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## Electronic Nose Technologies and Advances in Machine Olfaction - Albastaki, Yousif 2018-04-13

The design and study of materials is a pivotal component to new discoveries in the various fields of science and technology. By better understanding the components and structures of materials, researchers can increase its applications across different industries.

Electronic Nose Technologies and Advances in Machine Olfaction is an academic scholarly resource that examines the emerging applications of odor-sensing devices as well as a better understanding of the designing process with the aid of neural networks and various other technologies. Featuring coverage on a broad range of topics including food spoilage detection, chemical sensing, and olfactometer, this book is a vital resource for engineers, academicians, researchers, students, and practitioners seeking current research on the advancements in applications of odor-sensing devices.

## *Optical Fiber Communications Systems* - Le Nguyen Binh 2011-06-08

Carefully structured to provide practical knowledge on fundamental issues, *Optical Fiber Communications Systems: Theory and Practice with MATLAB and Simulink Models* explores advanced modulation and transmission techniques of lightwave communication systems. With coverage ranging from fundamental to modern aspects, the text presents optical communic

## Advanced Methodologies and Technologies in Artificial Intelligence, Computer Simulation, and Human-Computer Interaction - Khosrow-Pour, D.B.A., Mehdi 2018-09-28

As modern technologies continue to develop and

evolve, the ability of users to adapt with new systems becomes a paramount concern. Research into new ways for humans to make use of advanced computers and other such technologies through artificial intelligence and computer simulation is necessary to fully realize the potential of tools in the 21st century. Advanced Methodologies and Technologies in Artificial Intelligence, Computer Simulation, and Human-Computer Interaction provides emerging research in advanced trends in robotics, AI, simulation, and human-computer interaction. Readers will learn about the positive applications of artificial intelligence and human-computer interaction in various disciplines such as business and medicine. This book is a valuable resource for IT professionals, researchers, computer scientists, and researchers invested in assistive technologies, artificial intelligence, robotics, and computer simulation.

## *The Finite Volume Method in Computational Fluid Dynamics* - F. Moukalled 2015-08-13

This textbook explores both the theoretical foundation of the Finite Volume Method (FVM) and its applications in Computational Fluid Dynamics (CFD). Readers will discover a thorough explanation of the FVM numerics and algorithms used for the simulation of incompressible and compressible fluid flows, along with a detailed examination of the components needed for the development of a collocated unstructured pressure-based CFD solver. Two particular CFD codes are explored. The first is uFVM, a three-dimensional unstructured pressure-based finite volume academic CFD code, implemented within Matlab. The second is OpenFOAM®, an open source framework used in the development of a

range of CFD programs for the simulation of industrial scale flow problems. With over 220 figures, numerous examples and more than one hundred exercise on FVM numerics, programming, and applications, this textbook is suitable for use in an introductory course on the FVM, in an advanced course on numerics, and as a reference for CFD programmers and researchers.

**Solving ODEs with MATLAB** - Lawrence F. Shampine 2003-04-28

This concise text, first published in 2003, is for a one-semester course for upper-level undergraduates and beginning graduate students in engineering, science, and mathematics, and can also serve as a quick reference for professionals. The major topics in ordinary differential equations, initial value problems, boundary value problems, and delay differential equations, are usually taught in three separate semester-long courses. This single book provides a sound treatment of all three in fewer than 300 pages. Each chapter begins with a discussion of the 'facts of life' for the problem, mainly by means of examples. Numerical methods for the problem are then developed, but only those methods most widely used. The treatment of each method is brief and technical issues are minimized, but all the issues important in practice and for understanding the codes are discussed. The last part of each chapter is a tutorial that shows how to solve problems by means of small, but realistic, examples.

Proceedings of the 36th International MATADOR Conference - Srichand Hinduja 2010-08-05

Presented here are 130 refereed papers given at the 36th MATADOR Conference held at The University of Manchester in July 2010. The MATADOR series of conferences covers the topics of Manufacturing Automation and Systems Technology, Applications, Design, Organisation and Management, and Research. The proceedings of this Conference contain original papers contributed by researchers from many countries on different continents. The papers cover the principles, techniques and applications in aerospace, automotive, biomedical, energy, consumable goods and process industries. The papers in this volume reflect: • the importance of manufacturing to

international wealth creation; • the emerging fields of micro- and nano-manufacture; • the increasing trend towards the fabrication of parts using lasers; • the growing demand for precision engineering and part inspection techniques; and • the changing trends in manufacturing within a global environment.

*Frontiers of Manufacturing and Design Science II* - Dong Ye Sun 2011-10-24

Volume is indexed by Thomson Reuters CPCI-S (WoS). This collection of 949 peer-reviewed papers on the Frontiers of Manufacturing and Design Science is intended to promote the development of Manufacturing, Design and Materials Science, the strengthening of international academic cooperation and communications and the exchange of research ideas. This book provides readers with a broad overview of the latest advances in the field of Manufacturing and Design Science.

*Learning MATLAB* - Walter Gander 2015-11-21

This comprehensive and stimulating introduction to Matlab, a computer language now widely used for technical computing, is based on an introductory course held at Qian Weichang College, Shanghai University, in the fall of 2014. Teaching and learning a substantial programming language aren't always straightforward tasks. Accordingly, this textbook is not meant to cover the whole range of this high-performance technical programming environment, but to motivate first- and second-year undergraduate students in mathematics and computer science to learn Matlab by studying representative problems, developing algorithms and programming them in Matlab. While several topics are taken from the field of scientific computing, the main emphasis is on programming. A wealth of examples are completely discussed and solved, allowing students to learn Matlab by doing: by solving problems, comparing approaches and assessing the proposed solutions.

