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### *Using Pre Computed Lookup Tables*

***An up-to-date, comprehensive guide for advanced electrical engineering students and electrical engineers working in the IC and optical industries. This book covers the major transimpedance amplifier (TIA) topologies and their circuit implementations for optical receivers. This includes the shunt-feedback TIA, common-base TIA, common-gate TIA, regulated-cascode TIA, distributed-amplifier TIA, nonresistive feedback TIA, current-mode TIA, burst-mode***

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***TIA, and analog-receiver TIA. The noise, transimpedance, and other performance parameters of these circuits are analyzed and optimized. Topics of interest include post amplifiers, differential vs. single-ended TIAs, DC input current control, and adaptive transimpedance. The book features real-world examples of TIA circuits for a variety of receivers (direct detection, coherent, burst-mode, etc.) implemented in a broad array of technologies (HBT, BiCMOS, CMOS, etc.). The book begins with an introduction to optical***

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***communication systems, signals, and standards. It then moves on to discussions of optical fiber and photodetectors. This discussion includes p-i-n photodetectors; avalanche photodetectors (APD); optically preamplified detectors; integrated detectors, including detectors for silicon photonics; and detectors for phase-modulated signals, including coherent detectors. This is followed by coverage of the optical receiver at the system level: the relationship between noise, sensitivity, optical***

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***signal-to-noise ratio (OSNR), and bit-error rate (BER) is explained; receiver impairments, such as intersymbol interference (ISI), are covered. In addition, the author presents TIA specifications and illustrates them with example values from recent product data sheets. The book also includes: Many numerical examples throughout that help make the material more concrete for readers Real-world product examples that show the performance of actual IC designs Chapter summaries that highlight the***

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***key points Problems and their solutions for readers who want to practice and deepen their understanding of the material Appendices that cover communication signals, eye diagrams, timing jitter, nonlinearity, adaptive equalizers, decision point control, forward error correction (FEC), and second-order low-pass transfer functions Analysis and Design of Transimpedance Amplifiers for Optical Receivers belongs on the reference shelves of every electrical engineer working in the IC and optical industries. It also can serve as***

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***a textbook for upper-level undergraduates and graduate students studying integrated circuit design and optical communication.***

***This proven textbook guides readers to a thorough understanding of the theory and design of operational amplifiers (OpAmps). The core of the book presents systematically the design of operational amplifiers, classifying them into a periodic system of nine main overall configurations, ranging from one gain stage up to four or more stages. This division enables circuit designers to***

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***recognize quickly, understand,  
and choose optimal  
configurations.***

***Characterization of operational  
amplifiers is given by macro  
models and error matrices,  
together with measurement  
techniques for their  
parameters. Definitions are  
given for four types of  
operational amplifiers  
depending on the grounding of  
their input and output ports.  
Many famous designs are  
evaluated in depth, using a  
carefully structured approach  
enhanced by numerous  
figures. In order to reinforce  
the concepts introduced and***

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***facilitate self-evaluation of design skills, the author includes problems with detailed solutions, as well as simulation exercises.***

***This book constitutes the thoroughly refereed post-workshop proceedings of the 7th International Workshop Radio Frequency Identification: Security and Privacy Issues. RFIDSec 2011, held in Amherst, Massachusetts, USA, in June 2011. The 12 revised full papers presented were carefully reviewed and selected from 21 initial submissions for inclusion in***

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***the book. The papers focus on minimalism in cryptography, on-tag cryptography, securing RFID with physics, and protocol-level security in RFID. Gain an intuitive understanding of jitter and phase noise with this authoritative guide. Leading researchers provide expert insights on a wide range of topics, from general theory and the effects of jitter on circuits and systems, to key statistical properties and numerical techniques. Using the tools provided in this book, you will learn how and when jitter and phase noise***

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***occur, their relationship with one another, how they can degrade circuit performance, and how to mitigate their effects - all in the context of the most recent research in the field. Examine the impact of jitter in key application areas, including digital circuits and systems, data converters, wirelines, and wireless systems, and learn how to simulate it using the accompanying Matlab code. Supported by additional examples and exercises online, this is a one-stop guide for graduate students and practicing engineers***

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***interested in improving the performance of modern electronic circuits and systems.***

