M. Ahmad, Aligarh Muslim University, Aligarh, India

**High Performance AC Drives**
**Modelling Analysis and Control**

This book presents a comprehensive view of high performance ac drives. It may be considered as both a text book for graduate students and as an up-to-date monograph. It may also be used by R & D professionals involved in the improvement of performance of drives in the industries. The book will also be beneficial to the researchers pursuing work on multiphase drives as well as sensorless and direct torque control of electric drives since up-to-date references in these topics are provided. It will also provide few examples of modeling, analysis and control of electric drives using MATLAB/SIMULINK.

**Features**
- Presents a comprehensive view of high performance drives
- Provides an up-to-date references in sensorless and direct torque control of electric drives
- "This is a very good book" Werner Leonhard, Braunschweig

**Contents**
Introduction.- Modeling Of Induction And Synchronous Machines.- Vector Controlled Ac Drives.- Direct Torque Control And Sensor-Less Control Of Induction Machines.- Vector Control Of Permanent Magnet Machine (Pm).- Switch Reluctance Motor Drives (Srm).- Fuzzy Logic And Neural Network Applications In Ac Drives.

**Fields of interest**
Power Electronics, Electrical Machines and Networks; Power Engineering; Control, Robotics, Mechatronics

**Target groups**
Research

**Type of publication**
Monograph

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A. Amara, T. Ea, ISEP, Paris, France; M. Belleville, CEA-LETI Minatrac, Grenoble, France (Eds.)

**Emerging Technologies and Circuits**

With the semiconductor market growth, new Integrated Circuit designs are pushing the limit of the technology and in some cases, require specific fine-tuning of certain process modules in manufacturing. Thus the communities of design and technology are increasingly intertwined. The issues that require close interactions and collaboration for trade-off and optimisation across the design/device/process fields are addressed in Emerging Technologies and Circuits. It contains a set of outstanding papers, keynote tutorials presented during 3 days at the International Conference On Integrated Circuit Design and Technology (ICICDT) held in June 2008 in Minatrac, Grenoble. The selected papers are spread over 5 chapters covering various aspects of emerging technologies and devices, advanced circuit design, reliability, variability issues and solutions, advanced memories and analog and mixed signals. All these papers are focusing on design and technology interactions and comply with the scope of the conference.

**Features**
- Covers different aspects of emerging technology and devices
- Covers different aspects of advanced devices and circuits
- Covers different aspects of reliability and SEU
- Covers different aspects of power, timing and variability,
- Covers different aspects of analog and mixed signal.

**Contents**

**Fields of interest**
Circuits and Systems; Nanotechnology; Memory Structures

**Target groups**
Research

**Type of publication**
Monograph

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B. Arfi, University of Florida, Gainesville, FL, USA

**Linguistic Fuzzy Logic Methods in Social Sciences**

The book, titled “Linguistic Fuzzy-Logic Methods in Social Sciences,” is a first in its kind. Linguistic fuzzy logic theory deals with sets or categories whose boundaries are blurry or, in other words, "fuzzy," and which are expressed in a formalism that uses “words” to compute, not numbers, termed in engineering as “soft computing.” This book presents an accessible introduction to this linguistic fuzzy logic methodology, focusing on its applicability to social sciences. Specifically, this is the first book to propose an approach based on linguistic fuzzy-logic and the method of computing with words to the analysis of decision making processes, strategic interactions, causality, and data analysis in social sciences. The project consists of systematic, theoretical and practical discussions and developments of these new methods as well as their applications to various substantive issues of interest to international relations scholars, political scientists, and social scientists in general.

**Features**
- Pioneering book demonstrating the analytic power of the combination of linguistic fuzzy logic methods and type-2 fuzzy sets
- Presents Linguistic Fuzzy Logic Methods applied to Social Sciences
- Written by a leading expert in the field

**Contents**

**Fields of interest**
Computational Intelligence; Artificial Intelligence (incl. Robotics)

**Target groups**
Research

**Type of publication**
Monograph
Structures for Nuclear Facilities
Analysis, Design, Construction, Monitoring, Inspection & Demolition

This book provides a general introduction to the topic of buildings for resistance to the effects of abnormal loadings. The structural design requirements for nuclear facilities are very unique. In no other structural system are extreme loads such as tornadoes, missile and loud interaction, earthquake effects typical in excess of any recorded historical data at a site, and postulated system accident at very low probability range explicitly considered in design.

This book covers the whole spectrum of extreme load which have to be considered in the structural design of nuclear facilities and reactor buildings, the safety criteria, the structural design, the analysis of containment. Test case studies are given in a comprehensive treatment.

Each major section contains a full explanation which allows the book to be used by students and practicing engineers, particularly those facing formidable task of having to design complicated building structures with unusual boundary conditions.

Features
- Covers the whole spectrum of extreme load which must be considered for structures of reactor buildings
- Gives a complete picture of a project from planning, design, and construction

Contents

Fields of interest
Structural Mechanics; Civil Engineering; Continuum Mechanics and Mechanics of Materials

Target groups
Professional/practitioner

Type of publication
Monograph

Due August 2010
2010. 900 p. Hardcover
- approx. € 299.95 / £273.00
- € (D) 329.95 / £ (A) 498.00
ISBN 978-3-642-12559-1

Handbook of Signal Processing Systems

The Handbook is organized in four parts. The first part motivates representative applications that drive and apply state-of-the-art methods for design and implementation of signal processing systems; the second part discusses architectures for implementing these applications; the third part focuses on compilers and simulation tools; and the fourth part describes models of computation and their associated design tools and methodologies.

Features
- A comprehensive overview of signal processing systems
- A standalone, complete reference to signal processing systems
- A comprehensive index for ease of use
- An extensive bibliography for further reading

From the contents

Fields of interest
Signal, Image and Speech Processing; Communications Engineering, Networks; Computer Systems Organization and Communication Networks

Target groups
Research

Type of publication
Handbook

Due September 2010
2010. XXXVIII, 1117 p. 100 illus. Hardcover
- approx. € 189.95 / £166.50
- € (D) 203.25 / £ (A) 208.94 / sFr 286.50
ISBN 978-1-4419-6344-4

A. Bolshoy, Z. Volkovich, V. Kirzhner, Z. Barzily

Genome Clustering
From Linguistic Models to Classification of Genetic Texts

This book deals with the methods of text comparison which are based on different techniques of converting the text into a distribution on a certain finite support, be it a genetic text or a text of some other type. Such distribution is usually referred to as “spectrum”. The measure of dissimilarity of two texts is formally expressed as a certain “distance” between the spectra of these texts. Such definition implies that the similarity of the texts results from the similarity of the random processes generating the texts.