Flight Dynamics, Simulation, and Control - Ranjan Vepa 2014-08-18

Explore Key Concepts and Techniques Associated with Control Configured Elastic Aircraft A rapid rise in air travel in the past decade is driving the development of newer, more energy-efficient, and malleable aircraft. Typically lighter and more flexible than the

traditional rigid body, this new ideal calls for adaptations to some conventional concepts. *Flight Dynamics, Simulation, and Control: For Rigid and Flexible Aircraft* addresses the intricacies involved in the dynamic modelling, simulation, and control of a selection of aircraft. This book covers the conventional dynamics of rigid aircraft, explores key concepts associated with control configured elastic aircraft, and examines the use of linear and non-linear model-based techniques and their applications to flight control. In addition, it reveals how the principles of modeling and control can be applied to both traditional rigid and modern flexible aircraft. *Understand the Basic Principles Governing Aerodynamic Flows* This text consists of ten chapters outlining a range of topics relevant to the understanding of flight dynamics, regulation, and control. The book material describes the basics of flight simulation and control, the basics of nonlinear aircraft dynamics, and the principles of control configured aircraft design. It explains how elasticity of the wings/fuselage can be included in the dynamics and simulation, and highlights the principles of nonlinear stability analysis of both rigid and flexible aircraft. The reader can explore the mechanics of equilibrium flight and static equilibrium, trimmed steady level flight, the analysis of the static stability of an aircraft, static margins, stick-fixed and stick-free, modeling of control surface hinge-moments, and the estimation of the elevator for trim. Introduces case studies of practical control laws for several modern aircraft Explores the evaluation of aircraft dynamic response Applies MATLAB®/Simulink® in determining the aircraft's response to typical control inputs Explains the methods of modeling both rigid and flexible aircraft for controller design application Written with aerospace engineering faculty and students, engineers, and researchers in mind, *Flight Dynamics, Simulation, and Control: For Rigid and Flexible Aircraft* serves as a useful resource for the exploration and study of simulation of flight dynamics.

*Progress in Pattern Recognition, Image Analysis, Computer Vision, and Applications* - Ruben Vera-Rodriguez 2019-03-02

This book constitutes the refereed post-conference proceedings of the 23rd

Iberoamerican Congress on Pattern Recognition, CIARP 2018, held in Madrid, Spain, in November 2018 The 112 papers presented were carefully reviewed and selected from 187 submissions The program was comprised of 6 oral sessions on the following topics: machine learning, computer vision, classification, biometrics and medical applications, and brain signals, and also on: text and character analysis, human interaction, and sentiment analysis

*Optical Fiber Communication Systems with MATLAB® and Simulink® Models* - Le Nguyen Binh 2014-12-01

Carefully structured to instill practical knowledge of fundamental issues, *Optical Fiber Communication Systems with MATLAB® and Simulink® Models* describes the modeling of optically amplified fiber communications systems using MATLAB® and Simulink®. This lecture-based book focuses on concepts and interpretation, mathematical procedures, and engineering applications, shedding light on device behavior and dynamics through computer modeling. Supplying a deeper understanding of the current and future state of optical systems and networks, this Second Edition: Reflects the latest developments in optical fiber communications technology Includes new and updated case studies, examples, end-of-chapter problems, and MATLAB® and Simulink® models Emphasizes DSP-based coherent reception techniques essential to advancement in short- and long-term optical transmission networks *Optical Fiber Communication Systems with MATLAB® and Simulink® Models, Second Edition* is intended for use in university and professional training courses in the specialized field of optical communications. This text should also appeal to students of engineering and science who have already taken courses in electromagnetic theory, signal processing, and digital communications, as well as to optical engineers, designers, and practitioners in industry.

*Surveillance in Action* - Panagiotis Karampelas 2017-11-14

This book addresses surveillance in action-related applications, and presents novel research on military, civil and cyber surveillance from an international team of experts. The first part of the book, *Surveillance of Human*

Features, reviews surveillance systems that use biometric technologies. It discusses various novel approaches to areas including gait recognition, face-based physiology-assisted recognition, face recognition in the visible and infrared bands, and cross-spectral iris recognition. The second part of the book, *Surveillance for Security and Defense*, discusses the ethical issues raised by the use of surveillance systems in the name of combatting terrorism and ensuring security. It presents different generations of satellite surveillance systems and discusses the requirements for real-time satellite surveillance in military contexts. In addition, it explores the new standards of surveillance using unmanned air vehicles and drones, proposes surveillance techniques for detecting stealth aircrafts and drones, and highlights key techniques for maritime border surveillance, bio-warfare and bio-terrorism detection. The last part of the book, *Cyber Surveillance*, provides a review of data hiding techniques that are used to hinder electronic surveillance. It subsequently presents methods for collecting and analyzing information from social media sites and discusses techniques for detecting internal and external threats posed by various individuals (such as spammers, cyber-criminals, suspicious users or extremists in general). The book concludes by examining how high-performance computing environments can be exploited by malicious users, and what surveillance methods need to be put in place to protect these valuable infrastructures. The book is primarily intended for military and law enforcement personnel who use surveillance-related technologies, as well as researchers, Master's and Ph.D. students who are interested in learning about the latest advances in military, civilian and cyber surveillance.

