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Sci-Tech Book News Reviews

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PSYCHOLOGY

BF241 2010-049713 978-1-56881-465-0
Visual perception from a computer graphics perspective.
Title main entry. Ed. by William B. Thompson et al.
CRC Press, ©2011 526 p. $69.95
Computer scientist Thompson (U. of Utah) and psychologists Roland W Fleming (Justus-Liebig-U. Giessen, Germany), Sarah H. Creem-Regehr (U. of Utah), and Jeanine K. Stefanucci (College of William & Mary) introduce students or professionals working in computer graphics to human visual perception. Because of the unusual perspective, the material might also interest cognitive scientists and visual neuroscientists. The book ties together image generation and the resulting perceptual phenomena, explores topics rare to introductions such as the perception of material properties and spatial cognition, and emphasizes visual performance and biological mechanisms in specific situations. It can be used in a graduate or advanced undergraduate course in computer graphics or related fields.

GEOGRAPHY

G70 2010-051815 978-1-60960-192-8
Geospatial web services; advances in information interoperability.
Title main entry. Ed. by Peisheng Zhao and Liping Di.
Information Science Reference, ©2011 530 p. $180.00
Researchers and practitioners in the large overlap between geographical and computer sciences describe services that are designed to use web service technology to deal with spatial information over the network, and their potential for interoperability for distributed heterogeneous geospatial data and applications. They cover standards, design and implementation, registry and discovery, the semantic web, distributed computing, workflows, and applications. Among the topics are enabling quality in geospatial web services, using distributed semantic catalogs for discovering information on spatial data infrastructures, ontological and semantic technologies for geospatial portals, geospatial service composition in grid environments, and using geospatial web services holistically in emergency management.

SOCIAL SCIENCES (GENERAL), STATISTICS

H61 2010-027609 978-1-4398-2860-1
Applied concept mapping; capturing, analyzing, and organizing knowledge.
Title main entry. Ed. by Brian Moon et al.
CRC Press, ©2011 339 p. $59.95
Contributors from academia, the US Environmental Protection Agency, militaries of various countries, and companies engaged in various activities, explain the current status of concept mapping now that the first generation of computer-savvy people who have been using it in school are on the threshold of the workforce. Among their topics are concept maps as tools to enhance executive and team effectiveness, a concept mapping approach to semi-automated definition integration, concept maps within the product design process in engineering, and virtual collaboration environments.

LANGUAGE, LITERATURE

P53 2010-043163 978-1-60960-141-6
Academic podcasting and mobile assisted language learning; applications and outcomes.
Title main entry. Ed. by Betty Rose Facer and Mohammed Abdous.
Information Science Reference, ©2011 226 p. $180.00
This work for faculty, librarians, and instructional designers presents best practices for planning, designing, and producing effective podcasts.
for second-language learning and acquisition. Academics mainly working in the US explore the benefits of academic podcasting technology and mobile assisted language learning (MALL). While the book provides enough technical information to enable the production of podcasts, it also offers pedagogical and philosophical underpinnings for the use of podcasting in language learning. Material is in sections on MALL and language acquisition, student centered projects, MALL and study abroad, and MALL and ESL. Some specific areas explored include benefits and challenges of using these technologies, students’ perceived learning gains, and economic perspectives. Facer directs the Language Learning Center and Abdous directs the Center for Learning Technologies at Old Dominion University.

SCIENCE (GENERAL)

Q121 978-0-470-14680-4
This is quite an unusual reference. Marvin (reference coordinator, West Chester U., Pennsylvania) has worked, taught, and consulted as a librarian in Latin America and China. He undertook this collection clearly as a labor of love, striving to assemble “all known rules or laws commonly called principles”—offering definitions and applications. Approximately 2,000 principles--from math, medicine, and the sciences, as well as psychology, management, philosophy, and art --are arranged alphabetically, with cross references when there are multiple names. Entries range in length from a few sentences to several paragraphs. They are referenced to their sources in footnotes for those seeking further information. Internet searching of course might serve students trying to find information about particular principles, but this collection offers the benefits of concision and the convenience of a bound volume with a consistent approach.

Q325 2010-043659 978-1-4398-2127-5
Support vector machines and their application in chemistry and biotechnology. Liang, Yizeng et al. CRC Press, ©2011 201 p. $119.95
For chemists and biologists, Liang (analytical chemistry and chemometrics, Central South U., China) et al. explain support vector machines and their applications in chemistry and biology. They first address theoretical aspects, including classification and regression, kernel methods, and ensemble learning, then applications in the quantitative structure-activity relationship, near-infrared spectroscopy, traditional Chinese medicine, and genomics, proteomics, and other OMICS studies.

MATH, COMPUTERS

QA76 978-1-4398-0626-5
Mining software specifications; methodologies and applications. Lo, David et al. (Chapman & Hall/CRC data mining and knowledge discovery series) CRC Press, ©2011 442 p. $89.95
Computer scientists explain methods for determining specifications for existing and heritage software when no or inadequate documentation is available. Among their topics are mining finite-state automata with annotations, adaptive grammar inference techniques for mining state machines, static specification mining using automata-based abstractions, automatic inference and the effective application of temporal specifications, path-aware static program analyses for specifications, and the lightweight mining of object usage.

QA76.58 2010-043659 978-0-470-90210-3
Gebali (engineering, U. of Victoria) explains techniques that programmers can use to explore parallelism in serial and iterative algorithms and create software that uses the full potential of the parallel computers. He writes for researchers and graduate students in computer science and engineering and electrical engineering with a basic knowledge of linear algebra and digital signal processing. His goals are to describe several techniques for expressing a parallel algorithm as a dependence graph or as a set of dependence matrices, and explore scheduling and allocation schemes.

QA76.585 2010-046367 978-0-470-88799-8
Cloud computing; principles and paradigms. Title main entry. Ed. by Rajkumar Buyya et al. (Wiley series on parallel and distributed computing) John Wiley & Sons, ©2011 637 p. $120.00
Researchers and practitioners in computer and information describe a new business model in which vendors offer computation, storage, and applications-hosting services, and provide coverage in several continents. It is an extension of traditional data centers, but...
charges for use rather than a flat subscription rate, so is more like a utility. They cover foundations, infrastructure as a service, monitoring and management, applications, and governance and case studies. Among specific topics are migrating into a cloud, secure distributed data storage, a workflow engine for clouds, an architecture for federated cloud computing, massively multi-player online game hosting on cloud resources, and organizational readiness and change management in the cloud age.


Computer scientists, software engineers, and other basic and application researchers explore approaches to computing that have emerged from distributed systems and exploit the ubiquity of computers and computing power on networks. In sections on basics, scheduling, security, and applications, they consider such topics as porting high performance computing applications to grids and clouds, the speculative scheduling of parameter sweep applications using body behavior descriptions, the adaptive control of redundant task execution for dependable volunteer computing, and persistence and communication state transfer in an asynchronous pipe mechanism.

QA76.5915 2010-040624 978-1-60960-611-4 Pervasive computing and communications design and deployment; technologies, trends, and applications. Title main entry. Ed. by Apostolos Malatras. Information Science Reference, ©2011 376 p. $180.00

The 15 contributions in this volume propose frameworks for building pervasive computing systems and address the challenges posed by pervasive communications, context awareness, security, privacy, and assessment. The opening chapter classifies query processing according to execution frequency and compares the classification scheme to existing query taxonomies. A pair of papers from Monash University identify the factors influencing satisfaction with mobile portals and modify the traditional balanced scorecard tool to evaluate aged care services. Other topics include self-addressing for autonomous networking systems, level crossing sampling for energy conservation in wireless sensor networks, secure electronic healthcare record distribution, and interactive use of multimedia content on mobile devices. Malatras is a lecturer with the pervasive and artificial intelligence research group at the University of Fribourg.