Features
- Presents a general spectrum approach in bioinformatics
- State of the art
- Written by experts in this field

Contents

Fields of interest
Applied Mathematics/Computational Methods of Engineering; Artificial Intelligence (incl. Robotics)

Target groups
Research

Type of publication
Monograph

Available
2010. 206 p. (Studies in Computational Intelligence, Volume 286) Hardcover
- approx. € 99.95 / £90.00
- 8 (D) 106.95 / £ (A) 109.95 / sFr 155.50
ISBN 978-3-642-15951-7
Advances in Design Methods from Modeling Languages for Embedded Systems and SoC's

Selected Contributions on Specification, Design, and Verification from FDL 2009

More than ever, FDL is the place for researchers, developers, industry designers, academia, and EDA tool companies to present and to learn about the latest scientific achievements, practical applications and users experiences in the domain of specification and design languages. FDL covers the modeling and design methods, and their latest supporting tools, for complex embedded systems, systems on chip, and heterogeneous systems. FDL 2009 is the twelfth in a series of events that were held all over Europe, in selected locations renowned for their Universities and Research Institutions as well as the importance of their industrial environment in Computer Science and Micro-electronics. In 2009, FDL was organized in the attractive south of France area of Sophia Antipolis. Together with the DASIP (Design and Architectures for Signal and Image Processing) Conference and the SAME (Sophia Antipolis MicroElectronics) Forum. All submitted papers were carefully reviewed to build a program with 27 full and 10 short contributions. From these, the Program Committee selected a shorter list, based on the evaluations of the reviewers, and the originality and relevance of the work that was presented at the Forum. The revised, and sometimes extended versions of these contributions constitute the chapters of this volume.

Features

► FDL is the unique yearly European event that focuses on design languages their use ► Includes a selection of the best contributions of the 12th FDL ► FDL contributions are original works that are intended to become practically useful

Fields of interest

Circuits and Systems; Programming Languages, Compilers, Interpreters

Target groups

Research

Type of publication

Monograph

Due July 2010

Only available in print

2010. 290 p. (Lecture Notes in Electrical Engineering, Volume 63) Hardcover

► approx. € 99.95 | £90.00
► € (D) 106.95 | € (A) 109.95 | sFr 155.50

The Power of Assertions in SystemVerilog

This book provides a deeper understanding of the meaning of the enhancements contained in the new SystemVerilog 1800-2009 LRM. In particular, it discusses the context of practical deployment in hardware design projects. The material also addresses language implementation alternatives and their impact on simulation performance as well as the ability to debug them in simulation and formal verification environments. The underlying performance issues are illustrated for practical examples drawn from the author's experience.

Features

► Explains the new SystemVerilog 1800-2009 LRM enhancements ► Includes practical examples that address underlying performance issues ► Provides deep understanding needed for successful deployment of the full assertion language

Contents


Fields of interest

Circuits and Systems; Electrical Engineering

Target groups

Professional/practitioner

Type of publication

Professional book

Due August 2010

2010. XX, 520 p. 332 illus., 166 in color. Hardcover

► approx. € 107.05 | £97.00
► approx. € (D) 114.54 | € (A) 117.76 | sFr 178.00

Available

2010. 290 p. (Lecture Notes in Electrical Engineering, Volume 63) Hardcover

► € 99.95 | £90.00
► € (D) 106.95 | € (A) 109.95 | sFr 155.50
H. M. Cheema, R. Mahmoudi, A. H. Roermund,
Eindhoven University of Technology, Eindhoven,
The Netherlands

60-GHz CMOS Phase-Locked Loops

The promising high data rate wireless applications at millimeter wave frequencies in general and 60 GHz in particular have gained much attention in recent years. However, challenges related to circuit, layout and measurements during mm-wave CMOS IC design have to be overcome before they can become viable for mass market.

60-GHz CMOS Phase-Locked Loops focusing on phase-locked loops for 60 GHz wireless transceivers elaborates these challenges and proposes solutions for them. The system level design to circuit level implementation of the complete PLL, along with separate implementations of individual components such as voltage controlled oscillators, injection locked frequency dividers and their combinations, are included. Furthermore, to satisfy a number of transceiver topologies simultaneously, flexibility is introduced in the PLL architecture by using new dual-mode ILFDs and switchable VCOs, while reusing the low frequency components at the same time.

Features
- Offers a system level to circuit level design of 60-GHz PLLs
- Provides guidelines for millimeter-wave layout and measurement
- Covers both single-mode and dual-mode injection-locked frequency dividers

Contents
1 Introduction.
2 Synthesizer system architecture.
3 Layout and measurements at mm-wave frequencies.
4 Design of high frequency components.
5 Design of low frequency components.
6 Synthesizer integration.
7 Conclusions.

Acronyms
- ILFD: Injection locking frequency divider
- PLL: Phase-locked loop
- VCO: Voltage controlled oscillator
- MMIC: Monolithic microwave integrated circuit
- LNA: Low noise amplifier
- DUT: Device under test
- DCM: Direct conversion mixer
- IC: Integrated circuit
- ADC: Analog to digital converter
- DAC: Digital to analog converter
- SAW: Surface acoustic wave
- CMOS: Complementary metal-oxide-semiconductor

Fields of interest
- Circuits and Systems
- Microelectronics
- Radio Frequency

Target groups
- Professional/practitioner

Type of publication
Monograph

Available
2010. IV, 218 p. 294 illus., 147 in color. Hardcover
- € 99.95 | £90.00
- * € (D) 106.95 | £ (A) 109.95 | sFr 155.50
ISBN 978-3-642-12847-9

Due November 2010
2010. XVIII, 356 p. 133 illus. Hardcover
- approx. € 129.95 | £117.00
- approx. * € (D): 139.95 | £ (A): 142.94 | sFr 202.00
ISBN 978-3-642-12847-9
Architecture and Design for the Future Internet
4WARD EU Project

Architecture and Design for the Future Internet addresses the Networks of the Future and the Future Internet, focusing on networks aspects, offering both technical and non-technical perspectives. It presents the main findings of 4WARD (Architecture and Design for the Future Internet), a European Integrated Project within Framework Programme 7, which addressed this area from an innovative approach. Today’s network architectures are stifling innovation, restricting it mostly to the application level, while the need for structural change is increasingly evident. The absence of adequate facilities to design, optimise and interoperate new networks currently forces a convergence to an architecture that is suboptimal for many applications and that cannot support innovations within itself, the Internet.