*Recent Progress in Optical Fiber Research* - Moh Yasin 2012-01-25

This book presents a comprehensive account of the recent progress in optical fiber research. It consists of four sections with 20 chapters covering the topics of nonlinear and polarisation effects in optical fibers, photonic crystal fibers and new applications for optical fibers. Section 1 reviews nonlinear effects in optical fibers in terms of theoretical analysis, experiments and applications. Section 2 presents polarization

mode dispersion, chromatic dispersion and polarization dependent losses in optical fibers, fiber birefringence effects and spun fibers. Section 3 and 4 cover the topics of photonic crystal fibers and a new trend of optical fiber applications. Edited by three scientists with wide knowledge and experience in the field of fiber optics and photonics, the book brings together leading academics and practitioners in a comprehensive and incisive treatment of the subject. This is an essential point of reference for researchers working and teaching in optical fiber technologies, and for industrial users who need to be aware of current developments in optical fiber research areas.

*Digital Image Processing and Analysis* - Scott E Umbaugh 2022-12-30

*Computer Vision and Image Analysis*, focuses on techniques and methods for image analysis and their use in the development of computer vision applications. The field is advancing at an ever increasing pace, with applications ranging from medical diagnostics to space exploration. The diversity of applications is one of the driving forces that make it such an exciting field to be involved in for the 21st century. This book presents a unique engineering approach to the practice of computer vision and image analysis, which starts by presenting a global model to help gain an understanding of the overall process, followed by a breakdown and explanation of each individual topic. Topics are presented as they become necessary for understanding the practical imaging model under study, which provides the reader with the motivation to learn about and use the tools and methods being explored. The book includes chapters on image systems and software, image analysis, edge, line and shape detection, image segmentation, feature extraction and pattern classification. Numerous examples, including over 500 color images are used to illustrate the concepts discussed. Readers can explore their own application development with any programming languages, including C/C++, MATLAB®, Python, and R, and software is provided for both the Windows/C/C++ and MATLAB® environments. The book can be used by the academic community in teaching and research, with over 700 PowerPoint Slides and a complete Solutions Manual to the over 150

included problems. It can also be used for self-study by those involved with developing computer vision applications, whether they are engineers, scientists or artists. The new edition has been extensively updated and includes numerous problems and programming exercises that will help the reader and student to develop their skills.

**Finite Element Methods for Flow Problems -**  
Jean Donea 2003-06-02

In recent years there have been significant developments in the development of stable and accurate finite element procedures for the numerical approximation of a wide range of fluid mechanics problems. Taking an engineering rather than a mathematical bias, this valuable reference resource details the fundamentals of stabilised finite element methods for the analysis of steady and time-dependent fluid dynamics problems. Organised into six chapters, this text combines theoretical aspects and practical applications and offers coverage of the latest research in several areas of computational fluid dynamics. \* Coverage includes new and advanced topics unavailable elsewhere in book form \* Collection in one volume of the widely dispersed literature reporting recent progress in this field \* Addresses the key problems and offers modern, practical solutions Due to the balance between the concise explanation of the theory and the detailed description of modern practical applications, this text is suitable for a wide audience including academics, research centres and government agencies in aerospace, automotive and environmental engineering.

MATLAB/Simulink for Digital Communication -  
Won Y. Yang 2018-03-02

Chapter 1: Fourier Analysis 1 1.1  
CONTINUOUS-TIME FOURIER SERIES  
(CTFS)..... 2  
1.2 PROPERTIES OF  
CTFS..... 6  
1.2.1 Time-Shifting  
Property..... 6  
1.2.2 Frequency-  
Shifting Property  
..... 6  
1.2.3 Modulation  
Property..... 6  
1.3 CONTINUOUS-  
TIME FOURIER TRANSFORM

(CTFT)..... 7  
1.4  
PROPERTIES OF  
CTFT..... 13  
1.4.1  
Linearity..... 13  
1.4.2  
Conjugate  
Symmetry..... 13  
1.4.3 Real  
Translation (Time Shifting) and Complex  
Translation (Frequency Shifting)..... 14  
1.4.4  
Real Convolution and  
Correlation..... 14  
1.4.5 Complex Convolution -  
Modulation/Windowing..... 14  
1.4.6  
Duality..... 17  
1.4.7  
Parseval Relation - Power  
Theorem..... 18  
1.5 DISCRETE-TIME FOURIER  
TRANSFORM  
(DTFT)..... 18  
1.6 DISCRETE-TIME FOURIER SERIES -  
DFS/DFT..... 19  
1.7 SAMPLING  
THEOREM..... 21  
1.7.1  
Relationship between CTFS and DFS  
..... 21  
1.7.2 Relationship between CTFT and  
DTFT..... 27  
1.7.3 Sampling  
Theorem..... 27  
1.8 POWER,  
ENERGY, AND  
CORRELATION..... 29  
1.9 LOWPASS EQUIVALENT  
OF BANDPASS  
SIGNALS..... 30  
Chapter 2: PROBABILITY AND RANDOM  
PROCESSES 39  
2.1  
PROBABILITY..... 39  
2.1.1 Definition of  
Probability..... 39  
2.1.2 Joint Probability  
and Conditional  
Probability..... 40  
2.1.3 Probability Distribution/Density  
Function.....