QA76.76 2010-039601 978-0-12-385003-4 API design for C++. Reddy, Martin. Morgan Kaufmann Pub., Inc., ©2011 441 p. $59.95 (pa)

Intended for programmers with intermediate to advanced skills in the C++ programming language, this guide to the building of useful and robust application programming interfaces (APIs) provides practical instruction for software engineers developing systems on which downstream software engineers depend. The work provides a methodical approach to API design covering solution based API design, performance, versioning, documentation, testing, scripting, extensibility and libraries. The work includes numerous illustrations and code examples and access to additional online resources is provided. Reddy is a software development consultant.

QA76.8 978-1-84334-582-4 iPhone application development; strategies for efficient mobile design and delivery. Hahn, Jim. (Chandos information professional series) Chandos Publishing, ©2011 158 p. $75.00 (pa)

Directed at librarians, this small guide to iPhone application development provides a user driven approach to creating context-aware interactive web apps for college library use. Using the Apple’s Dashcode development application, the work uses sample applications such as RSS readers, a podcast aggregator and a library tour video program to demonstrate key programming concepts and to showcase sample projects that might be of use for library application developers. The work includes numerous screen shots as well as appendices documenting iPhone and iOS features. Hahn is a librarian at the University of Illinois Urbana-Champaign and the vice-chair of the Emerging Technologies Interest Group at the American Library Association. Distributed by Neal-Schuman.

This collection of fourteen articles on database queries showcases advanced scholarship in the searching of a variety of database systems. Topics discussed include automatic categorization in web database query results, concept-oriented query language, fuzzy approaches to flexible database querying, pattern based schema mapping, relational techniques for storage and querying and graph database queries. Individual papers include abstracts, illustrations, notes and references and a volume-wide compilation of reading resources is provided. Contributors include academics in computer science and informatics fields from universities around the world.

QA76.9 2010-030988 978-0-470-92714-4
Analyzing the large number of variables in biomedical and satellite imagery.
Good, Phillip I.
John Wiley & Sons, ©2011 185 p. $64.95
A consultant specializing in statistical solutions for private and public organizations, Good here presents material from a course he teaches on the specialized techniques required to analyze the very large data sets that arise in the study of medical images such as EEG, MEG, MRI, PET, ultrasound, and X-rays and from microarrays and satellite imagery. Some students are biomedical research workers and others are statisticians, he says, so the course has to explain much about statistics to the former and much about the biological context to the latter. He covers very large arrays, permutation tests, the biological background, multiple tests, the bootstrap, classification methods, and applying decision trees. Links are provided to the many software packages available on the Internet.

QA76.9 978-1-4398-1567-0
Automated physical database design and tuning.
Bruno, Nicolas. (Emerging directions in database systems and applications)
CRC Press, ©2011 239 p. $79.95
The ever increasing complexity of application workload and query engines can easily outstrip the ability of general administrators to tune a database to a particular set and use of data, so automated tuning tools were developed that can systematically explore the space of alternatives, and guide administrator to the best tuning. A veteran of database design, Bruno details the fundamental ideas and algorithms to design a system that automatically recommends changes in the physical design of a database system. The choice of physical structures such as indexes has a significant impact on the performance of the database system.

QA76.9 2011-001310 978-1-60960-617-6
Conversational agents and natural language interaction; techniques and effective practices.
Title main entry. Ed. by Diana Perez-Marin and Ismael Pascual-Nieto.
Information Science Reference, ©2011 456 p. $180.00
This collection of eighteen articles on human-computer interaction showcases current scholarship in the field of Natural Language Interaction (NLI) and specifically the use of conversational agents for intuitive user interfaces. The volume is divided into sections covering theoretical concepts, the design of conversational agents, practical applications and future research and topics discussed include interactive agents for children with autism, design for convincing conversational agents, conversational include abstracts, illustrations, tables and bibliographies and a volume wide compilation of reading resources is provided. Contributors include academics and professionals from computer science, ergonomics and linguistics backgrounds from institutions around the world.

QA76.9 2011-006790 978-1-4200-6438-4
Display and interface design; subtle science, exact art.
Bennett, Kevin B. and John Flach.
CRC Press, ©2011 484 p. $99.95
Cognitive psychologists Bennett and Flach (both Wright State U., Ohio) present a textbook on interface design and cognitive systems engineering for students in human factors and related disciplines. They begin by laying a theoretical foundation for approaching cognitive systems that integrates across situations, representations, and awareness; then suggest how to apply them for particular purposes. Among the topics are a framework for ecological interface design, semantic mapping versus proximity compatibility, configural graphics for process control, metaphor to leverage experience, visual momentum, and evaluating interfaces.

QA76.9 2010-051278 978-1-57808-708-2
Honeypots; a new paradigm to information security.
Joshi, R. C. and Anjali Sardana.
Science Publishers, Inc., ©2011 328 p. $139.95
This comprehensive guide to the theory and practical use of honeypots for the collection and study of network attacks provides students, network administrators and security professionals
with a collection of useful strategies and illustrative case studies for implementing a variety of useful security traps. Topics discussed include built and commercially available honeypots, honeynets, static, virtual and dynamic honeypots, deployment and applications, anti-honeypot technologies and network forensics. The work includes numerous illustrations and code examples as well as chapter review exercises. Distributed by CRC Press.

QA76.9 978-1-4398-2499-3
Security patch management.
Nicastro, Felicia M.

CRC Press, ©2011 270 p. $79.95
For network and IT managers, this guide to developing an effective software patch management system provides practical advice on securing network and infrastructure resources against software and hardware vulnerability exploits. Topics discussed include general security management, vulnerability management, tools and testing of patches and developing and implementing a robust patching process. The work includes specific example processes and several network diagrams. Nicastro is the director of the Ethical Hacking Center of Excellence at BT Global Services.

QA274 978-1-4200-7941-8
Handbook of Markov chain Monte Carlo; methods and applications
Title main entry. Ed. by Steve Brooks et al. (Chapman & Hall/CRC handbooks of modern statistical methods)
CRC Press, ©2011 592 p. $99.95
This is a reference not a textbook, but there is enough introductory matter that graduate students and researchers new to Markov Chain Monte Carlo (MCMC) statistical methods can become acquainted with the basic theory, algorithms, and applications. The first half looks at the foundations, methodology, and algorithms; the second half samples practical applications in a number of fields. Among the topics are reversible jump MCMC, MCMC using Hamiltonian dynamics, estimating with confidence, spatial point processes, an MCMC-based analysis of a multilevel model for functional magnetic resonance imaging data, statistical ecology, educational research, fisheries science, and analyzing rural-urban migration in Thailand.

QA278 978-1-4398-6223-0
Data clustering in C++; an object-oriented approach. (CD-ROM included)
Gan, Guojun. (Chapman and Hall/CRC data mining and knowledge discovery series)
CRC Press, ©2011 496 p. $89.95
This practical guide to data clustering provides information on using object oriented programming to implement a variety of sorting algorithms. While intended for experienced C++ programmers, the volume none the less provides extremely straight forward explanations of all code examples and clearly presents each new class in detail. The work begins with an overview of data clustering and applicable C++ review and covers the creation of a C++ data clustering framework as well as providing numerous data clustering algorithms. Numerous code examples, diagrams and equations are provided throughout and a companion CD-ROM contains sample applications and configuration files. Gan is the co-author of Data Clustering: Theory, Algorithms and Applications.

QA312 2010-031105 978-0-470-69945-4
Statistical methods for fuzzy data.
Viertl, Reinhard.

John Wiley & Sons, ©2011 256 p. $99.95
Viertl (Vienna U. of Technology, Austria) explains how to perform statistical analysis of data that is inherently imprecise. He describes the necessary foundations of fuzzy models and basic statistical analysis methods for fuzzy samples, both generalized classical statistical procedures and generalized Bayesian inference procedures. Among his topics are fuzzy numbers and fuzzy vectors, empirical correlation for fuzzy data, a law of large numbers, generalized confidence regions, fuzzy predictive distributions, classical regression analysis, and stochastic method in fuzzy time series analysis.

QA372 2010-034587 978-0-470-71549-9
The Duffing equation; nonlinear oscillators and their behaviour.
Title main entry. Ed. by Ivana Kovacic and Michael J. Brennan.