Features
- Topics developed in the book will catch the attention of many of those involved in this area
- There are still no books addressing these topics, in a joint perspective, hence, this book will fill in a gap
- Written by experts in the field, namely mixing academic and industry, working together in a European project, which is a unique and valuable approach
- Enables readers to have first hand access to the main results of the project
- Presents both technical and non-technical perspectives in an added value

Contents

Fields of interest
Communications Engineering, Networks; Information Systems Applications (incl.Internet)

Target groups
Research

Type of publication
Monograph

Due July 2010
2010. Approx. 250 p. (Signals and Communication Technology) Hardcover
► approx. € 99,95 | £80.00
► approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50

Linear CMOS RF Power Amplifiers for Wireless Applications
Efficiency Enhancement and Frequency-Tunable Capability

The RF power amplifier is a key component in a wireless transceiver and is considered by many as the design bottleneck in the transmitting chain. Linear CMOS RF Power Amplifiers for Wireless Applications addresses two fundamental aspects in RF power amplifier design for integration in CMOS technologies at 2.4, 3.7 and 5.2 GHz: efficiency enhancement and frequency agility. The well-known linearity–efficiency trade-off is circumvented by employing an efficiency-enhancement technique called the dynamic supply RF power amplifier. The design of this system is described with great detail and compared with other efficiency enhancement techniques. The frequency agility is achieved with a novel impedance matching network based on coupled inductors. The design of a dual-band RF power amplifier is shown, with a careful analysis of the tunable matching network and its interaction with the rest of the circuit. The considerations and conclusions drawn throughout this book are based on simulation as well as measurement results from the integrated circuit prototypes carefully built and respecting best practices in RF design.

Features
- Practical design of linear CMOS RF power amplifiers with proven Silicon results
- Analysis and design of the first full-CMOS dynamic supply RF power amplifier
- Analysis and design of a novel impedance matching network for multiband PAs
- Details of the characterization of the prototypes

Fields of interest
Microwaves, RF and Optical Engineering; Solid State Physics; Spectroscopy and Microscopy

Target groups
Research

Type of publication
Monograph

Due July 2010
► approx. € 99,95 | £90.00
► approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50

Radioisotope Thin-Film Powered Microsystems

"Radioisotope Thin-Film Powered Microsystems" describes high energy density microbatteries required for compact long lifetime wireless sensor Microsystems. These microbatteries are presented alongside theories employing high energy density radioisotope thin films in actuating novel electromechanical energy converters. Also discussed are novel wireless sensor architectures that enable long lifetime wireless sensors Microsystems with minimal amounts of radioisotope fuel used. Ultra low-power beta radiation counting clocks are described in order to illustrate the application of radioisotope thin films in realizing the deployment of various components of Microsystems. "Radioisotope Thin-Film Powered Microsystems" also presents the latest work on 3D silicon electrovoltaic converters and energy density microbatteries required for high-power Microsystems.

Features
- Discusses how to design and manufacture wireless sensor networks with potential application in environmental, medical and industrial monitoring
- Provides information on how to safely apply radioisotope thin-films across numerous devices to create long lifetime sensors
- Covers next-generation microbatteries and 3D silicon betavoltaics with an average 5-year lifespan

Contents

Fields of interest
Electronics and Microelectronics, Instrumentation; Power Electronics, Electrical Machines and Networks; Nanotechnology and Microengineering

Target groups
Professional/practitioner

Type of publication
Monograph

Due September 2010
2010. XIV, 218 p. 150 illus., 75 in color. (MEMS Reference Shelf, Volume 6) Hardcover
► approx. € 99,95 | £86.50
► approx. * € (D) 106,95 | € (A) 109,95 | sFr 155,50
ISBN 978-1-4419-6762-6
Engineering Asset Management Reviews

Volume 1

J. E. Amadi-Echendu, K. Brown, R. Willett, J. Mathew (Eds.)

Engineering Asset Management Review

Engineering Asset Management Review focuses on life cycle management of the physical assets required by a private or public firm for the purpose of making products and/or for providing services in a manner that satisfies various business performance rationales. In exploring the wide ranging issues involved in the management of engineered assets constituting our built environment, EAMR takes a broad view of the inter- and multi-disciplinary approach which combines science, engineering, and technology principles with human behavior and business practice.

Features

- Compiles a body of knowledge about engineering asset management
- Encourages cross-disciplinary interaction on the subject of engineering asset management
- Written by experts

Fields of interest

Engineering Economics, Organization, Logistics, Marketing; Technology Management; Finance / Banking

Target groups

Research

Due October 2010

2010. 300 p. Hardcover

- approx. € 129,95 | £99.95
- approx. * € (D) 139,05 | € (A) 142,95 | sFr 202,00
ISBN 978-1-84996-177-6

Engineering in the Heavens

The Seventies

B. Evans, Warwickshire, UK

Foothold in the Heavens, the second volume in the A History of Human Space Exploration series, focuses upon the 1970s, the decade in which humanity established real, longterm foothold in the heavens with the construction and operation of the first space stations. It marked a transitional phase between the heady, race-to-the-Moon days of the Sixties and efforts to make space travel more economical, more frequent and more ‘routine.’ Space exploration in the Seventies, although dominated by Soviet achievement, saw the first efforts of mankind to really ‘live’ and work in space, producing results of direct benefit to humans on Earth. The emphasis changed from the gung-ho, ‘strap-it-on-and-go’ pioneers of the Sixties to the more practical exploitation of space for science, medicine, and technology. This book focuses on each mission launched between April 1971 and April 1981: from the launch of the world’s first space station to the end of operations of Salyut 6, and from the expanded, lengthy exploration of the Moon on Apollo 15 to the first flight of the Shuttle.

Features

- Details the stories of missions, the crews and their progress to mankind’s progress in Space in the Seventies
- Provides a balanced account of the aspirations, frustrations and achievements of early human spaceflight
- Illustrates the early contributions of space exploration for science, medicine, and technology

Fields of interest

Aerospace Technology and Astronautics; Popular Science in Astronomy; Extraterrestrial Physics, Space Sciences

Target groups

Popular/general

Type of publication

Popular science

Due June 2010

Jointly published with Praxis Publishing, UK

2010. XII, 533 p. 170 illus. (Springer Praxis Books / Space Exploration) Softcover

- approx. € 44,95 | £27.50
- approx. * € (D) 48,10 | € (A) 49,45 | sFr 52,00
Introduction to Circuit Analysis and Design

Introduction to Circuit Analysis and Design takes the view that circuits have inputs and outputs, and that relations between inputs and outputs and the terminal characteristics of circuits at input and output ports are all-important in analysis and design. Two-port models, input resistance, output impedance, gain, loading effects, and frequency response are treated in more depth than is traditional. Due attention to these topics is essential preparation for design, provides useful preparation for subsequent courses in electronic devices and circuits, and eases the transition from circuits to systems.