..... 41	2.1.4 Joint Probability Density Function.....	87
..... 41	2.1.5 Conditional Probability Density Function.....	88
..... 41	2.1.6 Independence.....	89
..... 41	2.1.7 Function of a Random Variable.....	91
..... 42	2.1.8 Expectation, Covariance, and Correlation.....	95
..... 43	2.1.9 Conditional Expectation.....	97
..... 47	2.1.10 Central Limit Theorem - Normal Convergence Theorem.....	100
..... 47	2.1.11 Random Processes.....	107
..... 49	2.1.12 Stationary Processes and Ergodic Processes.....	109
..... 51	2.1.13 Power Spectral Density (PSD).....	110
..... 53	2.1.14 White Noise and Colored Noise.....	112
..... 53	2.2 LINEAR FILTERING OF A RANDOM PROCESS.....	112
..... 57	2.3 PSD OF A RANDOM PROCESS.....	114
..... 58	2.4 FADING EFFECT OF A MULTIPATH CHANNEL.....	114
..... 58	Chapter 3: ANALOG MODULATION	114
..... 71	3.1 AMPLITUDE MODULATION (AM).....	114
..... 71	3.1.1 DSB (Double Sideband)-AM (Amplitude Modulation).....	114
..... 75	3.1.2 Conventional AM (Amplitude Modulation).....	114
..... 75	3.1.3 SSB (Single Sideband)-AM (Amplitude Modulation).....	114
..... 78	3.2 ANGLE MODULATION (AGM) - FREQUENCY/PHASE MODULATIONS.....	114
..... 82	Chapter 4: ANALOG-TO-DIGITAL CONVERSION	114
..... 87	4.1 QUANTIZATION.....	114
..... 87	4.1.1 Uniform Quantization.....	114
..... 88	4.1.2 Non-uniform Quantization.....	114
..... 89	4.1.3 Non-uniform Quantization Considering the Absolute Errors.....	114
..... 91	4.2 Pulse Code Modulation (PCM).....	114
..... 95	4.3 Differential Pulse Code Modulation (DPCM).....	114
..... 97	4.4 Delta Modulation (DM).....	114
..... 100	Chapter 5: BASEBAND TRANSMISSION	114
..... 107	5.1 RECEIVER (RCVR) and SNR.....	114
..... 107	5.1.1 Receiver of RC Filter Type.....	114
..... 109	5.1.2 Receiver of Matched Filter Type.....	114
..... 110	5.1.3 Signal Correlator.....	114
..... 112	5.2 PROBABILITY OF ERROR WITH SIGNALING.....	114
..... 114	5.2.1 Antipodal (Bipolar) Signaling.....	114
..... 114	5.2.2 On-Off Keying (OOK)/Unipolar Signaling.....	114
..... 118	5.2.3 Orthogonal Signaling.....	114
..... 119	5.2.4 Signal Constellation Diagram.....	114
..... 121	5.2.5 Simulation of Binary Communication.....	114
..... 123	5.2.6 Multi-Level(amplitude) PAM Signaling.....	114
..... 127	5.2.7 Multi-Dimensional Signaling.....	114
..... 129	5.2.8 Bi-Orthogonal Signaling.....	114
..... 133	Chapter 6: BANDLIMITED CHANNEL AND EQUALIZER	114
..... 139	6.1 BANDLIMITED	114

CHANNEL.....	Recovery Using Costas Loop for PSK
..... 139	Signals..... 237
6.1.1 Nyquist	8.4.3 Carrier
Bandwidth.....	Phase Recovery for QAM
..... 139	Signals.....
6.1.2 Raised-	240
Cosine Frequency	8.5 SYMBOL SYNCHRONIZATION (TIMING
Response.....	RECOVERY)..... 243
..... 141	8.5.1 Early-Late Gate Timing Recovery for BPSK
6.1.3 Partial Response Signaling -	Signals..... 243
Duobinary	8.5.2
Signaling..... 143	NDA-ELD Synchronizer for PSK
6.2	Signals.....
EQUALIZER.....	246
..... 148	Chapter 9: INFORMATION AND CODING
6.2.1 Zero-Forcing Equalizer	257
(ZFE).....	9.1 MEASURE OF INFORMATION -
..... 148	ENTROPY.....
6.2.2 MMSE Equalizer	..... 257
(MMSEE).....	9.2 SOURCE
..... 151	CODING.....
6.2.3 Adaptive Equalizer	..... 259
(ADE).....	9.2.1
..... 154	Huffman
6.2.4 Decision Feedback	Coding.....
Equalizer	..... 259
(DFE).....	9.2.2 Lempel-Zip-
..... 155	Welch
Chapter 7: BANDPASS	Coding.....
TRANSMISSION 169	..... 262
7.1 AMPLITUDE SHIFT	9.2.3 Source Coding vs.
KEYING	Channel
(ASK).....	Coding.....
..... 169	..... 265
7.2 FREQUENCY SHIFT KEYING	9.3 CHANNEL MODEL AND
(FSK).....	CHANNEL
..... 178	CAPACITY.....
7.3 PHASE SHIFT KEYING	266
(PSK).....	9.4 CHANNEL
..... 187	CODING.....
7.4 DIFFERENTIAL PHASE	..... 271
SHIFT KEYING	9.4.1
(DPSK).....	Waveform
..... 190	Coding.....
7.5 QUADRATURE AMPLITUDE	..... 272
MODULATION	9.4.2 Linear Block
(QAM)..... 195	Coding.....
7.6	..... 273
COMPARISON OF VARIOUS	9.4.3 Cyclic
SIGNALINGS.....	Coding.....
..... 200	..... 282
Chapter 8: CARRIER RECOVERY	9.4.4
AND SYMBOL SYNCHRONIZATION 227	Convolutional Coding and Viterbi
8.1	Decoding.....
INTRODUCTION.....	..... 287
..... 227	9.4.5 Trellis-Coded Modulation
8.2 PLL (PHSE-LOCKED	(TCM).....
LOOP).....	..... 296
..... 228	9.4.6 Turbo
8.3 ESTIMATION OF	Coding.....
CARRIER PHASE USING	..... 300
PLL..... 233	9.4.7 Low-
8.4 CARRIER PHASE	Density Parity-Check (LDPC)
RECOVERY.....	Coding.....
..... 235	..... 311
8.4.1 Carrier Phase	9.4.8 Differential Space-Time Block Coding
Recovery Using a Squaring Loop for BPSK	(DSTBC)..... 316
Signals..... 235	9.5 CODING GAIN
8.4.2 Carrier Phase	.....
..... 235	..... 319
Chapter 10:	.....