John Wiley & Sons, ©2011 369 p. $135.00
Mechanical and civil engineers, and allied researchers consider the nature, variations, and applications of the nonlinear equation describing an oscillator with a cubic nonlinearity, named after German engineer Georg Duffing, who introduced it in 1918. It is one of the simplest equations that describes chaotic behavior of a system, so has become popular with researchers in chaos since the 1970s. The topics include examples of physical systems described by the Duffing equation, analysis techniques for its various forms, the forced harmonic vibration of a Duffing oscillator with different damping mechanisms, and the forced harmonic vibration of an asymmetric Duffing oscillator.
PHYSICS

QC185 2010-051904 978-0-07-175184-1
The diffusion handbook; applied solutions for engineers.
Thambynayagam, R. K. Michael.
McGraw-Hill, ©2011 1911 p. $199.00
This reference presents approximately 1,000 solutions to boundary-value problems associated with Dirichlet, Neumann, and Robin boundary conditions. Coverage includes integral transforms and their inversion formulae, infinite and semi-infinite continua, bounded continuum, infinite and semi-infinite lamella, rectangle, quadrant layer and octant layer, cuboid, infinite and semi-infinite cylindrical continua, bounded cylindrical continuum, wedge-shaped infinite and semi-ion finite continua, wedge-shaped bounded continuum, and wedge. All semi-analytic solutions are accompanied by prescriptions for numerical computation. The diffusion coefficient and the initial and boundary conductions apply to fluid flow in a porous medium. All solutions can be applied to problems in heat conduction and mass transfer.

QC371 978-1-4398-2906-6
Applied optics fundamentals and device applications, nano, MOEMS, and biotechnology.
Mentzer, Mark A. (Emerging technologies in optical engineering)
CRC Press, ©2011 354 p. $129.95
A scientists with the US Army, Mentzer launches the series he edits with a volume surveying interactions between the various fields the series will encompass. It can serve as a reference for practitioners or a textbook in any of the disciplines. He covers electro-optics; acousto-optics, optical computing, and signal processing; fiber-optic sensors; integrated optics; optical diagnostics and imaging; and micro-electro-mechanical and micro-opto-electro-mechanical systems and nano- and bio-nano-technologies.

QC689 978-1-4398-1324-9
Fundamentals of attosecond optics.
Chang, Zenghu.
CRC Press, ©2011 519 p. $89.95
Attosecond optical pulses are a laser-like light that is redefining ultra-fast physics and chemistry. Chang (physics and optics, U. of Central Florida) introduces the emerging field to graduate and senior undergraduate students and scientists. He emphasizes the fundamental concepts and techniques, but also surveys recent research, including that by his own group. The topics include the quest for attosecond optical pulses, poky old femtosecond driving lasers, the semi-classical model, phase matching, attosecond pulse trains, single isolated attosecond pulses, and applications. Solutions are provided for selected problems.

CHEMISTRY

QD79 978-1-4398-0753-8
Hydrophilic interaction liquid chromatography (HILIC) and advanced applications.
Title main entry. Ed. by Perry G. Wang and Weixuan He.
CRC Press, ©2011 589 p. $169.95
The technique is a variation of normal-phase chromatography that can examine organic solvents that are miscible in water. It uses polar materials such as amino cyano, diol, and silanol as its stationary phase, so is sometimes called reverse reversed-phase or aqueous normal phase. Chemists in various fields describe the technology, which was introduced in 1990, and provide detailed information and discussion on advanced applications in such fields as environmental sciences, food analysis, clinical chemistry, pharmaceutical research, and biotechnology. An underlying theory has yet to jell, and commercial equipment is still hard to find, so there is a chance to be the first on your block.

QD96 2010-038209 978-1-4398-1324-9
Ion mobility spectrometry-mass spectrometry; theory and applications.
(CD-ROM included)
Title main entry. Ed. by Charles L. Wilkins and Sarah Trimpin.
CRC Press, ©2011 357 p. $159.95
Ion mobility spectrometry goes back some 40 years, under the name plasma chromatography, but only recently, and conjoined with mass spectrometry, is it being applied in the real world, and instruments are hitting the shelves. Here researchers and practitioners discuss fundamentals, instrumentation, and applications. Their topics include measuring ion mobility in a gas jet formed by adiabatic expansion, a cryogenic-temperature ion mobility mass spectrometer for improved ion mobility resolution, multiplexed ion mobility spectrometry and ion-mobility-mass spectrometry, metabolomics by ion mobility-mass spectrometry, profiling and imaging tissues, deciphering carbohydrate structures with applications in biological features related to carbohydrate chemistry and biology, and the conformational landscape of biomolecules.
Metallic systems; a quantum chemist’s perspective.
Title main entry. Ed. by Thomas C. Allison et al. CRC Press, ©2011 403 p. $149.95
Being quantum chemists, the contributors are interested in calculating the properties of the metals and metal-containing molecules using first principles methods, and are more frequently in molecular properties as opposed to properties of extended solids, that is interested in the chemistry that takes place at the surface of metals. Their topics include carbohydrate and trivalent iron ion interactions in the gas phase and in aqueous solution, a first-principles perspective on the structure of liquid metal surfaces, computational investigations of metal oxide surfaces, density functional theory calculations on cobalt and platinum transition metal clusters, and exploring borderlands between physics and chemistry with theoretical methods in the study of atomic clusters.

Carbon dioxide thermodynamic properties handbook; covering temperatures from -20 degrees to 250 degrees C and pressures up to 1000 bar.
Anwar and Caroll, with a gas engineering company in Calgary, Canada, have compiled the most comprehensive collection of data on the thermodynamic properties of carbon dioxide ever published. The substance is one of the most well studied in the world, they point out, and will certainly become even better studied as it continues to be a factor of political and economic issues. In tabular form, they set out the density, enthalpy, entropy, and heat capacity of saturated carbon dioxide, and as a function of temperature and pressure.

Complex macromolecular architectures; synthesis, characterization, and self-assembly. (online access included)
Written by an international group of specialists, the chapters of this outstanding resource present an in-depth description of the state of research, current applications, and future outlook for 26 complex macromolecular structures, including new entrants in the field, such as structures from living alkene polymerization. A small sample of the individual chapter topics includes arborescent polymers with a mesoscopic scale, living polymerization of ylides, highly branched functional polymer architectures using click chemistry, and precision polyolefins. Though appealing to specialists, the material is presented with adequate description to be accessible to researchers in other fields. Each chapter concludes with a list of references. The contributors are chemists with research institutions in Europe, North America, Taiwan, and Japan.

Biological chemistry of arsenic, antimony and bismuth.
The three elements are in Group 15, along with nitrogen and phosphorus, all of which are directly or indirectly related to life. Biochemists and other chemists report findings from recent research into their role in medicine and biology. The topics include arsenic's interactions with macromolecules and its relationship to carcinogenesis, the biological chemistry of antimony and bismuth, arsenic in traditional Chinese medicine, metalloid transport systems, Helicobacter pylori and bismuth, application of arsenic trioxide therapy for patients with leukemia, radio-bismuth for therapy, and genetic toxicity in arsenic and antimony.
MEDICINE (GENERAL)

R856 2011-006351 978-1-4398-4995-8
Biological and biomedical coatings handbook; processing and characterization.
Title main entry. Ed. by Sam Zhang. (Advances in materials science and engineering)
CRC Press, ©2011 441 p. $139.95
This book is volume 1 of a two-volume handbook. It contains nine chapters focusing on processing and characterization of biological and biomedical coatings, covering sol-gel methods, thermal spraying, hydrothermal and physical or chemical vapor deposition, and other methods. The book is illustrated with b&w images and can serve as an introduction to the field and as a reference for experts. Chapters are written by international contributors and describe materials such as bone-like mineral coatings, synthesis and characterization of hydroxyapatite nanocoatings, hydroxyapatite and other biomedical coatings by electrophoretic deposition, and nanostructured titania coatings for biological applications. Other subjects covered include bioceramic coatings on titanium, layer-by-layer assembled polyelectrolyte film coatings, and bioactive glass-based coatings and modified surface strategies for manufacture, testing, and clinical applications in regenerative medicine. The book will interest those in academia, research, and industry. Zhang is professor in the School of Mechanical and Aerospace Engineering at Nanyang Technological University, Singapore.

