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Crafting e-Puppets with DIY Electronics Springer

The international conference on Advances in Computing and Information technology (ACITY 2012) provides an excellent international forum for both academics and professionals for sharing knowledge and results in theory, methodology and applications of Computer Science and Information Technology. The Second International Conference on Advances in Computing and Information technology (ACITY 2012), held in Chennai, India, during July 13-15, 2012, covered a number of topics in all major fields of Computer Science and Information Technology including: networking and communications, network security and applications, web and internet computing, ubiquitous computing, algorithms, bioinformatics, digital image processing and pattern recognition, artificial intelligence, soft computing and applications. Upon a strength review process, a number of high-quality, presenting not only innovative ideas but also a founded evaluation and a strong argumentation

of the same, were selected and collected in the present proceedings, that is composed of three different volumes.

Soft Circuits MIT Press

In fabrication of FeRAMs, various academic and technological backgrounds are necessary, which include ferroelectric materials, thin film formation, device physics, circuit design, and so on.This book covers from fundamentals to applications of ferroelectric random access memories (FeRAMs). The book consists of 5 parts; (1) ferroelectric thin films, (2) deposition and characterization methods, (3) fabrication process and circuit design, (4) advanced-type memories, and (5) applications and future prospects, and each part is further devided in several chapters. Because of the wide range of the discussed topics, each chapter in this book was written by one of the best authors knowing the specific topic very well. Thus, this is a good introduction book of FeRAM for graduate students and new comers to this field, as well as it helps specialists to understand FeRAMs more deeply.

Short Circuits

Greenwood Publishing Group

This book provides users with cutting edge methods and technologies in the area of big data and visual analytics, as well as an insight to the big data and data analytics research conducted by world-renowned researchers in this field. The authors present comprehensive educational resources on big data and visual analytics covering state-of-the art techniques on data analytics, data and information visualization,

and visual analytics. Each chapter covers specific topics related to big data and data analytics as virtual data machine, security of big data, big data applications, high performance computing cluster, and big data implementation techniques. Every chapter includes a description of an unique contribution to the area of big data and visual analytics. This book is a valuable resource for researchers and professionals working in the area of big data, data analytics, and information visualization. Advanced-level students studying computer science will also find this book helpful as a secondary textbook or reference.

Introduction to Engineering Design and Problem Solving

CRC Press

Continuous optimization is the study of problems in which we wish to opti mize (either maximize or minimize) a continuous function (usually of several variables) often subject to a collection of restrictions on these variables. It has its foundation in the development of calculus by Newton and Leibniz in the 17*^ century. Nowadys, continuous optimization problems are widespread in the mathematical modelling of real world systems for a very broad range of applications. Solution methods for large multivariable constrained continuous optimiza tion problems using computers began with the work of Dantzig in the late 1940s on the simplex method for linear programming problems. Recent re search in continuous optimization has produced a variety of theoretical devel opments, solution methods and new areas of applications. It is impossible to give a full account

of the current trends and modern applications of contin uous optimization. It is our intention to present a number of topics in order to show the spectrum of current research activities and the development of numerical methods and applications.

Electronic Design Automation for IC Implementation, Circuit Design, and Process Technology Stenhouse Publishers

Physical Design for 3D Integrated Circuits reveals how to effectively and optimally design 3D integrated circuits (ICs). It also analyzes the design tools for 3D circuits while exploiting the benefits of 3D technology. The book begins by offering an overview of physical design challenges with respect to conventional 2D circuits, and then each chapter delivers an in-depth look at a specific physical design topic. This comprehensive reference: Contains extensive coverage of the physical design of 2.5D/3D ICs and monolithic 3D ICs Supplies state-of-the-art solutions for challenges unique to 3D circuit design Features contributions from renowned experts in their respective fields Physical Design for 3D Integrated Circuits provides a single, convenient source of cutting-edge information for those pursuing 2.5D/3D technology.

Development Challenges, South-South Solutions is the monthly e-newsletter of the United Nations Office for South-South Cooperation in UNDP (www.southerninnovator.org). Margret Schneider

Where would we be without conversation? Throughout history, conversations have allowed us to see different perspectives, build ideas, and solve problems. Conversations, particularly academic conversations ... push students to think and learn in lasting ways. Academic conversations are back-and-forth dialogues in which students focus on a topic and explore it by building, challenging, and negotiating relevant ideas. [The] authors ... have identified five core communication skills to help students hold productive academic conversations across content areas. These skills are: elaborating and clarifying, supporting ideas with evidence, building on and/or challenging ideas, paraphrasing and synthesizing. This books shows teachers how to weave the cultivation of academic conversation skills and conversations into current teaching approaches.

Electronic Devices and Circuit Design Springer

Tools and methods for creating electronic puppets. Short Circuits offers students opportunities to undertake physical computing projects, providing tools and methods for creating electronic puppets. Students learn how to incorporate microprocessors into everyday materials and use them to enhance their language and writing skills with shadow puppet shows featuring their own DIY flashlights.

The VLSI Handbook CRC Press

This Edited Volume Memristors - Circuits and Applications of Memristor Devices is a collection of reviewed and relevant

research chapters, offering a comprehensive overview of recent developments in the field of Engineering. The book comprises single chapters authored by various researchers and edited by an expert active in the physical sciences, engineering, and technology research areas. All chapters are complete in itself but united under a common research study topic. This publication aims at providing a thorough overview of the latest research efforts by international authors on physical sciences, engineering, and technology,and open new possible research paths for further novel developments.