SPREAD-SPECTRUM SYSTEM 339 10.1 PN (Pseudo Noise) Sequence.....	339
..... 339 10.2 DS-SS (Direct Sequence Spread Spectrum).....	347
..... 347 10.3 FH-SS (Frequency Hopping Spread Spectrum).....	352
..... 352 Chapter 11: OFDM SYSTEM 359 11.1 OVERVIEW OF OFDM.....	359
..... 359 11.2 FREQUENCY BAND AND BANDWIDTH EFFICIENCY OF OFDM.....	363
..... 363 11.3 CARRIER RECOVERY AND SYMBOL SYNCHRONIZATION.....	364
..... 364 11.4 CHANNEL ESTIMATION AND EQUALIZATION.....	381
..... 381 11.5 INTERLEAVING AND DEINTERLEAVING.....	384
..... 384 11.6 PUNCTURING AND DEPUNCTURING.....	386
..... 386 11.7 IEEE STANDARD 802.11A - 1999.....	388

*Handbook of Research on Nanoscience, Nanotechnology, and Advanced Materials* - Bououdina, Mohamed 2014-03-31

The burgeoning field of nanotechnology has led to many recent technological innovations and discoveries. Understanding the impact of these technologies on business, science, and industry is an important first step in developing applications for a variety of settings and contexts. *Handbook of Research on Nanoscience, Nanotechnology, and Advanced Materials* presents a detailed analysis of current experimental and theoretical approaches surrounding nanomaterials science. With applications in fields such as biomedicine, renewable energy, and synthetic materials, the research in this book will provide experimentalists, professionals, students, and academics with an in-depth understanding of nanoscience and its impact on modern technology.

Numerical Analysis - Richard L. Burden 2010-08-09

This well-respected text gives an introduction to

the theory and application of modern numerical approximation techniques for students taking a one- or two-semester course in numerical analysis. With an accessible treatment that only requires a calculus prerequisite, Burden and Faires explain how, why, and when approximation techniques can be expected to work, and why, in some situations, they fail. A wealth of examples and exercises develop students' intuition, and demonstrate the subject's practical applications to important everyday problems in math, computing, engineering, and physical science disciplines. The first book of its kind built from the ground up to serve a diverse undergraduate audience, three decades later Burden and Faires remains the definitive introduction to a vital and practical subject. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

**Olfaction and Electronic Nose** - Matteo Pardo 2009-06-09

ISOEN addresses research in the fields of gas sensors and artificial olfactory systems. In this edition we broadened the participation spectrum to all kinds of analytical instrumentation for odor measurement and to biological olfaction. We also had a strong involvement in industry. The audience comprises materials scientists, chemists, physicists, engineers, biologists, computer scientists, and application specialists (e.g. food, medical, environmental, security).

**Proceedings of the 6th International Conference on Electrical, Control and Computer Engineering** - Zainah Zain 2022

This book presents the proceedings of the 6th International Conference on Electrical, Control and Computer Engineering (InECCE 2021), held in Kuantan, Pahang, Malaysia, on 23 August 2021. The topics covered are sustainable energy, power electronics and drives and power engineering including distributed/renewable generation, power system optimization, artificial/computational intelligence, smart grid, power system protection and machine learning energy management and conservation. The book showcases some of the latest technologies and applications developed to solve local energy and power problems in order to ensure continuity, reliability and security of electricity for future



generations. It also links topics covered the sustainable developed goals (SDGs) areas outlined by the United Nation for global sustainability. The book will appeal to professionals, scientists and researchers with experience in industry.

*Simulation of Dynamic Systems with MATLAB® and Simulink®* - Harold Klee 2018-02-02

Continuous-system simulation is an increasingly important tool for optimizing the performance of real-world systems. The book presents an integrated treatment of continuous simulation with all the background and essential prerequisites in one setting. It features updated chapters and two new sections on Black Swan and the Stochastic Information Packet (SIP) and Stochastic Library Units with Relationships Preserved (SLURP) Standard. The new edition includes basic concepts, mathematical tools, and the common principles of various simulation models for different phenomena, as well as an abundance of case studies, real-world examples, homework problems, and equations to develop a practical understanding of concepts.

**Guided Wave Photonics** - Le Nguyen Binh 2016-04-19

A comprehensive presentation of the theory and simulation of optical waveguides and wave propagations in a guided environment, *Guided Wave Photonics: Fundamentals and Applications with MATLAB* supplies fundamental and advanced understanding of integrated optical devices that are currently employed in modern optical fiber communications systems and p

*Emerging Topics and Questions in Infocommunication Technologies* - Sergey Balandin 2020-06-16

This collection of essays consists of selected papers presented at the 24th IEEE FRUCT conference. It highlights the most pressing research topics in infocommunication technologies, such as challenges in the development of next generation networks, the architectures and design of innovative knowledge-based systems, and innovations in healthcare and eHealth.