TECHNOLOGY (GENERAL)

T55 2010-047225 978-0-470-76771-9
Conduct of operations and operational discipline; for improving process safety in industry.
Title main entry. Center for Chemical Process Safety.
John Wiley & Sons, ©2011 207 p. $120.00
This volume delineates management practices to help organizations have strong process safety management performance and operational excellence, with a focus on the design and implementation of conduct of operations and operational discipline systems, as well as correcting and improving existing systems. It also covers how to determine whether a program is needed, the benefits of these systems, leadership’s role and commitment, the importance of human factors, and each system’s key attributes. The book is meant to complement the more comprehensive guidelines books from the Center for Chemical Process Safety, which published this volume in alliance with the American Institute of Chemical Engineers.

ENGINEERING (GENERAL, CIVIL)

TA151 2010-031086 978-0-470-43841-1
Civil engineer’s handbook of professional practice.
Hansen, Karen Lee and Kent E. Zenobia.
John Wiley & Sons, ©2011 714 p. $135.00
Intended as both an advanced undergraduate or graduate level textbook and as a reference for professional engineers, this comprehensive volume outlines best business and professional practices for civil engineers. Topics discussed include professional ethics, the roles of engineers in projects, client relationships and business development, legal aspects of professional practice, and the engineer’s relationship to globalization, sustainability and emerging technology. The work includes numerous illustrations and tables and a series of appendices provide numerous sample documents. Hansen is a professor of civil engineering at California State University, Sacramento and Zenobia is an engineer for the California Department of Water Resources.

their topics are pharmacokinetics for medicinal chemists, in vitro approaches to genetic toxicity, preclinical candidate nomination and development, and fragment-based drug design.
Design decisions under uncertainty with limited information.
Nikolaidis, Efstratios et al. (Structures and infrastructures series; v.7) CRC Press, ©2011 521 p. $149.95
Mechanical engineers Nikolaidis (U. of Toledo, Ohio), Zissimos P. Mourelatos (Oakland U., Michigan), and Vijitashwa Pandey explore theories and tools to represent uncertainty using both data and expert judgment, and the use of the resulting models to make informed choices when there is limited or no data. They begin by summarizing decision making in engineering and business, and surveying and comparing tools for representing uncertainty. Then they look at objective probability and long-term frequency, and present a structured approach to making decisions that are consistent with the decision makers’ estimates of uncertainty and risk attitude. Among the topics are constructing probabilistic models from observations, the probabilistic analysis of dynamic systems, and multi-attribute considerations in design. There is no index.

Visualization of fields and applications in engineering.
Tou, who is not further identified, has gleaned information from scattered sources into a single-volume tutorial and reference on basic techniques for tensor field visualization and mapping from an engineering approach. Emphasizing fundamental aspects of post-processing digital database and applications, he explores existing theories and their integration in tensor field visualization, transformation, and analysis. His examples range across several fields of engineering.

Advanced Kalman filtering, least-squares and modeling; a practical handbook.
Gibbs, Bruce. P. John Wiley & Sons, ©2011 605 p. $145.00
Gibbs spent over 40 years applying estimation and control theory to applications for a number of US government agencies as well as private companies before turning consultant. Though there are many books on Kalman filtering and least-squares estimation, he says, they do not analyze model structure carefully, nor describe options for improving the performance of an estimation. Those are the matters he emphasizes here. One of the techniques he explains is exploratory data analysis to define model structure in cases when it is difficult to determine the best model structure a priori. His topics include system dynamics and models, fundamentals and solution techniques of linear least-square estimation, advanced filtering topics, and empirical modeling.

Nonsmooth mechanics and convex optimization.
Kanno, Yoshihiro. CRC Press, ©2011 425 p. $129.95
Kanno (mathematical informatics, U. of Tokyo) explains how to use theory and algorithms of optimization to treat problems in applied mechanics, the terms nonsmooth and convex signaling how the methodology he discusses diverges from conventions in applied and computational mechanics. He covers the broad areas of convex optimization over a symmetric cone, cable networks as an example in nonsmooth mechanics, numerical methods, and problems in nonsmooth mechanics. Among his topics are optimality and duality, principles of potential energy for cable networks, algorithms for conic optimization, masonry structures, and frictional contact problems.

Biosensor nanomaterials.
Title main entry. Ed. by Songjun Li et al. Wiley-VCH, ©2011 278 p. $185.00
Scientists and engineers from chemistry, materials, pharmaceuticals, and medicine explore how nanotechnology is being used in biosensors to detect small amounts of harmful agents against a noisy and often changing background. They consider new micrometer and nanometer technologies for electrochemical biosensor development, advanced nanoparticles in medical biosensors, smart polymeric nano fibers resolving biorecognition issues, fabricating and evaluating nanoparticle-based biosensors, the synthesis and applications of enzyme-based biosensors, energy harvesting for biosensors using biofriendly materials, in vitro and in vivo sensing and imaging of carbon nanotubes, the lipid nanoparticle-mediated detection of proteins, nanomaterials for optical imaging, semiconductor quantum dots for electrochemical biosensors, functionalized graphene for biosensing applications, electrochemical biosensors using chitosan nanocomposites, nanomaterials as promising DNA biosensors, and nanocomposites and their biosensor applications.
Integrated design of multiscale, multifunctional materials and products.

Title main entry. Ed. by David L. McDowell et al.
Butterworth-Heinemann, ©2010 370 p. $89.95
Mechanical and materials engineers examine systems strategies for concurrent robust design of materials and systems, along with elements of distributed modeling and simulation environments. They show how several primary disciplines or endeavors that have traditionally been distinct can combine to serve as a foundation of modern materials design. They are systems-based engineering design, computational materials science and engineering, robust system design, and information technology. Among their topics are critical path issues in materials design, decision making in engineering design, mathematical tools for decision making in design, integrated and concurrent design of materials and products, and distributed collaborative design frameworks.

Extended finite element method for crack propagation.

Pommier, Sylvie.
ISTE/Wiley, ©2011 254 p. $95.00
The authors concentrate on providing a method for modeling real crack propagation from the initial stage to final fracture. The new X-FEM method they discuss does not, they explain, have the shortcomings of the traditional finite element methods. The book also covers elementary concepts of fracture mechanics, representation of fixed and moving continuities, non-linear problems and crack growth by fatigue, and numerical simulation of crack growth. The book, intended for the solid mechanics community, is concisely written and includes numerous illustrations. Authors are Pommier (Ecole Normale Supérieure de Cachan and LMT-Cachan Laboratory, France), Gravouil (INSA and LaMCoS Laboratory, France), Combescure (INSa, France), and Moës (Ecole Centrale de Nantes, France).

Carbon nanotubes for polymer reinforcement.

Ma, Peng-Cheng and Jang-Kyo Kim.
CRC Press, ©2011 207 p. $179.95
Composites with the tubes and polymers show promise of a range of useful mechanical properties and other characteristics, say Ma (Liebnitz Institute of Polymer Research, Germany) and Kim (Hong Kong U. of Science and Technology), but there are major problems, primarily getting the disparate materials to mix evenly then hold on to each other. To help overcome these problems, they address how the tubes are functionalized and their surface functionalities controlled to enhance the interfacial interactions with a polymer matrix, and how they are incorporated into polymers when agglomerates are broken down into individual tubes. They describe a number of conventional and novel techniques for dispersing and functionalizing the tubes for polymer reinforcement; and systematically present the principles, theories, and technical practices involved.

Nanoporous materials; advanced techniques for characterization modeling, and processing.

Title main entry. Ed. by Nikos Kanellopoulos.
CRC Press, ©2011 564 p. $169.95
Paralleling the unprecedented developments in materials science, nanotechnology, and biosciences over the past three decades have been developments in techniques to characterize and simulate them. Mostly European physical scientists and engineers survey some of the innovations in those techniques, as well as some developments in the material themselves. Among the topics are calorimetric techniques, mesoscopic methods, a fundamental approach to the super-critical hydrogen adsorptivity of nanoporous carbons, and gas-to-liquid conversion and opportunities for advanced nanoporous materials.