Features
► Emphasis on input-output properties and descriptions of circuits ► Emphasis on symbolic relations among currents, voltages, and other quantities ► Inclusion of topics important in design but not found in competing books ► More than 800 in-line examples and exercises and more than 1100 end-of-chapter problems ► Sections on methods for checking intermediate and final results

Contents

Fields of interest
Circuits and Systems; Solid State Physics

Target groups
Graduate

Type of publication
Graduate/Advanced undergraduate textbook

Centrifugal Pumps

This book gives an unparalleled, up-to-date, in-depth treatment of all kinds of flow phenomena encountered in centrifugal pumps including the complex interactions of fluid flow with vibrations and wear of materials. The scope includes all aspects of hydraulic design, 3D-flow phenomena and partload operation, cavitation, numerical flow calculations, hydraulic forces, pressure pulsations, noise, pump vibrations (notably bearing housing vibration diagnostics and remedies), pipe vibrations, pump characteristics and pump operation, design of intake structures, the effects of highly viscous flows, pumping of gas-liquid mixtures, hydraulic transport of solids, fatigue damage to impellers or diffusers, material selection under the aspects of fatigue, corrosion, erosion-corrosion or hydro-abrasive wear, pump selection, and hydraulic quality criteria. The 2nd ed. has been enhanced by hydraulic design information on axial pumps and sewage pumps, turbine performance curve prediction, torsional rotor vibrations and recent research results on partload flow and hydraulic excitation forces.

Features
► Detailed design procedures for pumps ► Large variety of ready to use tables for design calculations and diagnostics ► In-depth treatment of the underlying physical mechanisms for practical applications ► Comprehensive scope of topics encountered by the pump engineer

Fields of interest
Machinery and Machine Elements; Engineering Fluid Dynamics; Power Engineering

Target groups
Professional/practitioner

Type of publication
Professional book

Coupled Data Communication Techniques for High-Performance and Low-Power Computing

This book provides an overview of the circuits, architectures, and chip packaging for coupled data techniques. It discusses the current research in chip-to-board capacitive coupling, chip-to-chip capacitive coupling, chip-to-chip inductive coupling, and chip-to-chip optical coupling. Circuits, modeling, and their implications for packaging are explored in depth. Mechanical methods to ensure accurate and sustained chip alignment are discussed, as well as electrical methods to compensate for resulting misalignment. Finally, the book covers issues raised by design for manufacturing and test. This book is one of the first in a new and emerging area. Coupled data communication offers new ways of looking at the old problem of limited off-chip I/O: it trades off packaging complexity for I/O performance; it offers a set of enabling technologies for 3D or stacked-chip architectures; and it raises the possibility of replace-able chips—and thus high yield—in an MCM.

Features
► Serves as a collection of the best-known-methods and ideas from leaders in the field ► Includes a carefully-selected set of discussions on the important issues, tradeoffs, and techniques in coupled data I/O ► Provides an overview of the circuits, architectures, and chip packaging for coupled data techniques ► Covers the new and emerging area of coupled data communication

Fields of interest
Circuits and Systems; Electronics and Microelectronics, Instrumentation; Electrical Engineering

Target groups
Research

Type of publication
Contributed volume
CMOS Nano-Electronics

Processors and Memories

CMOS Nano-Electronics will address the state-of-the-art in integrated circuit design in the context of emerging computing systems. New design opportunities in memories and processor are discussed. Emerging materials that can take system performance beyond standard CMOS, like carbon nanotubes, graphene, ferroelectrics, and tunnel junctions are explored. CMOS Nano-Electronics is divided into two parts: processors and memories. In the first part we start with high performance, low power processor design, followed by a chapter on multi-core processing. They both represent state-of-the-art concepts in current computing industry. The third chapter deals with asynchronous design that still carries lots of promise for future computing needs. At the end we present a “hardware design space exploration” methodology for implementing and analyzing the hardware for the Bayesian inference framework. This particular methodology involves: analyzing the computational cost and exploring candidate hardware components, proposing various custom architectures using both traditional CMOS and hybrid nanotechnology CMOL.

Features
- The only book on the market that covers advanced circuits for emerging technologies beyond standard CMOS circuit books
- Written by a mixture of top industrial experts and key academic professors. Practical enough to understand how these technologies work, but not a product manual. Scientific enough but not pure academic theory from the ivory tower
- Exploits potential behind new materials (SOI, SiGe, strained Si) that might carry performance beyond standard bulk CMOS technology

Contents
Part I Processors.- Part II Memories.

Fields of interest
Circuits and Systems; Solid State Physics; Nanotechnology and Microengineering

Target groups
Professional/practitioner

Type of publication
Monograph

Due August 2010

Hardcover
- £99.95 | £90.00
- €129.95 | €117.00
- approx. $142.95 | sFr 202.00
ISBN 978-3-642-12882-0

Software Engineering Research, Management and Applications 2010

The purpose of the 8th Conference on Software Engineering, Artificial Intelligence Research, Management and Applications (SERA 2010) held on May 24 – 26, 2010 in Montreal, Canada was to bring together scientists, engineers, computer users, and students to share their experiences and exchange new ideas and research results about all aspects (theory, applications and tools) of computer and information science, and to discuss the practical challenges encountered along the way and the solutions adopted to solve them.

Features
- Recent research in Software Engineering, Management and Applications
- Edited outcome of the SERA 2010 conference held in Montreal, Canada, in May 2010
- Written by experts in the field

From the contents
Distributed Modular Audio Recognition Framework capable of self-healing using the Autonomic System Specification Language.- Web Service Composition Problem and propose a reparative method based on planning graphs.- Total Cost of Administration (TCA) tool to collect and analyze test results.- Business Process Execution Language (BPEL) model’s decompositions.- Autonomic System Specification Language (ASSL) including an overview of ASSL and features of autonomously generated code.

Fields of interest
Computational Intelligence; Artificial Intelligence (incl. Robotics); Software Engineering

Target groups
Research

Type of publication
Monograph

Due August 2010

3rd edition was published in 1997 by VNR (now Wiley)

- approx. €129.95 | €117.00
- approx. $142.95 | sFr 202.00
ISBN 978-3-642-13272-8
Processor and System-on-Chip Simulation

Simulation of computer architectures has made rapid progress recently. The primary application areas are hardware/software performance estimation and optimization as well as functional and timing verification. Recent, innovative technologies such as re-targetable simulator generation, dynamic binary translation, or sampling simulation have enabled widespread use of processor and system-on-chip (SoC) simulation tools in the semiconductor and embedded system industries. Simultaneously, processor and SoC simulation is still a very active research area, e.g. what amounts to higher simulation speed, flexibility, and accuracy/speed trade-offs.