**Numerical Analysis and Graphic Visualization with MATLAB** - Shoichiro Nakamura 2002

Leverage the power of MATLAB 6 in all your technical computation and measurement

applications Now, there is a complete introduction to numerical methods and visualization with the latest, most powerful version of MATLAB, Version 6.0. Dr. Shoichiro Nakamura introduces the skills and knowledge needed to solve numerical equations with MATLAB, understand the computational results, and present them graphically. This book brings together all four cornerstones of numerical analysis with MATLAB: the fundamental techniques of MATLAB programming; the mathematical basis of numerical methods; the application of numerical analysis to engineering, scientific, and mathematical problems; and the creation of scientific graphics. Coverage includes: Complete introductory tutorials for both MATLAB 6.0 programming and professional-quality 3D graphics Linear algebra applications: matrices, vectors, Gauss elimination, Gauss-Jordan elimination, LU decomposition, and more Polynomials and interpolation, including interpolation with Chebyshev points; cubic hermite, 2D and transfinite interpolation; and M-files Numerical integration, differentiation, and roots of nonlinear equations Advanced techniques, including curve fitting, spline functions, and boundary value problems Whether you are a student, engineer, scientist, researcher, or economic analyst, MATLAB 6 offers you unprecedented power for defining and solving problems. Put that power to work -- with *Numerical Analysis and Graphical Visualization with MATLAB*, second edition.

**Asymmetric Dual Core Waveguides** - Soloman Raju Thokala 2023-02-12

This book highlights the dynamical behavior of self-similar waves in asymmetric dual-core waveguides. The proposed dual-core waveguide consists of two closely spaced adjoining fibers in which one fiber is active and the other is passive. Due to the linear coupling between them, the dynamics of the wave propagating through the passive core can be controlled by manipulating the dynamics of the wave propagating in the active core. The optimal pulse compression or amplification of these waves as the length of the fiber tends to infinity is presented. The exact Mobius transform self-similar solutions that propagate through these waveguides self-similarly are subject to simple

scaling rules. The book includes experiments conducted to corroborate the analytical predictions.

**Ultra-Fast Fiber Lasers** - Le Nguyen Binh  
2010-07-19

Ultrashort pulses in mode-locked lasers are receiving focused attention from researchers looking to apply them in a variety of fields, from optical clock technology to measurements of the fundamental constants of nature and ultrahigh-speed optical communications. Ultrashort pulses are especially important for the next generation of ultrahigh-speed optical systems and networks operating at 100 Gbps per carrier. *Ultra Fast Fiber Lasers: Principles and Applications with MATLAB® Models* is a self-contained reference for engineers and others in the fields of applied photonics and optical communications. Covering both fundamentals and advanced research, this book includes both theoretical and experimental results. MATLAB files are included to provide a basic grounding in the simulation of the generation of short pulses and the propagation or circulation around nonlinear fiber rings. With its unique and extensive content, this volume—Covers fundamental principles involved in the generation of ultrashort pulses employing fiber ring lasers, particularly those that incorporate active optical modulators of amplitude or phase types Presents experimental techniques for the generation, detection, and characterization of ultrashort pulse sequences derived from several current schemes Describes the multiplication of ultrashort pulse sequences using the Talbot diffraction effects in the time domain via the use of highly dispersive media Discusses developments of multiple short pulses in the form of solitons binding together by phase states Elucidates the generation of short pulse sequences and multiple wavelength channels from a single fiber laser The most practical short pulse sources are always found in the form of guided wave photonic structures. This minimizes problems with alignment and eases coupling into fiber transmission systems. In meeting these requirements, fiber ring lasers operating in active mode serve well as suitable ultrashort pulse sources. It is only a matter of time before scientists building on this research develop the practical and easy-to-use applications that will make ultrahigh-speed optical systems universally

available.

*Impact Behavior of Fibre Reinforced Laminates* - Kalyan Kumar Singh 2022-02-14

^ p="" This highly informative and carefully presented volume highlights the impact behavior of fibre reinforced polymer composites. It begins with a preliminary focus on FRP materials, fabrication processes, micro- and macro-mechanics to calculate FRP laminates properties, damage nodes associated with FRP composites under different loadings. It provides a simple and unified approach to cover aspects of FRP composites behavior with low velocity impact loading. This book offers a valuable guide for those who wish to develop deeper insights into weaving architectures, stacking sequences, fabrication processes, general damage modes associated with FRP composites. It is a useful volume for students, academia and industry alike. ^

**Towards Intelligent Systems Modeling and Simulation** - Samsul Ariffin Abdul Karim  
2021-10-19

This book creates the emergence of disruptive technologies that have led to a significant change in the role of mathematics and statistics for problem solving, with the use of sophisticated software and hardware in solving complex systems and process. In the era of digital technology, mathematics and statistics need to be highly relevant to be able to cater for the needs of IR4.0 such as big data analytics, simulation, autonomous system, and cloud computing. Motivated by this development, a total of 26 chapters are contributed by respectable experts for this book. The main scope of the book is to conduct a new system of modeling and simulations on solving differential equations, nonlinear equations, energy, epidemiology, and risk assessment. This book is of interest for postgraduate students, researchers as well as other scientists who are working in numerical modeling and simulations based on efficient mathematical and statistical techniques.