Porous polymers.

John Wiley & Sons, ©2011 454 p. $125.00
Chemists and materials scientists from many countries offer a broad reference to porous polymers, describing the fundamentals, the current state of the art, and possible futures. Covering in turn synthesis, characterization, and applications, they explore such topics as porous polymers from self-assembled structures, colloidal templating, the nondestructive evaluation of critical properties of thin porous films, microscopy characterization, biomedical devices, and polymer-supported reagents and catalysts.

Phase mixture models for the properties of nanoceramics.

Pabst, Willi and Eva Gregorova. (Nanotechnology science and technology)
Nova Science Publishers, ©2010 74 p. $43.00 (pa)
Based on a project and a research program...
in the Czech Republic, this volume discusses models of the thermal conductivity of nanocrystalline ceramics, taking into account the grain size dependence of the Young’s modulus. To simplify calculations, it considers only monodisperse systems as two-phase composites. This compact book includes a variety of graphs and figures, occasionally in color.

**Moving loads; dynamic analysis and identification techniques.**
Law, Siu-Seong and Xin-Qun Zhu. (Structures and infrastructures series; v.8) Routledge, ©2011 306 p. $149.95
Law (civil and structural engineering, Hong Kong Polytechnic U.) and Zhu (structural engineering, U. of Western Sydney) take the vehicle-bridge system as an illustration of the moving load problem, and present analytical methods for estimating interaction forces using modern computer power for the numerical analysis. The commercial packages available for such analysis are very expensive and not very effective, they say. First they set out the moving load problems of the dynamic response of multi-span continuous beams and orthotropic plates under moving loads, and applying vehicle-bridge interaction dynamics. Then they consider moving load identification in a variety of contexts, among them the frequency-time domain, state space, and finite element formulation.

**Thermal infrared sensors; theory, optimisation and practice.**
For design and optical engineers, technicians, technical managers, equipment suppliers, and users of infrared sensors and cameras, Budzier and Gerlach (Dresden U. of Technology, Germany) explain the basic physical and photometric fundamentals of thermal infrared sensors, technological requirements and issues, and applications to the solution of specific tasks. They discuss the origin and propagation of electromagnetic radiation; the photometric basics including mapping the radiation source area to the area of the sensor or sensor array; the characteristics of infrared optical sensors and sensor arrays; noise sources; the structure and characteristics of thermal infrared sensors; and applications in pyrometry, thermal imaging cameras, passive infrared motion detectors, gas analysis, and spectrometry. Classical optical elements such as lenses, grating, and filters are excluded. The book is based on lectures on infrared measuring technology by the authors at Dresden U. of Technology.

**High power laser handbook.**
Physicists and engineers in military, academic, and commercial environments explain the current status of every technical area of high-power lasers. They provide an intuitive and practical understanding, and leave the detailed derivations to the specialized literature they refer to. The areas covered are gas, chemical, and free-electron lasers; diode lasers; solid-state lasers; fiber lasers; and beam combining. Among specific topics are excimer lasers, semiconductor laser diodes, thin-disc lasers, and high-power fiber lasers for industry and defense.

**Biophysico-chemical processes of anthropogenic organic compounds in environmental systems.**
Title main entry. Ed. by Baoshan Xing et al. (Wiley-IUPAC series in biophysico-chemical processes in environmental systems) John Wiley & Sons, ©2011 572 p. $199.95
Scientists from a wide range of disciplines focus on the myriad physical, chemical, and biological interfacial interactions that govern how synthetic organic chemicals, many of them toxic, move through the environment. They consider in turn fundamental biological, physical, and chemical processes of the compounds; their occurrence and distribution in air, water, and soil and their global cycling; the current sampling methods and analytical, biological, spectroscopic, and microscopic techniques for monitoring and studying them; and the restoration of natural environments contaminated by organic pollutants. Among specific topics are the role interactions between organic matter and minerals play in the sorption of organic contaminants, pharmaceutical and personal care products in soils and sediments, biosensors for environmental analysis, and the phyto-remediation of soils contaminated with organic pollutants.

**Environmental anaerobic technology; applications and new developments.**
Title main entry. Ed. by Herbert H.P. Fang. Imperial College Press, ©2010 404 p. $149.00
Boasting the advantages of energy savings, reduced sludge yield, and production of biofuel, anaerobic technology has applications in the treatment of wastewaters from food, beverage, brewery, and distillery industries, as well as the potential for use with municipal wastewater systems, chemical industries, and agriculture. Although first applications were in the 1860s, the techniques for anaerobic waste and wastewater treatment fell out of favor for many years in relation to aerobic processes. The 1960s saw their return in the United States, and then major developments began to emerge from the Netherlands. This book brings together state-of-the-art processes and applications and emerging research from an international roster of contributors. Editor Herbert H.P. Fang is affiliated with the U. of Hong Kong. Distributed by World Scientific.
to maintain a balance between generation and load following serious disturbances. They explain the fundamentals of power system AGC to engineers and operators planning and running a power system, and to researchers and students in electrical engineering. They also introduce several new schemes using intelligent control methodologies to minimize system frequency deviation while simultaneously adjusting tie-line power to match the total generation and load demand, which is required to operate interconnected systems successfully.

TK2391 2010-010789 978-0-470-16768-7

**Applications of high temperature superconductors to electric power equipment.**
Kalsi, Swarn Singh.


Drawing on more than 40 years in superconducting magnet technology and electrical engineering with some large US companies, Kalsi offers a reference on designing power equipment with the high-temperature superconductors developed during the late 1980s. The technology is in its infancy and still developing, he warns, but the design and analysis approaches he discusses are from his actual experience. He writes for electrical and mechanical engineers and senior or graduate students who are familiar with the fundamentals of design and analysis of conventional power equipment like motors and generators, transformers, power cables, and electromagnets. Among his topics are cooling and thermal insulation systems, synchronous alternative current homopolar machines, fault current limiters, and maglev transport.

TK5103 2011-000933 978-0-470-18235-2

**Broadband optical access networks.**


This volume on optical networking and broadband delivery technologies showcases the work of the Stanford University Photonics and Networking Research Laboratory research group over the last decade. Outlining the state of the art of optical networking research, the chapters in this volume, provide an overview of core technologies and architectures that will be important factors in the transition to more efficient broadband delivery so important to emerging consumer demand for networked services. Topics discussed include broadband access technologies, optical communications components and systems, passive optical networks, next-generation broadband optical access networks and hybrid optical wireless access networks. Kazovsky is a professor of electrical engineering at Stanford University. Cheng, Shaw, Gutierrez and Wong are all graduates of Stanford University working for major firms in networking and communications.
This collection of sixteen articles on Service Oriented Architecture (SOA) presents current scholarship in data and service interoperability and discovery in business complex, distributed computer architectures. The work is divided into three sections covering service level agreements (SLAs), service composition and reliability and fault tolerance and individual articles address such topics as flexible and dynamic SLA management in service oriented architectures, service directories, selective querying, aggregating functional and non-functional properties for service identification and model based methodologies for assessing business process availability. Papers include abstracts, illustrations, notes and references and a volume-wide compilation of reading resources is provided. Contributors include academics in computer science fields from universities in the US, Europe, South America and Australia.

TK5105 2010-042272 978-1-60960-040-2
Handbook of research on methods and techniques for studying virtual communities; paradigms and phenomena; 2v.
Title main entry. Ed. by Ben Kei Daniel.
Information Science Reference, ©2011 841 p. $475.00
This two volume collection, featuring over forty academic papers, showcases current scholarship in the study of online communities and social networks. The work is divided into six broad sections beginning with an overview of the study of virtual communities and covering social networks and data mining, tools and techniques for building online communities, data and user modeling, metrics for evaluation and study. Volume two concludes with a collection of case studies and unique problems. Chapters discuss such topics as communications and emergent social practices in online communities, semantic social network analysis, using virtual learning communities for research in technical writing, modeling diversity of user behaviors and methods for measurement and visualization of social networks. Individual papers include abstracts, illustrations, notes and bibliographies and a collection-wide compilation of bibliographic resources is provided. Contributors to this set include academics and researchers in computer science and related fields from around the world.