This book presents and discusses the principle technologies and state-of-the-art in high-level hardware architecture simulation, both at the processor and the system-on-chip level.

Features
► Presents state-of-the-art and future trends in processor and SoC simulation ► Demonstrates how simulation helps to boost hardware and software design productivity ► Addresses simulation requirements and technologies in the multicore context ► Covers system aspects, such as virtual platforms, bus simulation, caches, power, design space exploration and a wide range of electronics industry segments

Fields of interest
Circuits and Systems; Computer-Aided Engineering (CAD, CAE) and Design

Target groups
Research

Type of publication
Monograph

Multi-state System Reliability Analysis and Optimization for Engineers and Industrial Managers

Multi-state System Reliability Analysis and Optimization for Engineers and Industrial Managers presents a comprehensive, up-to-date description of multi-state system (MSS) reliability as a natural extension of classical binary-state reliability. It presents all essential theoretical achievements in the field, but is also practically oriented. Multi-state System Reliability Analysis and Optimization for Engineers and Industrial Managers also discusses life cycle cost analysis and practical optimal decision making for real world MSSs. Numerous examples are included in each section in order to illustrate mathematical tools. Besides these examples, real world MSSs (such as power generation and transmission systems, air-conditioning systems, production systems, etc.) are considered as case studies.

Multi-state System Reliability Analysis and Optimization for Engineers and Industrial Managers also describes basic concepts of MSS, MSS reliability measures and tools for MSS reliability assessment and optimization. It is a self-contained study resource and does not require prior knowledge from its readers, making the book attractive for researchers as well as for practical engineers and industrial managers.

Features
► Presents a comprehensive, up-to-date description of Multi-state System (MSS) reliability ► Written by experts ► With numerous illustrations

Fields of interest
Quality Control, Reliability, Safety and Risk; Production/Logistics; Probability Theory and Stochastic Processes

Target groups
Research

Type of publication
Monograph

Finite Element Analysis of Beam-to-Beam Contact

Phenomena occurring during a contact of two bodies are encountered in everyday life. In reality almost every type of motion is related to frictional contact between a moving body and a ground. Moreover, modeling of simple and more complex processes as nailing, cutting, vacuum pressing, movement of machines and their elements, rolling or, finally, a numerical simulation of car crash tests, requires taking contact into account.

Therefore, its analysis has been a subject of many research efforts for a long time now. However, it is author’s opinion that there are relatively few efforts related to contact between structural elements, like beams, plates or shells. The purpose of this work is to fill this gap. It concerns the beam-to-beam contact as a specific case of the 3D solids contact. A numerical formulation of frictional contact for beams with two shapes of cross-section is derived. Further, a couple of effective methods for modeling of smooth curves representing beam axes are presented. A part of the book is also devoted to analyze some aspects of thermo-electro-mechanical coupling in contact of thermal and electric conductors.

Features
► Systematic description of a finite element analysis of beam-to-beam contact ► State of the art ► Written by experts in this field

Contents

Fields of interest
Continuum Mechanics and Mechanics of Materials; Appl.Mathematics/Computational Methods of Engineering

Target groups
Research

Type of publication
Monograph

Due August 2010

2010. X, 240 p. 200 illus., 100 in color. Hardcover
► approx. € 99,00 | £89.50
► approx. * € (D) 105,93 | € (A) 108,90 | sFr 165,00 ISBN 978-1-4419-6174-7

Due September 2010

2010. XVI, 391 p. 114 illus. Hardcover
► approx. € 129,95 | £69.99
► approx. * € (D) 139,05 | € (A) 142,94 | sFr 202,00 ISBN 978-1-84996-319-0

Available

► € 99,95 | £90.00
► * € (D) 106,95 | € (A) 109,95 | sFr 155,50 ISBN 978-3-642-12939-1
Induction Motor Control Design

This book provides the most important steps and concerns in the design of estimation and control algorithms for induction motors. A single notation and modern nonlinear control terminology is used to make the book accessible, although a more theoretical control viewpoint is also given. Focusing on the induction motor with, the concepts of stability and nonlinear control theory given in appendices, this book covers: speed sensorless control; design of adaptive observers and parameter estimators; a discussion of nonlinear adaptive controls containing parameter estimation algorithms; and comparative simulations of different control algorithms. The book sets out basic assumptions, structural properties, modelling, state feedback control and estimation algorithms, then moves to more complex output feedback control algorithms, based on stator current measurements, and modelling for speed sensorless control. The induction motor exhibits many typical and unavoidable nonlinear features.

Features
- Detailed coverage of speed sensorless control algorithms encourages reduced motor complexity and cost and increased reliability
- Uses modern unified and simplified nonlinear control notation and terminology
- Compares various important control algorithms on a single type of motor so that advantages and disadvantages of each can be clearly seen

Contents
- Dynamical Models and Structural Properties
- State Feedback Control
- Flux Observers and Parameters Estimation
- Output Feedback Control
- Speed Sensorless Feedback Control
- Comparative Performances
- Appendices: Stability, Nonlinear Control Theory

Fields of interest
- Control
- Electronics and Microelectronics
- Instrumentation
- Power Electronics
- Electrical Machines and Networks

Target groups
- Research

Type of publication
- Monograph

Hardware Based Packet Classification for High Speed Internet Routers

Hardware Based Packet Classification for High Speed Internet Routers presents the most recent developments in hardware based packet classification algorithms and architectures. This book describes five methods which reduce the space that classifiers occupy within TCAMs: TCAM Razor, All-Match Redundancy Removal, Bit Weaving, Sequential Decomposition, and Topological Transformations. These methods demonstrate that in most cases a substantial reduction of space is achieved. Case studies and examples are provided throughout this book.