***This book constitutes the refereed proceedings of the 4th International Symposium on Security in Computing and Communications, SSCC 2016, held in Jaipur, India, in September 2016. The 23 revised full papers presented together with 16 short papers and an invited paper were carefully reviewed and selected from 136 submissions. The papers are organized in topical sections on cryptosystems, algorithms,***

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***primitives; security and privacy in networked systems; system and network security; steganography, visual cryptography, image forensics; applications security.***

***This book contains extended and revised versions of the best papers presented at the 22nd IFIP WG 10.5/IEEE International Conference on Very Large Scale Integration, VLSI-SoC 2014, held in Playa del Carmen, Mexico, in October 2014. The 12 papers included in the book were carefully reviewed and selected from the 33 full***

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***papers presented at the conference. The papers cover a wide range of topics in VLSI technology and advanced research. They address the current trend toward increasing chip integration and technology process advancements bringing about stimulating new challenges both at the physical and system-design levels, as well as in the test of these systems.***

***The two-volume set LNCS 10031 and LNCS 10032 constitutes the refereed proceedings of the 22nd International Conference on***

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***the Theory and Applications of  
Cryptography and Information  
Security, ASIACRYPT 2016,  
held in Hanoi, Vietnam, in  
December 2016. The 67  
revised full papers and 2  
invited talks presented were  
carefully selected from 240  
submissions. They are  
organized in topical sections  
on Mathematical Analysis;  
AES and White-Box; Hash  
Function; Randomness;  
Authenticated Encryption;  
Block Cipher; SCA and  
Leakage Resilience; Zero  
Knowledge; Post Quantum  
Cryptography; Provable  
Security; Digital Signature;***

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***Functional and Homomorphic  
Cryptography; ABE and IBE;  
Foundation; Cryptographic  
Protocol; Multi-Party  
Computation.***

***The two-volume set, LNCS  
9878 and 9879 constitutes the  
refereed proceedings of the  
21st European Symposium on  
Research in Computer  
Security, ESORICS 2016, held  
in Heraklion, Greece, in  
September 2016. The 60  
revised full papers presented  
were carefully reviewed and  
selected from 285  
submissions. The papers  
cover a wide range of topics in  
security and privacy, including***

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***data protection: systems security, network security, access control, authentication, and security in such emerging areas as cloud computing, cyber-physical systems, and the Internet of Things.***

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*Millions of users create  
and share Excel*

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*spreadsheets every day, but few go deeply enough to learn the techniques that will make their work much easier. There are many ways to take advantage of Excel's advanced capabilities without spending hours on advanced study. Excel Hacks provides more than 130 hacks -- clever tools, tips and techniques -- that will leapfrog your work beyond the ordinary. Now expanded to include Excel 2007, this resourceful, roll-up-*

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*your-sleeves guide gives you little known "backdoor" tricks for several Excel versions using different platforms and external applications. Think of this book as a toolbox. When a need arises or a problem occurs, you can simply use the right tool for the job. Hacks are grouped into chapters so you can find what you need quickly, including ways to: Reduce workbook and worksheet frustration -- manage how users*

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*interact with worksheets, find and highlight information, and deal with debris and corruption. Analyze and manage data -- extend and automate these features, moving beyond the limited tasks they were designed to perform. Hack names -- learn not only how to name cells and ranges, but also how to create names that adapt to the data in your spreadsheet. Get the most out of PivotTables -- avoid the problems*

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*that make them  
frustrating and learn  
how to extend them.  
Create customized charts  
-- tweak and combine  
Excel's built-in  
charting capabilities.  
Hack formulas and  
functions -- subjects  
range from moving  
formulas around to  
dealing with datatype  
issues to improving  
recalculation time. Make  
the most of macros --  
including ways to manage  
them and use them to  
extend other features.  
Use the enhanced*

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*capabilities of Microsoft Office 2007 to combine Excel with Word, Access, and Outlook. You can either browse through the book or read it from cover to cover, studying the procedures and scripts to learn more about Excel. However you use it, Excel Hacks will help you increase productivity and give you hours of "hacking" enjoyment along the way. Das Buch präsentiert neue Ergebnisse der Computerschach-Forschung*