TK5105 2010-043008 978-1-60960-625-1
Ontology learning and knowledge discovery using the Web; challenges and recent advances.
Title main entry. Ed. by Wilson Wong et al.
Information Science Reference, ©2011 338 p. $180.00
Converting today's onslaught of information into usable knowledge is one of the main challenges facing us in the modern era. This volume covers a wide range of topics, from ontology learning to data mining of comparable patents and is edited by three faculty members at the University of Western Australia. Each chapter ends with paragraph-long definitions of the key terms considered.

TK5105 2010-054441 978-1-61520-921-7
Semantic web personalization and context awareness; management of personal identities and social networking.
Title main entry. Ed. by Miltiadis Lytras et al.
Information Science Reference, ©2011 216 p. $180.00
This collection of thirteen articles on knowledge management and the semantic web presents current scholarship in a variety of areas related to the next generation of personalization technologies for social networking and online identity management. Topics discussed include semantic recommendation systems for digital libraries, standardization of visual objects, the evolution of ontology-based user modeling.
and collaborative filtering and inference from the interactive web. Individual papers include abstracts, illustrations, notes and references and a volume-wide compilation of reading resources is provided. Contributors include academics in computer science and information technology fields from universities in the US and Europe.

TK6553 2010-035687 978-0-470-68871-7
Communications, radar and electronic warfare.
Graham, Adrian W.
John Wiley & Sons, ©2011 378 p. $120.00
Graham, an independent consultant in the UK, offers a guide for operators, designers, and managers to the principles of radio communication for both civilian and military applications, with a focus on the applications of radio propagation and prediction. He introduces the basic theory of radio prediction in a simplified way, then explains how this theory can be translated into real-life applications and how they work in practice. He focuses on aspects over which operators and developers have some control, such as selected frequency, antenna, location, and system configuration, and discusses spectrum management; the radio channel; effects of noise, interference and deliberate jamming; radio-controlled improvised explosive devices (RCIEDs) and countering them; the performance of jamming, detection, and intercept systems; predicting high-frequency radio and radio propagation at VHF (very high frequency) and above; data requirements; planning and optimizing radio links; coverage; and communications and non-communications electronic warfare.

TK6564 2011-010656 978-0-07-162289-9
Waveform diversity; theory & applications.
Title main entry. Ed. by Unnikrishna Pillai et al.
McGraw-Hill, ©2011 306 p. $125.00
Four electrical engineers explain how to exploit the shape of transmitter and receiver waveforms to improve signal detection and suppress interference and noise across various disciplines such as radar, sonar, and communications that routinely use waveforms. Their topics are waveform design and matched filtering, new methods for optimum transmitter and receiver design, constant envelope transmit signals, optimum waveform design, discrete-time waveform design, and sparsity-based receivers. They write for senior and graduate students and professional engineers who have a basic understanding of linear systems and radar fundamentals. They also write for people who need to improve or maintain existing systems, and for people who are considering new approaches. They discuss topics such as signal detection, waveforms, spectra, and systems design.

TK6565 2010-047251 978-0-470-82446-7
Antenna design for mobile devices.
Zhang, Zhijun.
John Wiley & Sons, ©2011 280 p. $130.00
For a decade or so, Zhang (electronic engineering, Tsinghua U., China) alternated between designing antennas to sell to companies, and buying antennas from designers for companies, so knows both sides of the transaction well. During that time he collected bits of lore, insights, tips, and experience that he here compiles into a broad handbook for student and intermediate engineers designing antennas that move around. He covers antenna matching, external and internal antennas, antenna measurement, and regulations related to antenna engineers.

TK6570 2011922546 978-1-60750-721-5
Radio frequency identification system security; proceedings.
RFID Sec’11 Workshop (Wuxi, China: 2011) Ed. by Tieyan Li et al. (Cryptology and information security series; v.6)
IOS Press, ©2011 157 p. $138.00
The invited paper describes the passive back-box cryptanalysis of an ultra-light protocol after eavesdropping one authentication session. Nine other papers explore such topics as radio frequency identification (RFID) mutual authentication protocols with universally composable security, attacks and improvements to a new RFID authentication protocol, an RFID electronic visa with personalized verification, and a memory-efficient distance bounding protocol with error detection.

TK6590 978-1-60807-190-6
Phased array antennas with optimized element patterns.
Skobelev, Sergei P. (Artech House antennas and propagation series)
Artech House, ©2011 261 p. $139.00
This comprehensive text for engineers involved in the creation of phased arrays provides detailed information on the design of large scale directional antennas. Topics discussed include phase array concepts and relations, arrays with beam-forming networks, coupled dual-mode waveguides, reactively loaded radiators, protruding dielectric elements and arrays with strip, disk and wire structures. Chapters include copious diagrams and equations and two appendices provide a selection of relevant calculations. Skobelev is a phased array expert working for the Russian company Radiophyzika, formerly a research institute for the Soviet Union.
Video encryption technology and application.
Xu, Zhengquan and Jing Sun. (Media and communications; technologies, policies and challenges)
Novinka Books, ©2010 99 p. $43.00 (pa)
Video encryption technology is a combination of cryptography and video technology. This book introduces several aspects of video encryption related to research methods and technology solutions. It describes video encryption techniques, performance requirements, and principles for designing a secure video encryption algorithm, and presents the primary encryption algorithms. It also describes novel applications and discusses security issues, open problems, and potential areas for further research in the field. Color and b&w images are included. Information on the authors is not given.

Video tracking; theory and practice.
Maggio, Emilio and Andrea Cavallaro.
John Wiley & Sons, ©2011 266 p. $115.00
Maggio (computer vision scientist, Vicon, UK) and Cavallaro (multimedia signal processing, Queen Mary U., UK) offer a reference designed to help researchers and practitioners create techniques and solutions from the potential of video tracking applications. The authors discuss design and implementation issues, algorithm implementation, and evaluation methods. Some specific topics include: feature extraction, target representation, localization, fusion, multi-target management, and context modeling. While technical, the text is clearly written and supported by exceptional illustrations.

Lead-free solder process development.
Title main entry. Ed. by Gregory Henshall et al.
This is a practice-oriented introduction to issues of lead-free soldering technology. It includes ten chapters covering topics associated with environmental regulatory and voluntary efforts in electronics products spurring the development of lead-free soldering; challenges of lead-free surface mount technology, wave-soldering, and rework; research results on various lead-free alloys for ball grid array/chip scale packaging components; tin whisker growth and mitigation strategies; testability of lead-free soldered printed circuit assemblies; board-level solder joint reliability under mechanical loading; and reliability of lead-free electronics in aerospace, military, and automotive environments.

ESD; design and synthesis.
Voldman, Steven H. (EDS series)
John Wiley & Sons, ©2011 270 p. $110.00
Writing for semiconductor chip architecture team lead floorplan engineers, circuit designers, design layout support, ESD (electrostatic discharge) engineers, and computer aided design integration teams, Voldman explains ESD chip design for a semiconductor chip, and demonstrates step-by-step how to provide ESD protection to a semiconductor chip. He also surveys the growing number of architectures and concepts being discussed, and delves into areas rarely considered by similar textbooks, such as power bus architecture, guard rings, and floorplanning. His treatment could also serve as a textbook for a graduate or undergraduate course involving the design of ESD devices, chips, and systems.

Diffusion in semiconductors, other than silicon; compilation.
Title main entry. Ed. by D.J. Fisher. (Defect and diffusion forum; v.308)
Trans Tech Publications, ©2010 168 p. $138.00 (pa)
Summary reports of 337 experiments provide information on the diffusion of matter and heat in 31 materials used in semiconductors. Most of the compounds are based on cadmium, gallium, indium, lead, and zinc. Mercury telluride is included however, as is silicon carbide for some reason. Each article is thoroughly referenced to the authors and publication number, date, and page. The arrangement is alphabetical by semiconductor material. Indexes cover authors, hosts, and diffusants.