Features
- Presents the only book in the market that exclusively covers hardware based packet classification for algorithms and architectures
- Describes five methods which reduce the space that classifiers occupy within TCAMs: TCAM Razor, All-Match Redundancy Removal, Bit Weaving, Sequential Decomposition, and Topological Transformations
- Provides case studies and examples throughout

Contents
- Introduction
- Related Work
- Part I Equivalent Transformation Techniques
- TCAM Razor
- Bit Weaving
- All-Match Redundancy Removal
- Part II New Architectural Approaches
- Sequential Decomposition
- Topological Transformations
- References

Fields of interest
- Communications Engineering, Networks
- Computer Communication Networks
- Signal, Image and Speech Processing

Target groups
- Research

Type of publication
- Monograph

Inside NAND Flash Memories

Digital photography, MP3, digital video, etc. make extensive use of NAND-based Flash cards as storage media. To realize how much NAND Flash memories pervade every aspect of our life, just imagine how our recent habits would change if the NAND memories suddenly disappeared. To take a picture it would be necessary to find a film (as well as a traditional camera...), disks or even magnetic tapes would be used to record a video or to listen a song, and a cellular phone would return to be a simple mean of communication rather than a multimedia console. The development of NAND Flash memories will not be set down on the mere evolution of personal entertainment systems since a new killer application can trigger a further success: the replacement of Hard Disk Drives (HDDs) with Solid State Drives (SSDs).

Features
- Flash NAND design
- NAND – SSD co-development
- Radiation effects on Flash memories
- Charge trap technology overview

Contents
- 1. Market and Applications for NAND Flash Memories
- 2. NAND overview: from memory to systems
- 3. Program and Erase of NAND memory arrays
- 4. Reliability issues of NAND Flash Memories
- 5. Charge trap NAND technologies
- 6. Control logic
- 7. NAND DDR Interface
- 8. Sensing Circuits
- 9. Parasitic effects and verify circuits
- 10. MLC Storage
- 11. Charge Pumps, Voltage Regulators and HV Switches
- 12. High Voltage overview
- 13. Redundancy
- 14. Error Correction Codes
- 15. NAND Design For Testability and Testing
- 16. XLC Storage
- 17. Flash Cards
- 18. Low Power 3D-integrated SSD
- 19. Radiation effects on NAND Flash memories

Fields of interest
- Circuits and Systems
- Solid State Physics
- Spectroscopy and Microscopy

Target groups
- Research

Type of publication
- Monograph
High-Quality Visual Experience

Creation, Processing and Interactivity of High-Resolution and High-Dimensional Video Signals

Last few years have seen rapid acceptance of high-definition television (HDTV) technology around the world. This technology has been hugely successful in delivering more realistic television viewing experiences. This technology has been hugely successful in delivering more realistic television viewing experiences. Last few years have seen rapid acceptance of high-definition television (HDTV) technology around the world. This technology has been hugely successful in delivering more realistic television viewing experiences.

Nonlinear Dynamics

Between Linear and Impact Limits

Nonlinear Dynamics represents a wide interdisciplinary area of research dealing with a variety of "unusual" physical phenomena by means of nonlinear differential equations, discrete mappings, and related mathematical algorithms. However, with no real substitute for the linear superposition principle, the methods of Nonlinear Dynamics appeared to be very diverse, individual and technically complicated. This book makes an attempt to find a common ground for nonlinear dynamics analyses based on the existence of strongly nonlinear but quite simple counterparts to the linear models and tools. It is shown that, since the subgroup of rotations, harmonic oscillators, and the conventional complex analysis generate linear and weakly nonlinear approaches, then translations and reflections, impact oscillators, and hyperbolic (Clifford's) algebras must give rise to some "quasi impact" methodology.

Features

- First systematic description for the non smooth time transformations and related analytical and numerical algorithms
- Bridges the gap between linear and strongly nonlinear dynamics by showing how to switch the physical basis when approaching the area of severe (impact) nonlinearities
- Presents a unified physical basis for analyses of vibrations with essentially non-harmonic or discontinuous temporal shapes

From the contents


Fields of interest

Vibration, Dynamical Systems, Control; Complexity; Mechanics

Target groups

Research

Type of publication

Monograph

Available

2010. 300 p. (Lecture Notes in Applied and Computational Mechanics, Volume 52) Hardcover
- € 169,95 | £153.00
- * € (D) 181,85 | € (A) 186,94 | sFr 264,00
ISBN 978-3-642-12801-1

Due August 2010

2010. 340 p. (Signals and Communication Technology) Hardcover
- approx. € 79,95 | £67.99
- approx. * € (D) 85.55 | € (A) 87,95 | sFr 152.50
ISBN 978-3-642-12804-2

K. Rao, D. N. Kim, University of Texas at Arlington, TX, USA; J. J. Hwang, Kunsan National University, Kunsan, Korea

Nonlinearity in Engineering Systems

M. Mrak, M. Grgic, M. Kunt (Eds.)

Springer News 6/2010


**Debugging at the Electronic System Level**

Debugging becomes more and more the bottleneck to chip design productivity, especially while developing modern complex integrated circuits and systems at the Electronic System Level (ESL). Today, debugging is still an unsystematic and lengthy process. Here, a simple reporting of a failure is not enough, anymore. Rather, it becomes more and more important not only to find many errors early during development but also to provide efficient methods for their isolation. In Debugging at the Electronic System level the state-of-the-art of modeling and verification of ESL designs is reviewed. There, a particular focus is taken onto SystemC. Then, a reasoning hierarchy is introduced. The hierarchy combines well-known debugging techniques with whole new techniques to improve the verification efficiency at ESL. The proposed systematic debugging approach is supported amongst others by static code analysis, debug patterns, dynamic program slicing, design visualization, property generation, and automatic failure isolation.

**Features**
- Currently, no other book is known to us that considers debugging for ESL designs.
- Debugging is still a manual and unsystematic process.
- Every technique, that helps the designer to improve and accelerate debugging, is welcome.
- The book presents a hierarchy of novel and state-of-the-art debugging techniques.
- The continuous application of these techniques improves the verification efficiency at ESL.
- There are only a few books about debugging in general.

**Contents**
- Ed Design And Verification.
- Early Error Detection.
- High-Level Debugging And Exploration.
- Learning About The Design.
- Isolating Failure Causes.
- Summary And Conclusion.

**Fields of interest**
- Circuits and Systems; Processor Architectures

**Target groups**
- Research

**Type of publication**
- Monograph

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**A Practical Introduction to Hardware/Software Codesign**

This book provides a systematic introduction to the topic of Hardware/Software Codesign. The material emphasizes the basic ideas, and the practical aspects of Hardware-Software Codesign. The book developed from a course on the topic of Hardware-Software Codesign, organized by the author at Virginia Tech. It is separated into five different sections; Basic Concepts, Custom Architectures, Hardware/Software Interfaces, and Applications.

The author covers many concepts including the various forms of expressing computations, sequential and parallel implementations, control-flow and data-flow, control dependency and data dependency, latency and throughput as well as the architecture design space of hardware data paths, finite state machines, micro-programmed machines, instruction-set processors, system-on-chip, and on-chip buses. The material also includes the different forms of hardware/software interfaces, their impact on performance, hardware cost, and software complexity.