*Electrical Machine Fundamentals with Numerical Simulation using MATLAB / SIMULINK* - Atif Iqbal 2021-04-12

A comprehensive text, combining all important concepts and topics of Electrical Machines and featuring exhaustive simulation models based on

MATLAB/Simulink Electrical Machine Fundamentals with Numerical Simulation using MATLAB/Simulink provides readers with a basic understanding of all key concepts related to electrical machines (including working principles, equivalent circuit, and analysis). It elaborates the fundamentals and offers numerical problems for students to work through. Uniquely, this text includes simulation models of every type of machine described in the book, enabling students to design and analyse machines on their own. Unlike other books on the subject, this book meets all the needs of students in electrical machine courses. It balances analytical treatment, physical explanation, and hands-on examples and models with a range of difficulty levels. The authors present complex ideas in simple, easy-to-understand language, allowing students in all engineering disciplines to build a solid foundation in the principles of electrical machines. This book: Includes clear elaboration of fundamental concepts in the area of electrical machines, using simple language for optimal and enhanced learning Provides wide coverage of topics, aligning with the electrical machines syllabi of most international universities Contains extensive numerical problems and offers MATLAB/Simulink simulation models for the covered machine types Describes MATLAB/Simulink modelling procedure and introduces the modelling environment to novices Covers magnetic circuits, transformers, rotating machines, DC machines, electric vehicle motors, multiphase machine concept, winding design and details, finite element analysis, and more Electrical Machine Fundamentals with Numerical Simulation using MATLAB/Simulink is a well-balanced textbook perfect for undergraduate students in all engineering majors. Additionally, its comprehensive treatment of electrical machines makes it suitable as a reference for researchers in the field.

**Computational Photonics** - Marek S. Wartak  
2013-01-10

A comprehensive manual on the efficient modeling and analysis of photonic devices for graduate students and researchers in engineering and physics.

[Airplane Numerical Simulation for the Rapid](#)

[Prototyping Process](#) - Paul F. Roysdon 2010

**Ultra-Fast Fiber Lasers** - Le Nguyen Binh  
2018-09-03

Ultrashort pulses in mode-locked lasers are receiving focused attention from researchers looking to apply them in a variety of fields, from optical clock technology to measurements of the fundamental constants of nature and ultrahigh-speed optical communications. Ultrashort pulses are especially important for the next generation of ultrahigh-speed optical systems and networks operating at 100 Gbps per carrier. Ultra Fast Fiber Lasers: Principles and Applications with MATLAB® Models is a self-contained reference for engineers and others in the fields of applied photonics and optical communications. Covering both fundamentals and advanced research, this book includes both theoretical and experimental results. MATLAB files are included to provide a basic grounding in the simulation of the generation of short pulses and the propagation or circulation around nonlinear fiber rings. With its unique and extensive content, this volume— Covers fundamental principles involved in the generation of ultrashort pulses employing fiber ring lasers, particularly those that incorporate active optical modulators of amplitude or phase types Presents experimental techniques for the generation, detection, and characterization of ultrashort pulse sequences derived from several current schemes Describes the multiplication of ultrashort pulse sequences using the Talbot diffraction effects in the time domain via the use of highly dispersive media Discusses developments of multiple short pulses in the form of solitons binding together by phase states Elucidates the generation of short pulse sequences and multiple wavelength channels from a single fiber laser The most practical short pulse sources are always found in the form of guided wave photonic structures. This minimizes problems with alignment and eases coupling into fiber transmission systems. In meeting these requirements, fiber ring lasers operating in active mode serve well as suitable ultrashort pulse sources. It is only a matter of time before scientists building on this research develop the practical and easy-to-use applications that will make ultrahigh-speed optical systems universally available.

Atypical Parkinsonian Disorders - Irene Litvan  
2007-10-27

A comprehensive review of what is known not only about the cause and treatment of atypical parksonian disorders, but also the issues that clinicians, researchers, patients, and caregivers face in dealing with them. The authors cover the basic science (history, epidemiology, genetics, pathology, nosology, computer modeling, and animal models), detailed clinical and laboratory assessments, and available diagnostic tools, including neuropsychiatric, neurologic, neuropsychologic, speech, electrophysiologic, and imaging evaluations. Current and future therapeutic approaches are also detailed, along with extensive discussions about future research directions.

The Nonlinear Schrödinger Equation - Catherine Sulem  
2007-06-30

Filling the gap between the mathematical literature and applications to domains, the authors have chosen to address the problem of wave collapse by several methods ranging from rigorous mathematical analysis to formal asymptotic expansions and numerical simulations.

**Electronic Nose: Algorithmic Challenges** - Lei Zhang  
2018-09-11

This book presents the key technology of electronic noses, and systematically describes how e-noses can be used to automatically analyse odours. Appealing to readers from the fields of artificial intelligence, computer science, electrical engineering, electronics, and instrumentation science, it addresses three main areas: First, readers will learn how to apply machine learning, pattern recognition and signal processing algorithms to real perception tasks. Second, they will be shown how to make their algorithms match their systems once the algorithms don't work because of the limitation of hardware resources. Third, readers will learn how to make schemes and solutions when the acquired data from their systems is not stable due to the fundamental issues affecting perceptron devices (e.g. sensors). In brief, the book presents and discusses the key technologies and new algorithmic challenges in electronic noses and artificial olfaction. The goal is to promote the industrial application of electronic nose technology in environmental detection, medical diagnosis, food quality

control, explosive detection, etc. and to highlight the scientific advances in artificial olfaction and artificial intelligence. The book offers a good reference guide for newcomers to the topic of electronic noses, because it refers to the basic principles and algorithms. At the same time, it clearly presents the key challenges - such as long-term drift, signal uniqueness, and disturbance - and effective and efficient solutions, making it equally valuable for researchers engaged in the science and engineering of sensors, instruments, chemometrics, etc.