Non-standard antennas.
Title main entry. Ed. by Francois Le Chevalier et al.
ISTE/Wiley, ©2011 462 p. $195.00
French physicists and engineers survey new designs for antennas that respond to new materials and technologies, new algorithms and increased speed for signal processing, and new requirements and applications. They cover emerging concepts, technologies, detection and localization, and ultra-wideband. The topics include acoustic antennas for biomedical and industrial ultrasonic imaging, terahertz broadband micro-antennas for continuous wave imaging, the airborne high precision location of radiating sources, and the co-design of antennas with low noise amplifier for ultra-wideband applications.
Self-organized organic semiconductors; from materials to device applications.

Chemists and chemical engineers introduce graduate students and researchers in fields concerned with making or using semiconductors to a selection of topics relating to organic, self-organized semiconductors such as large \pi-conjugated liquid crystals and conjugated block copolymers. Among their topics are crystal engineering organic semiconductors, charge-carrier transport and its modeling in liquid crystals, self-assembling carbon nanotubes, high-efficiency organic solar cells using self-organized materials, and selective molecular assembly for bottom-up fabrication of organic thin-film transistors.

Nano-lithography.

Scientists and engineers specializing in microelectronics, most associated with CEA, Grenoble, France, describe various methods for printing microcircuits for the benefit of colleagues new to the field. The topics include fundamentals and applications of X-ray lithography, NanoImprint lithography, lithography techniques using scanning probe microscopy, lithography and manipulation based on the optical properties of metal nanostructures, patterning with self-assembling block copolymers, and metrology for lithography.

Tools for signal compression.

An instructor at Télécom ParisTech for over 30 years, Moreau specializes in audio and multimedia signal processing, with a particular emphasis on audio coding and watermarking. He describes the standard tools for signal compression, focusing on the theoretical problem of minimizing the mean squared error. Then he cites examples of how they are applied in compressing speech and musical audio signals, attending to the more concrete matter of trying to minimize the bit rate while respecting the psychoacoustic constraints. A final section presents MATLAB programs for a speech coder and a music coder. Signal compression involves eliminating not only all redundant parts of the original signal, he explains, but also the inaudible parts. The techniques are not his own, but are the standards that have been developed over the past few decades.

Biometrics; methods, applications and analyses.

Biometrics is a method for recognizing particular individuals using one or more intrinsic physiological traits such as fingerprint, face recognition, DNA, iris recognition, or odor/scent; using one or more behavioral trait such as typing rhythm, gait, and voice; or one or more of each. Specialists from either the technical side or the biological side consider such aspects as biometrics in marine benthic ecology, improving the performance of color spaces for face recognition by color space normalization and rotation, problems and solutions for improving accuracy, estimating the initial population size from removal data, black coding schemes designed for biometrical authentication, and statistical methods for handling complex categorical data.

Design and test technology for dependable systems-on-chip.

Computer scientists, electrical engineers, and related researchers explore aspects of system design and efficient modeling, but also introduce various fault modes and fault mechanisms associated with digital circuits integrated into systems-on-chip (SoC), including versions for multi-processors and networks. They write primarily for practitioners and researchers already working in SoC, but also for graduate and undergraduate students with a basic understanding of electronics and computer engineering who can get comfortable designing dependable system from not-so reliable base components. They cover design, modeling, and verification; faults, compensation, and repair; fault simulation and fault injection; test technology for systems-on-chips; and test planning, compression, and compaction.

Thin-film organic photonics; molecular layer deposition and applications.

Developing artificial materials with atomic or
molecular-level tailored structures is the goal of material/device scientists and engineers for improving material performance and generating new photonic and electronic phenomena. Yoshimura (computer science, Tokyo U. of Technology) describes the properties of organic thin-films; assembling techniques for improving their properties via electron wavefunction control, e.g., scanning tunneling microscopy, molecular beam epitaxy, and atomic layer deposition; materials featuring conjugated polymers with multiple quantum dots; and proposed applications including optical interconnects in computers, solar energy conversion systems, and biomedical photonic devices using the self-organized lightwave network (SOLNET). He also presents the theoretical basis for predictions of electro-optical effects in polymer wires. Illustrations show examples of such technologies as integrated photoluminescence analysis chips and molecular recognition chips.

**MOTOR VEHICLES, AERONAUTICS, ASTRONAUTICS**

TL885 2010-054208 978-0-470-68791-8
Spacecraft reliability and multi-state failures; a statistical approach.
Saleh, Joseph Homer and Jean-Francois Castet.
John Wiley & Sons, ©2011 206 p. $125.00
By multi-state failures, Saleh and Castet (both Georgia Institute of Technology, US) mean failures of mechanical or electronic systems to different degrees of severity. Their topics include the non-parametric reliability analysis of spacecraft failure data, the statistical analysis of spacecraft reliability by orbit and mass categories, time to anomaly and failure of spacecraft subsystems, and toward survivability analysis of spacecraft and space-based networks.

**CHEMICAL TECHNOLOGY**

TP155 2010-048940 978-1-84821-281-7
Fluid mechanics for chemical engineering.
Mory, Mathieu.
ISTE/Wiley, ©2011 422 p. $195.00
Mory (chemical engineering, U. of Pau and the Adour Region, France) offers a reference book for chemical engineers who need to understand and use fluid mechanics skills in chemical and process engineering. The book is divided into three parts. The first covers the basics of fluid mechanics and the second addresses mixing phenomena associated with turbulence. The third section introduces the tools of fluid mechanics used in mechanical fluid/solid and fluid/fluid separation processes. Some topics include local equations and global theorems of fluid mechanics, dimensional analysis, pumps, rheometry, micromixing models, and centrifugal separation. The text is crisply and clearly written and well-supported by quality illustrations.

TP155 2010-034824 978-0-470-97587-9
Process control; a practical approach.
King, Myke.
John Wiley & Sons, ©2011 400 p. $140.00
A British consultant specializing in process control, King augments the many superb academic texts about process control with one designed specifically for engineers working in the process industry. He presents techniques that have an immediate practical application, describing not only design methods but also any shortcuts that can be taken and how to avoid common pitfalls. The mathematics is reduced to what is actually needed to do the job, and higher mathematical and theoretical aspects are mentioned only so readers can connect this manual with academic texts if they want to.

TP156 978-1-84735-455-6
Update on undertaking extractable and leachable testing.
Feilden, Andrew. (Smithers Rapra update)
ISTE/Wiley, ©2011 168 p. $135.00
Feilden explains methods for extracting a substance from a substrate, and analyzing the extracted material. The processes is important in such fields as pharmaceutical container closure systems, environmental sciences, and pesticide research. In his introduction he discusses preparing samples, general extraction principles, and how small a sample can be accurate. Whole chapters are then devoted to extraction techniques, liquid extraction techniques, general analysis, gas chromatography, high-performance liquid chromatography, and analyzing inductively coupled plasma-metal compounds.

TP159 2010-04016 978-1-61520-915-6
Intelligent systems for machine olfaction; tools and methodologies.
Title main entry. Ed. by Evor L. Hines and Mark S. Leeson.
Medical Information Science Reference, ©2011 334 p. $180.00
Computer and electrical engineers discuss some of the fundamental and generic issues that underpin the application of intelligent systems to machine smelling, then present a series of specific applications to a range of olfaction tasks across industrial, medical, and horticultural topics. Their topics include feature...
selection and sensor array optimization, noise and repeatability of odorant gas sensors in an electronic nose, odor reproduction with movies and its application to tele-olfaction, statistical gas distribution modeling using kernel methods, an electronic nose approach to monitoring the health of tomato plants, and improved gas source localization with a mobile robot by learning analytical gas dispersal models from statistical gas distribution maps using evolutionary algorithms.