**Features**
- Presents the field of hardware/software codesign in four parts: Basic Concepts, Custom Architecture, Hardware/Software Interfaces, and Applications.
- Includes problems at the end of each chapter as well as a bibliography and further reading suggestions.
- Utilizes a simple hardware description language called GEZEL.

**Contents**
- The Nature of Hardware and Software.
- Data Flow Modeling and Implementation.
- Analysis of Control Flow and Data Flow.
- Finite State Machine with Datapath.
- Microprogrammed Architectures.
- General-purpose Embedded Cores.
- System On Chip.
- On-chip Busses.
- Hardware/Software Interfaces.
- Coprocessor Control Shell Design.
- Trivium Crypto-Coprocessor.
- CORDIC Co-processor.

**Fields of interest**
- Circuits and Systems; Computer-Aided Engineering (CAD, CAE) and Design; Software Engineering/Programming and Operating Systems

**Target groups**
- Graduate

**Type of publication**
- Graduate/Advanced undergraduate textbook

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**Theory of Heat Transfer with Forced Convection Film Flows**

Developing a new treatment of ‘Free Convection Film Flows and Heat Transfer’ began in Shang’s first monograph and is continued in this monograph. The current book displays the recent developments of laminar forced convection and forced film condensation. It is aimed at revealing the true features of heat and mass transfer with forced convection film flows to model the deposition of thin layers. The novel mathematical similarity theory model is developed to simulate temperature- and concentration- dependent physical processes.

This way it is realized to conveniently and reliably predict heat and mass transfer for convection and film flows and to resolve a series of current difficult issues of heat and mass transfer with forced convection film flows. Professionals in this fields as well as graduate students will find this a valuable book for their work.

**Features**
- Presents a new approach for calculations of heat and mass transfer.
- Models presented for laminar forced convection and forced film condensation.
- System of novel theories on hydrodynamics and heat mass transfer for laminar forced convection and film flows and advanced similarity analysis presented.
- Numerical calculation approaches extensively presented.
- Useful reference to researchers and graduate students alike.

**Fields of interest**
- Engineering Thermodynamics, Heat and Mass Transfer; Thermodynamics; Fluid- and Aerodynamics

**Target groups**
- Research

**Type of publication**
- Monograph

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Synthesis of Embedded Software
Frameworks and Methodologies for Correctness by Construction

Embedded software is ubiquitous today. There are millions of lines of embedded code in smart phones, and even more in systems responsible for automotive control, avionics control, weapons control and space missions. Some of these are safety-critical systems whose correctness, timely response, and reliability are of paramount importance. These requirement pose new challenges to system designers. This necessitates that a proper design science, based on “constructive correctness” be developed. Correct-by-construction design and synthesis of embedded software is done in a way so that post-development verification is minimized, and correct operation of embedded systems is maximized. This book presents the state of the art in the design of safety-critical, embedded software. It introduced readers to three major approaches to specification driven, embedded software synthesis/construction: synchronous programming based approaches, models of computation based approaches, and an approach based on concurrent programming with a co-design focused language. It is an invaluable reference for practitioners and researchers concerned with improving the product development life-cycle.

Features
- Provides state-of-the-art research on new software engineering life-cycle for safety-critical, embedded software
- Includes theory, methodologies, and examples of ‘correct by construction’ software engineering
- Allows for the design of embedded software with a reduced verification burden and guarantee of correctness
- Offers a single source reference to the latest research, otherwise available only in disparate journals and conference proceedings

Fields of interest
Circuits and Systems; Computer-Aided Engineering (CAD, CAE) and Design

Target groups
Professional/practitioner

Type of publication
Professional book

Due June 2010

2010. 300 p. 200 illus., 100 in color. Hardcover
- approx. € 99,00 | £99.95
- appx. € (D) 105,93 | € (A) 108,90 | sFr 165,00
ISBN 978-1-4419-6399-4

New Network Architectures
The Path to the Future Internet

“Future Internet” is a worldwide hot topic. The Internet has become a critical infrastructure for business development and social interactions. However, the immense growth of the Internet has resulted in additional stresses on its architecture, resulting in a network difficult to monitor, understand, and manage due to its huge scale in terms of connected devices and actors (end users, content providers, equipment vendors, etc). This book presents and discusses the ongoing initiatives and experimental facilities for the creation of new Future Internet Architectures using alternative approaches like Clean Slate and Incremental improvements: It considers several possible internet network use scenarios that include seamless mobility, ad hoc networks, sensor networks, internet of things and new paradigms like content and user centric networks.

Features
- Presents numerous step-by-step tutorials
- Presents scenarios for evolution of future internet
- Technical as well as social-economics aspects are addressed

Contents

Fields of interest
Communications Engineering, Networks; Computer Communication Networks

Target groups
Research

Type of publication
Monograph

Due August 2010

- € 99,95 | £90.00
- € (D) 106,95 | € (A) 109,95 | sFr 155,50

Synthesis of Embedded Software
Electrical Fields in Composite Dielectrics and their Applications

An accurate quantitative picture of electric field distribution is essential in many electrical and electronic applications. In composite dielectric configurations composed of multiple dielectrics, anomalous or unexpected behavior of electric fields may appear when a solid dielectric is in contact with a conductor or another solid dielectric. The electric field near the contact point may become higher than the original field not only in the surrounding medium but also in the solid dielectric. Theoretically it may become infinitely high, depending on the contact angle. Although these characteristics are very important in a variety of applications, they have been clarified only recently using analytical and numerical calculation methods, and this is the first book to cover these new findings. Electric Fields in Composite Dielectrics and Their Applications describes the fundamental characteristics and practical applications of electric fields in composite dielectrics.

Features
- Elucidation of the peculiar behaviors of contact-point electric fields in composite dielectrics
- Application to the design of insulating supports in high-voltage equipment
- Application to the design of electrostatic devices using dielectric particles
- Explanation of the necessary calculation methods

From the contents
1 Basic Properties of Electric Fields in Composite Dielectrics.- 2 Electric Field Behavior for a Finite Contact Angle.- 3 Electric Field for a Zero Contact Angle (Smooth Contact). - 4 Electric Field Behavior for the Common Contact of Three Dielectrics.- 5 Electric Field in High-Voltage Equipment.- 6 Electric Field and Force in Electro-Theological Fluid: a System of Multiple Particles.