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*in den Bereichen der  
selektiven Vorwärts-  
Baumbeschneidung, der  
effizienten Anwendung  
spieltheoretischen  
Wissens und des  
Suchverhaltens bei  
zunehmender Suchtiefe.  
Es zeigt, wie man die  
bereits gut abgestimmte  
Spielbaumsuche bei immer  
höheren Suchtiefen noch  
besser skalierbar macht.  
This new edition  
introduces operation and  
design techniques for  
Sigma-Delta converters  
in physical and  
conceptual terms, and*

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*includes chapters which explore developments in the field over the last decade Includes information on MASH architectures, digital-to-analog converter (DAC) mismatch and mismatch shaping Investigates new topics including continuous-time ?? analog-to-digital converters (ADCs) principles and designs, circuit design for both continuous-time and discrete-time ?? ADCs, decimation and interpolation filters,*

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*and incremental ADCs  
Provides emphasis on  
practical design issues  
for industry  
professionals  
Discover a fresh  
approach to efficient  
and insight-driven  
analog integrated  
circuit design in  
nanoscale-CMOS with this  
hands-on guide. Expert  
authors present a sizing  
methodology that employs  
SPICE-generated lookup  
tables, enabling close  
agreement between hand  
analysis and simulation.  
This enables the*

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*exploration of analog circuit tradeoffs using the gm/ID ratio as a central variable in script-based design flows, and eliminates time-consuming iterations in a circuit simulator. Supported by downloadable MATLAB code, and including over forty detailed worked examples, this book will provide professional analog circuit designers, researchers, and graduate students with the theoretical know-how and practical*

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*tools needed to acquire a systematic and re-use oriented design style for analog integrated circuits in modern CMOS. Many programmers would love to use Perl for projects that involve heavy lifting, but miss the many traditional algorithms that textbooks teach for other languages. Computer scientists have identified many techniques that a wide range of programs need, such as: Fuzzy pattern matching for text*

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*(identify misspellings!)  
Finding correlations in  
data Game-playing  
algorithms Predicting  
phenomena such as Web  
traffic Polynomial and  
spline fitting Using  
algorithms explained in  
this book, you too can  
carry out traditional  
programming tasks in a  
high-powered, efficient,  
easy-to-maintain manner  
with Perl. This book  
assumes a basic  
understanding of Perl  
syntax and functions,  
but not necessarily any  
background in computer*

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*science. The authors explain in a readable fashion the reasons for using various classic programming techniques, the kind of applications that use them, and -- most important -- how to code these algorithms in Perl. If you are an amateur programmer, this book will fill you in on the essential algorithms you need to solve problems like an expert. If you have already learned algorithms in other languages, you will be surprised at how*

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*much different (and often easier) it is to implement them in Perl. And yes, the book even has the obligatory fractal display program. There have been dozens of books on programming algorithms, some of them excellent, but never before has there been one that uses Perl. The authors include the editor of The Perl Journal and master librarian of CPAN; all are contributors to CPAN and have archived much of the code in this book*

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*there."This book was so exciting I lost sleep reading it." Tom Christiansen*

*There is a growing demand for more energy efficient buildings.*

*Integrated systems with more intelligent controls are an important part of meeting this demand.*

*Model predictive control (MPC) is an established control technique in other fields and holds promise for improved supervisory control in buildings. It has been*

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*receiving increasing attention in buildings research but has yet to find its way into common practice. This is due, at least in part, to a mismatch between the tools and techniques used in most MPC development and the tools, skills and processes commonly found in building design and operation. This dissertation investigates an approach to optimization-based control that uses common building simulation*

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*tools and could fit more readily into building design and operation practices. Instead of solving optimization problems in real-time to determine control set-points given current states and predicted disturbances, the optimal set-points are pre-computed offline over a grid of possible conditions and the resulting lookup table is used with linear interpolation for control. The feasibility and range of*

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*applicability of this approach are evaluated, including analyses of the performance impacts of grid spacing and techniques for problem dimensionality reduction. Three abstract case studies and two detailed case studies are presented. The approach is found to be feasible for supervisory control problems that can be effectively simplified to functions of roughly 5-6 conditions variables, and the case*

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*studies show good performance relative to online MPC. The benefits for ease of implementation are significant, but the most useful aspect is likely the feedback it can provide to the design process.*

*Build, create, and deploy your own computer vision applications with the power of OpenCV*