TP159 978-1-4398-1387-4

**Semiconductor device-based sensors for gas, chemical, and biomedical applications.**

Title main entry. Ed. by Fan Ren and Stephen J. Pearton. *CRC Press*, ©2011 312 p. $149.95

Contributors from physics, chemistry, and materials report on recent developments in the sensors, for graduate and senior-undergraduate students and researchers in those fields. They present original theoretical and experimental research in basic physics, device physics, novel materials and device structures, processes, and systems. Among the topics are wide-bandgap semiconductor biological and gas sensors, hydrogen gas sensor technology and implementation in wireless sensor networks, zinc oxide thin-films and nanowire-based sensor applications, and optical chemical sensors based on micro-electro-mechanical systems.

TP248 978-1-4398-1699-8

**BioMEMS; science and engineering perspectives.**


Badilescu (mechanical engineering, U. of Moncton, New Brunswick, Canada) and Packirisamy (mechanical and industrial engineering, Concordia U., Canada) introduce the field of bio-micro-electro-mechanical systems, often shortened to biomicrosystems, balancing the engineering and bioscience perspectives that are both crucial to it. They cover substrate materials used in devices, the structure and properties of biomolecules and complex biological entities, the engineering of bioactive surfaces, methods for studying and characterizing surface-modified substrates, biosensing fundamentals, fabricating devices, microfluidics, and applications in life sciences. Review questions are provided for classroom use.

TP248 2010-039787 978-0-470-47235-4

**Engineered carbohydrate-based materials for biomedical applications; polymers, surfaces, dendrimers, nanoparticles, and hydrogels.**


Chemists and materials scientists survey the current status of how synthetic materials based on carbohydrates are being used in biomedical applications. Taking the five areas of the subtitle in turn, they consider such topics as the synthesis of glycopolymers, cationic glycopolymers, new nano-materials for biological applications, glycodendrimers and their biological applications, hydrogels and microgels derived from carbohydrates, and modified natural polysaccharides as nano-particulate drug delivery devices.

**PHOTOGRAPHY**

TR594 2010-029148 978-1-56881-719-4

**Advanced high dynamic range imaging; theory and practice.**


High dynamic range (HDR) imaging is the latest stage in the effort to teach machines to see as well as humans, particularly in the wide range of lighting levels. Four computer scientists offer a practical guide to the technology in order to help spread its adoption. Using the MATLAB numerical software package, they explain light, human vision, and color spaces; the HDR pipeline; tone mapping; expansion operators for low dynamic range content; image-based lighting; evaluation; and HDR content compression.

UG1242 978-1-4398-5095-4

**Guidance of unmanned aerial vehicles.**

Yanushevsky, Rafael. *CRC Press*, ©2011 358 p. $179.95

Yanushevsky, a veteran of the aerospace industry, presents analytical results taken from his research, which can be used for analysis and design of guidance and control systems in unmanned aerial vehicles (UAVs). The author explains UAV applications and presents computational algorithms behind missile guidance laws he has developed. These algorithms are tested in applications to the surveillance problem, the refueling problem, and the motion control of UAV swarms. The procedures for choosing and testing the guidance laws are also considered in an example of a future generation of airborne interceptors launched from UAVs. The book includes a glossary and 15 pages of appendices.
**Ice navigation.**
Kjerstad, Norvald.
Tapir Academic Press, ©2011 169 p. $76.00 (pa)
Kjerstad (ice navigation, U. of Tromso, Norway) offers a comprehensive introduction and description of ship operations in polar and ice-covered waters. He addresses geography, technology, environment, routing, and regulations. Some specific topics include: a description of open waters and navigational conditions, ice mechanics, technology for arctic shipping, and operation of ships in arctic regions. The book also includes a large number of photographs and other illustrations. It will interest professionals involved in ship operations and planning operations in remote and ice-covered regions. Distributed in the US by ISBS.

**PUBLISHING, LIBRARY SCIENCE, BIBLIOGRAPHY**

Z669 978-1-84334-619-7
**A librarian's guide on how to publish.**
Jelusic, Srecko and Ivanka Stricevic. (Information professional series)
Chandos Publishing, ©2011 152 p. $80.00 (pa)
Arguing that the relationship between librarians and publishers should be closer, Jelusic and Stricevic (international relations, publishing, and library and information studies, U. of Zadar, Croatia) detail the basic principles of publishing for students and librarians of all levels and settings who want to understand the field or publish, especially those at the managerial level. They describe the history of publishing, the role of technology in library publications, various fields, and the publishing process, production, timetable, and financial planning. They explain relevant professions, the tasks of various libraries, and co-publishing. Distributed by Neal-Schuman.

Z678 2011-000967 978-0-8389-8576-2
**Using qualitative methods in action research; how librarians can get to the why of data.**
Title main entry. Ed. by Douglas Cook and Lesley Farmer.
Am. Library Association, ©2011 252 p. $60.00 (pa)
Cook, an instruction/reference librarian at Shippensburg U. of Pennsylvania, and Farmer (librarianship, California State U. Long Beach) compile 16 chapters that outline the basic principles of qualitative research methods for librarians to use to understand user interaction with library services and collections and conduct action research projects. After an overview of the process, a group of library, education, and other faculty from US universities describe useful methodologies and research projects such as narrative inquiry, discourse analysis, observation, content analysis, focus groups to understand user needs, and rubrics, and common problems and topics like information and visual literacy, library instruction, decision making, library tutorials, virtual reference services, and collection development, with examples of research and assessment.

Z711 2010-043518 978-0-8389-1086-3
**The librarian as information consultant; transforming reference for the information age.**
Murphy, Sarah Anne.
Am. Library Association, ©2011 106 p. $48.00 (pa)
Noting that reference librarians are competing with other sources of information in today’s society, Murphy (research and reference, Ohio State U. Libraries) helps them transform their function into library and information consultants. She bases her ideas on the fundamentals for sustaining a successful consulting practice and argues that librarians must embrace this new role by recognizing their traditional advisory function in matching information needs with resources and adapting the business model and practices of consultants. She enumerates these practices, including building and maintaining client relationships, service marketing and brand identity, managing employee service roles and customer demand, and using quality improvement frameworks like Lean, Six Sigma, and the Baldrige National Quality Program.

Z711 978-1-84334-580-0
**Numeric data services and sources for the general reference librarian.**
Kellam, Lynda M. (Chandos information professional series)
Chandos Publishing, ©2011 229 p. $80.00 (pa)
For general reference librarians and managers in academic libraries, Kellam (data services and government librarian, U. of North Carolina at Greensboro) details how to set up and sustain numeric data services. Focusing on social science data sources, she explains key terms and background; different types of data compilation; the creation and growth of data services; techniques for marketing; virtual and physical presences like Web 2.0; assessing data services; patron interactions, including the reference
interview and using statistics and numeric sources in instruction; experiences of data librarians from the US and other countries; and three current areas of data librarianship: data visualization, preservation, and citation. One chapter is by Katharin Peter (social sciences data librarian, U. of Southern California), who outlines major data vendors for use in acquisitions and search strategies for finding data, as well as international, US, Canadian, and British sources. Distributed in North America by Neal-Schuman.

Z711 2011-000461 978-1-59158-801-6

Science and technology resources; a guide for information professionals and researchers.
Bobick, James E. and G. Lynn Berard. (Library and information science text series)
Libraries Unlimited, ©2011  285 p. $50.00

This work is intended as a guide and resource for librarians, information specialists, library science students, and library science educators, as well as engineering and science professionals interested in understanding science and technology collections. The book begins with an overview of the nature of science and technical literature and an overview of the information seeking behavior of scientists and engineers within the context of the research information cycle. Next, the authors give advice on getting familiar with your collection, the types of resources, materials, and publishers in the field, and how to assist clients with their research. Separate chapters are devoted to specific formats including journals, specialized databases, Web 2.0 tools, conferences and society meetings, dictionaries and encyclopedias, patents, and technical reports. These format chapters showcase specific examples and representative resources in current practice. The book also includes an appendix of 29 subject bibliographies for the science and engineering fields, which will help sci-tech library administrators develop and maintain an effective science, technology and engineering collection. Bobick is the former head of the science and technology department at the Carnegie Library of Pittsburgh. Berard is a principal librarian in the science libraries at Carnegie Mellon University.