Fields of interest
Power Electronics, Electrical Machines and Networks; Applied and Technical Physics

Target groups
Research

Type of publication
Monograph

Due July 2010

2010. 250 p. (Studies in Computational Intelligence, Volume 297) Hardcover
- € 99,95 | £90.00
- € (D) 106,95 | € (A) 109,95 | sFr 155,50
ISBN 978-3-642-11747-8
Advanced Nonlinear Strategies for Vibration Mitigation and System Identification

The papers in this volume address advanced nonlinear topics in the general areas of vibration mitigation and system identification, such as, methods of analysis of strongly nonlinear dynamical systems; techniques and methodologies for interpreting complex, multi-frequency transitions in damped nonlinear responses; new approaches for passive vibration mitigation based on nonlinear targeted energy transfer (TET) and the associated concept of nonlinear energy sink (NES); and an overview and assessment of current nonlinear system identification techniques.

Fields of interest
Vibration, Dynamical Systems, Control

Target groups
Research

Type of publication
Contributed volume

ESD Design for Analog Circuits

This book is on high voltage and system level circuit design. It covers many challenging ESD topics related to analog circuit design for both ESD device and ESD circuits at the network level. Included is extensive discussion of analog design for DC-DC buck/boost converters, level shifters, digital-analog converters, high speed and precision power amplifiers, and system level cable specs for interface applications.

Features
- Includes case studies that involve four classes of baseline ESD devices
- Features based software simulation with topics that overlap the text material
- Provides many device level solutions

Contents

Fields of interest
Circuits and Systems; Electronics and Microelectronics, Instrumentation

Target groups
Professional/practitioner

Type of publication
Professional book

Due July 2010

Low-Power Crystal and MEMS Oscillators

The Experience of Watch Developments

Electronic oscillators using an electromechanical device as a frequency reference are irreplaceable components of systems-on-chip for time-keeping, carrier frequency generation and digital clock generation. With their excellent frequency stability and very large quality factor Q, quartz crystal resonators have been the dominant solution for more than 70 years. But new possibilities are now offered by micro-electro-mechanical (MEM) resonators, that have a qualitatively identical equivalent electrical circuit. Crystal and MEMS Oscillator Circuits concentrates on the analysis and design of the most important schemes of integrated oscillator circuits. It explains how these circuits can be optimized by best exploiting the very high Q of the resonator to achieve the minimum power consumption compatible with the requirements on frequency stability and phase noise. Most of the material has been accumulated during the author’s 40 years experience in designing very low-power, high-performance quartz oscillators for watches and other battery operated systems. Some additional original material related to phase noise has been added. The explanations are mainly supported by analytical developments, whereas computer simulation is limited to numerical examples. The main part is dedicated to the most important Pierce circuit, with a full design procedure illustrated by examples. Symmetrical circuits that became popular for modern telecommunication systems are analyzed in a last chapter.

Features
- 40 years experience of the author in very low-power circuits
- Analytical approach highlighting the importance of each design parameter
- Optimization for minimum power/performance ratio
- Includes detailed design of power-efficient amplitude regulation

Fields of interest
Circuits and Systems; Electronics and Microelectronics, Instrumentation; Microwaves, RF and Optical Engineering

Target groups
Research

Type of publication
Monograph

Due June 2010
Introduction to Skin Biothermomechanics and Thermal Pain

“Introduction to Skin Biothermomechanics and Thermal Pain” introduces the study of coupled bio-thermo-mechanical and neural behavior of skin tissue in response to combined thermal and mechanical loads. The research in this book focuses on the theoretical modeling and experimental investigation of heated skin tissue in order to provide a predictive framework for thermal therapies of diseased tissue in clinics. Furthermore, by developing solution tools, it focuses on changes in treatment parameters leading to more effective therapies. The book is intended for researchers and scientists in Biomechanics, Heat Transfer, Mechanics, Biology and Neurophysiology, as well as clinicians.

Features
- Introduces a new interdisciplinary research area on skin biothermomechanics
- Provides a predictive framework for treating diseased tissue
- Interdisciplinary research areas, involving the subjects of heat transfer, mechanics, biology and neurophysiology

Contents

Fields of interest
Biomedical Engineering; Biophysics and Biological Physics; Neurology

Target groups
Research

Type of publication
Monograph

Advances in Neural Network Research and Applications

This book is a part of the Proceedings of the Seventh International Symposium on Neural Networks (ISNN 2010), held on June 6-9, 2010 in Shanghai, China. ISNN 2010 received numerous submissions from about thousands of authors in about 40 countries and regions across six continents. Based on the rigorous peer-reviews by the program committee members and the reviewers, 108 high-quality papers were selected for publications in Lecture Notes in Electrical Engineering (LNEE) Proceedings. These papers cover all major topics of the engineering designs and applications of neural network research. In addition to the contributed papers, the ISNN 2010 technical program included four plenary speeches by Andrzej Cichocki (RIKEN Brain Science Institute, Japan), Chin-Teng Lin (National Chiao Tung University, Taiwan), DeLiang Wang (Ohio State University, USA), Gary G. Yen (Oklahoma State University, USA).

Features
- State of the art of Neural Network Research applied to Electrical Engineering
- Presents the edited outcome of the Seventh International Symposium on Neural Networks (ISNN 2010), Shanghai June 6-9 2010, devoted to electrical engineering applications
- Written by experts in the field

Contents

Fields of interest
Power Electronics, Electrical Machines and Networks; Computational Intelligence; Artificial Intelligence (incl. Robotics)

Target groups
Research

Type of publication
Monograph

LDA Application Methods

This technical book considers the application side of LDA techniques. Starting from the basic theories that are crucial for each LDA user, the main subject of the book is focused on diverse application methods. In details, it deals with universal methodical techniques that have been mostly developed in the last 15 years. The book thus gives for the first time an application reference for LDA users in improving the optical conditions and enhancing the measurement accuracies. It also provides the guidelines for simplifying the measurements and correcting measurement errors as well as for clarifying the application limits and extending the application areas of LDA techniques. Beside the treatments of some traditional optical and flow mechanical features influencing the measurement accuracies, the book shows a broad spectrum of LDA application methods in the manner of measuring the flow turbulence, resolving the secondary flow structures, and quantifying the optical aberrations at measurements of internal flows etc. Thus, it also supports the further developments of both the hard- and software of LDA instrumentations.

Features
- This technical book considers the application side of LDA techniques
- Detailed application methods for LDA users in practical applications
- Focuses on diverse application methods
- Gives for the first time an application reference for LDA users in improving the optical conditions and enhancing the measurement accuracies

Fields of interest
Engineering Fluid Dynamics; Fluid- and Aerodynamics; Industrial Chemistry/Chemical Engineering

Target groups
Research

Type of publication
Monograph

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