*About This Book This book provides hands-on examples that cover the major features that are part of any important*

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*Computer Vision*  
application It explores  
important algorithms  
that allow you to  
recognize faces,  
identify objects,  
extract features from  
images, help your system  
make meaningful  
predictions from visual  
data, and much more All  
the code examples in the  
book are based on OpenCV  
3.1 - the latest version  
Who This Book Is For  
This is the perfect book  
for anyone who wants to  
dive into the exciting  
world of image

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*processing and computer vision. This book is aimed at programmers with a working knowledge of C++. Prior knowledge of OpenCV or Computer Vision/Machine Learning is not required. What You Will Learn Explore the steps involved in building a typical computer vision/machine learning application Understand the relevance of OpenCV at every stage of building an application Harness the vast amount of information that lies*

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*hidden in images into  
the apps you build  
Incorporate visual  
information in your apps  
to create more appealing  
software Get acquainted  
with how large-scale and  
popular image editing  
apps such as Instagram  
work behind the scenes  
by getting a glimpse of  
how the image filters in  
apps can be recreated  
using simple operations  
in OpenCV Appreciate how  
difficult it is for a  
computer program to  
perform tasks that are  
trivial for human beings*

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*Get to know how to develop applications that perform face detection, gender detection from facial images, and handwritten character (digit) recognition In Detail Computer vision and machine learning concepts are frequently used in practical computer vision based projects. If you're a novice, this book provides the steps to build and deploy an end-to-end application in the domain of computer*

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*vision using OpenCV/C++. At the outset, we explain how to install OpenCV and demonstrate how to run some simple programs. You will start with images (the building blocks of image processing applications), and see how they are stored and processed by OpenCV. You'll get comfortable with OpenCV-specific jargon (Mat Point, Scalar, and more), and get to know how to traverse images and perform basic pixel-wise*

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*operations. Building upon this, we introduce slightly more advanced image processing concepts such as filtering, thresholding, and edge detection. In the latter parts, the book touches upon more complex and ubiquitous concepts such as face detection (using Haar cascade classifiers), interest point detection algorithms, and feature descriptors. You will now begin to appreciate the true power of the library in how it*

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*reduces mathematically non-trivial algorithms to a single line of code! The concluding sections touch upon OpenCV's Machine Learning module. You will witness not only how OpenCV helps you pre-process and extract features from images that are relevant to the problems you are trying to solve, but also how to use Machine Learning algorithms that work on these features to make intelligent predictions from visual data! Style*

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*and approach This book takes a very hands-on approach to developing an end-to-end application with OpenCV. To avoid being too theoretical, the description of concepts are accompanied simultaneously by the development of applications. Throughout the course of the book, the projects and practical, real-life examples are explained and developed step by step in sync with the theory.*

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*A transistor-level, design-intensive overview of high speed and high frequency monolithic integrated circuits for wireless and broadband systems from 2 GHz to 200 GHz, this comprehensive text covers high-speed, RF, mm-wave, and optical fibre circuits using nanoscale CMOS, SiGe BiCMOS, and III-V technologies. Step-by-step design methodologies, end-of chapter problems, and practical simulation and*

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*design projects are provided, making this an ideal resource for senior undergraduate and graduate courses in circuit design. With an emphasis on device-circuit topology interaction and optimization, it gives circuit designers and students alike an in-depth understanding of device structures and process limitations affecting circuit performance.*

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Symposium, SSCC 2016,

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[Jaipur, India, September  
21-24, 2016, Proceedings](#)

This modern, pedagogic textbook from leading author Behzad Razavi provides a comprehensive and rigorous introduction to CMOS PLL design, featuring intuitive presentation of theoretical concepts, extensive circuit simulations, over 200 worked examples, and 250 end-of-chapter problems. The perfect text for senior undergraduate and graduate students.

This book constitutes the refereed proceedings of the International Conference on Computer Vision and Graphics, ICCVG 2018, held in Warsaw, Poland, in September 2018. The 45 full papers were selected

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from 117 submissions. The contributions are thematically arranged as follows: computer graphics, image quality and graphic, user interfaces, object classification and features, 3D and stereo image processing, low-level and middle-level image processing, medical image analysis, motion analysis and tracking, security and protection, pattern recognition and new concepts in classification.