**Solving Problems in Scientific Computing Using Maple and MATLAB®** - Walter Gander  
2011-06-27

Teaches problem-solving using two of the most important mathematical software packages: Maple and MATLAB. This new edition contains five completely new chapters covering new developments.

**Atlas of Lip and Nose Plastic and Cosmetic Surgery** - Jianhua Liu  
2021-10-22

This Atlas covers various types of lip and nose deformities and introduces individualized surgical plan for patients. The surgical techniques are classified according to the various types of deformities. Schematic diagrams, pre-operative and post-operative photographs are supplemented by detailed explanations. It consists of four parts: anatomical structure of lips and nose; cosmetic surgery of lips and nose; plastic surgery of nasolabial congenital deformity; plastic surgery of acquired nasolabial defect and deformities. The management of nasolabial deformities and defects crosses many surgical disciplines, and therefore, this book recommended to be read by surgeons of different backgrounds i.e. oral and maxillofacial surgery, plastic surgery, cosmetic surgery, otorhinolaryngology, etc. It can also be used as a reference for anatomy, developmental biology, physiology, linguistics, aesthetics and other basic medical sciences.

Nonlinear Fiber Optics - Govind P. Agrawal  
2007  
Since the 3rd edition appeared, a fast evolution of the field has occurred. The fourth edition of this classic work provides an up-to-date account of the nonlinear phenomena occurring inside optical fibers. The contents include such important topics as self- and cross-phase

modulation, stimulated Raman and Brillouin scattering, four-wave mixing, modulation instability, and optical solitons. Many new figures have been added to help illustrate the concepts discussed in the book. New to this edition are chapters on highly nonlinear fibers and the novel nonlinear effects that have been observed in these fibers since 2000. Such a chapter should be of interest to people in the field of new wavelengths generation, which has potential application in medical diagnosis and treatments, spectroscopy, new wavelength lasers and light sources, etc. Continues to be industry bestseller providing unique source of comprehensive coverage on the subject of nonlinear fiber optics Fourth Edition is a completely up-to-date treatment of the nonlinear phenomena occurring inside optical fibers Includes 2 NEW CHAPTERS on the properties of highly nonlinear fibers and their novel nonlinear effects

**Progress in Pattern Recognition, Image Analysis and Applications** - José Ruiz-

Shulcloper 2008-09-17

This book constitutes the refereed proceedings of the 13th Iberoamerican Congress on Pattern Recognition, CIARP 2008, held in Havana, Cuba, in September 2008. The 93 revised full papers presented together with 3 keynote articles were carefully reviewed and selected from 182 submissions. The papers are organized in topical sections on signal analysis for characterization and filtering, analysis of shape and texture, analysis of speech and language, data mining, clustering of images and documents, statistical pattern recognition, classification and description of objects, classification and edition, geometric image analysis, neural networks, computer vision, image coding, associative memories and neural networks, interpolation and video tracking, images analysis, music and speech analysis, as well as classifier combination and document filtering.

**INTRODUCTION TO INFORMATION**

**TECHNOLOGY** - RAJARAMAN, V. 2018-01-01

his textbook is designed to teach a first course in Information Technology (IT) to all undergraduate students. In view of the all-pervasive nature of IT in today's world a decision has been taken by many universities to

introduce IT as a compulsory core course to all Bachelor's degree students regardless of their specialisation. This book is intended for such a course. The approach taken in this book is to emphasize the fundamental "Science" of Information Technology rather than a cook book of skills. Skills can be learnt easily by practice with a computer and by using instructions given in simple web lessons that have been cited in the References. The book defines Information Technology as the technology that is used to acquire, store, organize, process and disseminate processed data, namely, information. The unique aspect of the book is to examine processing all types of data: numbers, text, images, audio and video data. As IT is a rapidly changing field, we have taken the approach to emphasize reasonably stable, fundamental concepts on which the technology is built. A unique feature of the book is the discussion of topics such as image, audio and video compression technologies from first principles. We have also described the latest technologies such as 'e-wallets' and 'cloud computing'. The book is suitable for all Bachelor's degree students in Science, Arts, Computer Applications, and Commerce. It is also useful for general reading to learn about IT and its latest trends. Those who are curious to know, the principles used to design jpg, mp3 and mpeg4 compression, the image formats—bmp, tiff, gif, png, and jpg, search engines, payment systems such as BHIM and Paytm, and cloud computing, to mention a few of the technologies discussed, will find this book useful. KEY FEATURES • Provides comprehensive coverage of all basic concepts of IT from first principles • Explains acquisition, compression, storage, organization, processing and dis-semination of multimedia data • Simple explanation of mp3, jpg, and mpeg4 compression • Explains how computer networks and the Internet work and their applications • Covers business data processing, World Wide Web, e-commerce, and IT laws • Discusses social impacts of IT and career opportunities in IT and IT enabled services • Designed for self-study with every chapter starting with learning objectives and concluding with a comprehensive summary and a large number of exercises.