomers to the field. Many examples are presented to illustrate the unique experimental possibilities. Linked Data Management presents techniques for querying and managing Linked Data that is available on today's Web. The book shows how the abundance of Linked Data can serve as fertile ground for research and commercial applications. The text focuses on aspects of managing large-scale collections of Linked Data. It offers a detailed introduction to Linked Data and related standards, including the main principles distinguishing Linked Data from standard database technology. Chapters also describe how to generate links between datasets and explain the overall architecture of data integration systems based on Linked Data. A large part of the text is devoted to query processing in different setups. After presenting methods to publish relational data as Linked Data and efficient centralized processing, the book explores lookup-based, distributed, and parallel solutions. It then addresses advanced topics, such as reasoning, and discusses work related to read-write Linked Data for system interoperation. Despite the publication of many papers since Tim Berners-Lee developed the Linked Data principles in 2006, the field lacks a comprehensive, unified overview of the state of the art. Suitable for both researchers and

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practitioners, this book provides a thorough, consolidated account of the new data publishing and data integration paradigm. While the book covers query processing extensively, the Linked Data abstraction furnishes more than a mechanism for collecting, integrating, and querying data from the open Web—the Linked Data technology stack also allows for controlled, sophisticated applications deployed in an enterprise environment. Reviews the most interesting materials on the market concerning self-ordering, including macroporous silicon, porous alumina, MCM41 and photonic bandgap. The one-stop resource for rubber-clay nanocomposite information The first comprehensive, single-volume book to compile all the most important data on rubber-clay nanocomposites in one place, Rubber-Clay Nanocomposites: Science, Technology, and Applications reviews rubber-clay nanocomposites in an easy-to-reference format designed for R&D professionals. Including contributions from experts from North America, Europe, and Asia, the book explores the properties of compounds with rubber-clay nanocomposites, including their rheology, curing kinetics, mechanical properties, and many others. Rubber-clay nanocomposites are of growing interest to the scientific and technological community, and have been shown to improve rubber compound reinforcement and impermeability. These natural mineral fillers are of potential interest for large-scale applications and are already making an impact in several major fields. Packed with valuable information about the synthesis, processing, and mechanics of these reinforced rubbers, the book covers assorted rubber-clay nanocomposites applications, such as in automotive tires and as polymer fillers. Promoting common knowledge and interpretation of the most important aspects of rubber-clay nanocomposites, and clarifying the main results achieved in the field of rubbers and crosslinked rubbers—something not covered in other books in the field—Rubber-Clay Nanocomposites helps scientists understand morphology, vulcanization, permeability, processing methods, and characterization factors quickly and easily.

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