The latest edition of this bestselling game development reference offers proven tips and techniques for the real-time rendering of special effects and visualization data that are useful for beginners and seasoned game and graphics programmers alike.

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Exploring recent developments in the rapidly evolving field of real-time rendering, GPU Pro6: Advanced Rendering Techniques assembles a high-quality collection of cutting-edge techniques for advanced graphics processing unit (GPU) programming. It incorporates contributions from more than 45 experts who cover the latest developments in graphics programming for games and movies. The book covers advanced rendering techniques that run on the DirectX or OpenGL runtimes, as well as on any other runtime with any language available. It details the specific challenges involved in creating games across the most common

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consumer software platforms such as PCs, video consoles, and mobile devices. The book includes coverage of geometry manipulation; rendering techniques, handheld devices programming, effects in image space, shadows, 3D engine design, graphics-related tools, and environmental effects. It also includes a dedicated section on general purpose GPU programming that covers CUDA, DirectCompute, and OpenCL examples. In color throughout, GPU Pro6 presents ready-to-use ideas and procedures that can help solve many of your daily graphics programming challenges. Example programs with downloadable source code are also

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provided on the book's CRC Press web page.

This book constitutes the proceedings of the 20th International Conference on Selected Areas in Cryptography, SAC 2013, held in Burnaby, Canada, in August 2013. The 26 papers presented in this volume were carefully reviewed and selected from 98 submissions. They are organized in topical sections named: lattices; discrete logarithms; stream ciphers and authenticated encryption; post-quantum (hash-based and system solving); white box crypto; block ciphers; elliptic curves, pairings and RSA; hash functions and MACs; and side-channel attacks. The book also contains 3 full-length

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invited talks.

This book contains a series of articles summarizing the technical, institutional and intellectual history of mathematical tables from earliest times until the late 20th century when the electronic spreadsheet changed the way information is processed.

Your Python code may run correctly, but you need it to run faster.

Updated for Python 3, this expanded edition shows you how to locate performance bottlenecks and significantly speed up your code in high-data-volume programs. By exploring the fundamental theory behind design choices, High Performance Python helps you gain

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a deeper understanding of Python's implementation. How do you take advantage of multicore architectures or clusters? Or build a system that scales up and down without losing reliability? Experienced Python programmers will learn concrete solutions to many issues, along with war stories from companies that use high-performance Python for social media analytics, productionized machine learning, and more. Get a better grasp of NumPy, Cython, and profilers Learn how Python abstracts the underlying computer architecture Use profiling to find bottlenecks in CPU time and memory usage Write efficient programs by choosing appropriate data structures Speed up

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matrix and vector computations Use  
tools to compile Python down to  
machine code Manage multiple I/O  
and computational operations  
concurrently Convert

multiprocessing code to run on local  
or remote clusters Deploy code  
faster using tools like Docker

This book constitutes the refereed  
proceedings of the 9th International  
Conference on Computer Vision  
Systems, ICVS 2013, held in St.  
Petersburg, Russia, July 16-18,  
2013. Proceedings. The 16 revised  
papers presented with 20 poster  
papers were carefully reviewed and  
selected from 94 submissions. The  
papers are organized in topical  
sections on image and video capture;

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visual attention and object detection;  
self-localization and pose estimation;  
motion and tracking; 3D  
reconstruction; features, learning and  
validation.

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This book provides information on the Earth science remote sensing data information and data format such as HDF-EOS. It evaluates the current data processing approaches and introduces data searching and ordering from different public domains. It further explores the remote sensing and GIS migration products and WebGIS applications. Both volumes are designed to give an introduction to current and future NASA, NOAA and other Earth science remote sensing. The essentials of analog circuit design

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with a unique all-region MOSFET modeling approach.

Combines both the DSP principles and real-time implementations and applications, and now updated with the neweZdsp USB Stick, which is very low cost, portable and widely employed at many DSP labs. Real-Time Digital Signal Processing

introduces fundamental digital signal processing (DSP) principles and will be updated to include the latest DSP applications, introduce new software development tools and adjust the software design process to reflect the latest advances in the field. In the 3rd edition of the book, the key aspect of hands-on experiments will be enhanced to make the DSP principles more interesting and directly interact with the real-world applications. All of the programs will be

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carefully updated using the most recent version of software development tools and the new TMS320VC5505 eZdsp USB Stick for real-time experiments. Due to its lower cost and portability, the new software and hardware tools are now widely used in university labs and in commercial industrial companies to replace the older and more expensive generation. The new edition will have a renewed focus on real-time applications and will offer step-by-step hands-on experiments for a complete design cycle starting from floating-point C language program to fixed-point C implementation, code optimization using INTRINSICS, and mixed C-and-assembly programming on fixed-point DSP processors. This new methodology enables readers to concentrate on learning DSP

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fundamentals and innovative applications by relaxing the intensive programming efforts, namely, the traditional DSP assembly coding efforts. The book is organized into two parts; Part One introduces the digital signal processing principles and theories, and Part Two focuses on practical applications. The topics for the applications are the extensions of the theories in Part One with an emphasis placed on the hands-on experiments, systematic design and implementation approaches. The applications provided in the book are carefully chosen to reflect current advances of DSP that are of most relevance for the intended readership. Combines both the DSP principles and real-time implementations and applications using the new eZdsp USB Stick, which is very low cost, portable

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and widely employed at many DSP labs is now used in the new edition. Places renewed emphasis on C-code experiments and reduces the exercises using assembly coding; effective use of C programming, fixed-point C code and INTRINSICS will become the main focus of the new edition. Updates to application areas to reflect latest advances such as speech coding techniques used for next generation networks (NGN), audio coding with surrounding sound, wideband speech codec (ITU G.722.2 Standard), fingerprint for image processing, and biomedical signal processing examples. Contains new addition of several projects that can be used as semester projects; as well as many new real-time experiments using TI's binary libraries – the experiments are prepared with flexible interface and

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modular for readers to adapt and modify to create other useful applications from the provided basic programs. Consists of more MATLAB experiments, such as filter design, algorithm evaluation, prototyping for C-code architecture, and simulations to aid readers to learn DSP fundamentals. Includes supplementary material of program and data files for examples, applications, and experiments hosted on a companion website. A valuable resource for Postgraduate students enrolled on DSP courses focused on DSP implementation & applications as well as Senior undergraduates studying DSP; engineers and programmers who need to learn and use DSP principles and development tools for their projects.

This book constitutes the proceedings

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of the 19th International Conference on Cryptographic Hardware and Embedded Systems, CHES 2017, held in Taipei, Taiwan, in September 2017. The 33 full papers presented in this volume were carefully reviewed and selected from 130 submissions. The annual CHES conference highlights new results in the design and analysis of cryptographic hardware and software implementations. The workshop builds a valuable bridge between the research and cryptographic engineering communities and attracts participants from industry, academia, and government organizations. JAC ECC is a venue for extending collaboration between prominent Japanese, African and International researchers from academia and industry in the fields of electronics, communications, and computer

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engineering

This book brings together a representative set of Earth System Science (ESS) applications of the neural network (NN) technique. It examines a progression of atmospheric and oceanic problems, which, from the mathematical point of view, can be formulated as complex, multidimensional, and nonlinear mappings. It is shown that these problems can be solved utilizing a particular type of NN – the multilayer perceptron (MLP). This type of NN applications covers the majority of NN applications developed in ESSs such as meteorology, oceanography, atmospheric and oceanic satellite remote sensing, numerical weather prediction, and climate studies. The major properties of the mappings and MLP NNs are formulated and

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discussed. Also, the book presents basic background for each introduced application and provides an extensive set of references. “This is an excellent book to learn how to apply artificial neural network methods to earth system sciences. The author, Dr. Vladimir Krasnopolsky, is a universally recognized master in this field. With his vast knowledge and experience, he carefully guides the reader through a broad variety of problems found in the earth system sciences where neural network methods can be applied fruitfully. (...) The broad range of topics covered in this book ensures that researchers/graduate students from many fields (...) will find it an invaluable guide to neural network methods.” (Prof. William W. Hsieh, University of British Columbia, Vancouver, Canada) “Vladimir

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Krasnopolsky has been the “founding father” of applying computation intelligence methods to environmental science; (...) Dr. Krasnopolsky has created a masterful exposition of a young, yet maturing field that promises to advance a deeper understanding of best modeling practices in environmental science.” (Dr. Sue Ellen Haupt, National Center for Atmospheric Research, Boulder, USA) “Vladimir Krasnopolsky has written an important and wonderful book on applications of neural networks to replace complex and expensive computational algorithms within Earth System Science models. He is uniquely qualified to write this book, since he has been a true pioneer with regard to many of these applications. (...) Many other examples of creative emulations will inspire not just readers

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interested in the Earth Sciences, but any other modeling practitioner (...) to address both theoretical and practical complex problems that may (or will!) arise in a complex system." " (Prof. Eugenia Kalnay, University of Maryland, USA)

This hands-on guide contains a fresh approach to efficient and insight-driven integrated circuit design in nanoscale-CMOS. With downloadable MATLAB code and over forty detailed worked examples, this is essential reading for professional engineers, researchers, and graduate students in analog circuit design.

Ready to use statistical and machine-learning techniques across large data sets? This practical guide shows you why the Hadoop ecosystem is perfect for the job. Instead of deployment, operations, or software development

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usually associated with distributed computing, you'll focus on particular analyses you can build, the data warehousing techniques that Hadoop provides, and higher order data workflows this framework can produce. Data scientists and analysts will learn how to perform a wide range of techniques, from writing MapReduce and Spark applications with Python to using advanced modeling and data management with Spark MLlib, Hive, and HBase. You'll also learn about the analytical processes and data systems available to build and empower data products that can handle—and actually require—huge amounts of data. Understand core concepts behind Hadoop and cluster computing Use design patterns and parallel analytical algorithms to create distributed data analysis jobs Learn

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about data management, mining, and warehousing in a distributed context using Apache Hive and HBase Use Sqoop and Apache Flume to ingest data from relational databases Program complex Hadoop and Spark applications with Apache Pig and Spark DataFrames Perform machine learning techniques such as classification, clustering, and collaborative filtering with Spark's MLlib

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Find a Perl programmer, and you'll find a copy of Perl Cookbook nearby. Perl Cookbook is a comprehensive collection of problems, solutions, and practical examples for anyone programming in Perl. The book contains hundreds of rigorously reviewed Perl "recipes" and thousands of examples ranging from brief one-liners to complete applications. The second edition of Perl Cookbook has been fully updated for Perl 5.8, with extensive changes for Unicode support, I/O layers, `mod_perl`, and new technologies that have emerged since the previous edition of the book. Recipes have been updated to include the latest modules. New

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recipes have been added to every chapter of the book, and some chapters have almost doubled in size. Covered topic areas include:

- Manipulating strings, numbers, dates, arrays, and hashes
- Pattern matching and text substitutions
- References, data structures, objects, and classes
- Signals and exceptions
- Screen addressing, menus, and graphical applications
- Managing other processes
- Writing secure scripts
- Client-server programming
- Internet applications programming with mail, news, ftp, and telnet
- CGI and mod\_perl programming
- Web programming

Since its first release in 1998, Perl Cookbook has earned its place in the libraries of serious

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Perl users of all levels of expertise by providing practical answers, code examples, and mini-tutorials addressing the challenges that programmers face. Now the second edition of this bestselling book is ready to earn its place among the ranks of favorite Perl books as well. Whether you're a novice or veteran Perl programmer, you'll find *Perl Cookbook, 2nd Edition* to be one of the most useful books on Perl available. Its comfortable discussion style and accurate attention to detail cover just about any topic you'd want to know about. You can get by without having this book in your library, but once you've tried a few of the recipes, you won't want to.

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Franco's "Design with Operational Amplifiers and Analog Integrated Circuits, 4e" combines theory with real-life applications to deliver a straightforward look at analog design principles and techniques. An emphasis on the physical picture helps the student develop the intuition and practical insight that are the keys to making sound design decisions. The book is intended for a design-oriented course in applications with operational amplifiers and analog ICs. It also serves as a comprehensive reference for practicing engineers. This new edition includes enhanced pedagogy (additional problems, more in-depth coverage of negative feedback, more

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effective layout), updated technology (current-feedback and folded-cascode amplifiers, and low-voltage amplifiers), and increased topical coverage (current-feedback amplifiers, switching regulators and phase-locked loops).

IC designers appraise currently MOS transistor geometries and currents to compromise objectives like gain-bandwidth, slew-rate, dynamic range, noise, non-linear distortion, etc. Making optimal choices is a difficult task. How to minimize for instance the power consumption of an operational amplifier without too much penalty regarding area while keeping the gain-bandwidth unaffected in the

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same time? Moderate inversion yields high gains, but the concomitant area increase adds parasitics that restrict bandwidth. Which methodology to use in order to come across the best compromise(s)? Is synthesis a mixture of design experience combined with cut and tries or is it a constrained multivariate optimization problem, or a mixture? Optimization algorithms are attractive from a system perspective of course, but what about low-voltage low-power circuits, requiring a more physical approach? The connections amid transistor physics and circuits are intricate and their interactions not always easy to

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describe in terms of existing software packages. The gm/ID synthesis methodology is adapted to CMOS analog circuits for the transconductance over drain current ratio combines most of the ingredients needed in order to determine transistors sizes and DC currents.

Following the highly successful International Conference on Computer Vision - stems held in Las Palmas, Spain (ICVS'99), this second International Workshop on Computer Vision Systems, ICVS 2001 was held as an associated workshop of the International Conference on Computer Vision in Vancouver, Canada. The

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organization of ICVS'99 and ICVS 2001 was motivated by the fact that the majority of computer vision conferences focus on component technologies. However, Computer Vision has reached a level of maturity that allows us not only to perform research on individual methods and system components but also to build fully integrated computer vision systems of significant complexity. This opens a number of new problems related to system architecture, methods for system synthesis and verification, active vision systems, control of perception and attention, knowledge and system representation, context modeling, cue integration, etc. By

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focusing on methods and concepts for the construction of fully integrated vision systems, ICVS aims to bring together researchers interested in computer vision systems. Similar to the previous event in Las Palmas, ICVS 2001 was organized as a single-track workshop consisting of high-quality, previously unpublished papers on new and original research on computer vision systems. All contributions were presented orally. A total of 32 papers were submitted and reviewed thoroughly by program committee members. Twenty of them have been selected for presentation. We would like to thank all members of the organizing

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and program committee for their help in putting together a high-quality workshop.

This unique book contains all topics of importance to the analog designer which are essential to obtain sufficient insights to do a thorough job. The book starts with elementary stages in building up operational amplifiers. The synthesis of opamps is covered in great detail. Many examples are included, operating at low supply voltages. Chapters on noise, distortion, filters, ADC/DACs and oscillators follow. These are all based on the extensive amount of teaching that the author has carried out world-wide.

More useful techniques, tips, and

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tricks for harnessing the power of the new generation of powerful GPUs.

This book is the first graduate-level textbook presenting a comprehensive treatment of Data Converters. The advancement of digital electronics urged the availability of a still missing support for teaching and self-learning analog-digital interfaces at many levels: the specification, the conversion methods and architectures, the circuit design and the testing. This book, after the necessary study of the background theoretical elements, covers aspects and provide elements for a deep and comprehensive knowledge. The breath and the level

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of details of topics is enhanced by introductory material in each chapter and the use of many examples, most of them in the form of computer behavioral simulations. The examples and the end-of-chapter problems help in understanding and favor self-practice using tools that are effective for training and for design activity. Data Converters is a textbook that is also essential for engineering professionals as it was written for responding to a shortage of organically organized material on the topic. The book assumes a solid background in analog and digital circuits as well as a working knowledge of simulation tools for circuit and behavioral analysis. A

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background on statistical analysis is also helpful, though not strictly necessary. Coverage of all the basic elements essential for a clear understanding of sampling, quantization, noise in sampled-data systems and mathematical tools for sampled-data linear systems Comprehensive definition of the parameters used to specify data converters and necessary for understanding product data sheets Coverage of all the architectures used in Nyquist-rate data converters and detailed study of features, limits and design techniques Detailed study of oversampled and Sigma-Delta converters with simulation examples and use of spectra and

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histograms for a clear understanding of features and limit if the noise shaping Coverage of digital correction and calibration techniques for enhancing performances Use of theory and intuitive views to explain circuits and systems operation and limits Coverage of testing methods and description of the data processing used for testing and characterization Extensive use of Simulink and Matlab in examples and problem sets to assist reader comprehension and favor deeper study

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