Essays Presented to Julian F. Miller on the Occasion of his 60th Birthday World Scientific

Aimed at helping new engineering students gain a better perspective on engineering, this book draws particular attention to the creative aspects of engineering design that go hand-in-hand with the rigours of analysis.

On Growth, Form and Computers Springer

How to engineer change in your high school science classroom With the Next Generation Science Standards, your students won ' t just be scientists—they ' ll be engineers. But you don ' t need to reinvent the wheel. Seamlessly weave engineering and technology concepts into your high school math and science lessons with this collection of time-tested engineering curricula for science classrooms. Features include: A handy table that leads you straight to the chapters you need In-depth

commentaries and illustrative examples A vivid picture of each curriculum, its learning goals, and how it addresses the NGSS More information on the integration of engineering and technology into high school science education

Evolvable Systems: From Biology to Hardware Soft CircuitsCrafting e-Fashion with DIY Electronics

This book describes an alternative method of realizing accurate on-chip frequency references in standard CMOS processes. This method exploits the thermal-diffusivity of silicon, i.e. the rate at which heat diffuses through a silicon substrate. This is the first book describing the design of such electrothermal frequency references. It includes the necessary theory, supported by practical realizations that achieve inaccuracies as low as 0.1% and thus demonstrate the feasibility of this approach. The book also includes several circuit and system-level solutions to the precision circuit design challenges encountered during the design of such frequency references.

Big Data and Visual Analytics CRC Press

This new volume offers a broad view of the challenges of electronic devices and circuits for IoT applications. The book presents the basic concepts and fundamentals behind new low power, high-speed efficient devices, circuits, and systems in addition to CMOS. It provides an understanding of new materials to improve device performance with smaller dimensions and lower costs. It also looks at the new methodologies to enhance system performance and provides key parameters for exploring the devices and circuit performance based on smart

applications. The chapters delve into myriad aspects of circuit design, including MOSFET structures depending on their low power applications for IoT-enabled systems, advanced sensor design and fabrication using MEMS, indirect bootstrap techniques, efficient CMOS comparators, various encryption-decryption algorithms, IoT video forensics applications, microstrip patch antennas in embedded IoT applications, real-time object detection using sound, IOT and nanotechnologies based wireless sensors, and much more.

The Go-To Guide for Engineering Curricula, Grades 9-12 John Wiley & Sons Introducing students to the world of wearable technology. Soft Circuits introduces students to the world of wearable technology. Using Modkit, an accessible DIY electronics toolkit, students learn to create e-textile cuffs, " electrici-tee " shirts, and solar-powered backpacks. Students also learn the importance of one component to the whole—how, for example, changing the structure of LED connections immediately affects the number of LEDs that light up.

System Aspects in Organic and Pervasive Computing ; Workshop Proceedings: Dynamically Reconfigurable Systems, Self-organization and Emergence ; Innsbruck, Austria, March 14-17, 2005 CRC Press Conceived for both computer scientists and biologists alike, this collection of 22 essays highlights the important new role that computers play in developmental biology research. Essays show how through computer modeling, researchers gain further insight into developmental processes.

Featured essays also cover their use in designing computer algorithms to tackle computer science problems in areas like neural network design, robot control, evolvable hardware, and more. Peter Bentley, noted for his prolific research on evolutionary computation, and Sanjeev Kumar head up a respected team to guide readers through these very complex and fascinating disciplines. * Covers both developmental biology and computational development -- the only book of its kind! * Provides introductory material and more detailed information on BOTH disciplines * Includes contribututions from Richard Dawkins, Lewis Wolpert, Ian Stewart, and many other experts

Springer

This book constitutes the refereed proceedings of the 7th International Conference on Evolvable Systems, ICES 2007, held in Wuhan, China, in September 2007. The 41 revised full papers presented were carefully reviewed and selected from 123 submissions. The papers are organized in topical sections on digital hardware evolution, analog hardware evolution, bio-inspired systems, mechanical hardware evolution, evolutionary design, evolutionary algorithms in hardware design, and hardware implementation of evolutionary algorithms.

Challenges and Applications in the Internet of Things John Wiley & Sons Incorporated

Designs in nanoelectronics often lead to challenging simulation problems and include strong feedback couplings. Industry demands provisions for variability in order to guarantee quality and yield. It also requires the incorporation of higher abstraction levels to allow for system simulation in order to shorten the design cycles,

while at the same time preserving accuracy. The methods developed here promote a methodology for circuit-and-system-level modelling and simulation based on best practice rules, which are used to deal with coupled electromagnetic field-circuit-heat problems, as well as coupled electro-thermal-stress problems that emerge in nanoelectronic designs. This book covers: (1) advanced mon olithic/multirate/co-simulation techniques, which are combined with envelope/wavelet approaches to create efficient and robust simulation techniques for strongly coupled systems that exploit the different dynamics of sub-systems within multiphysics problems, and which allow designers to predict reliability and ageing; (2) new generalized techniques in Uncertainty Quantification (UQ) for coupled problems to include a variability capability such that robust design and optimization, worst case analysis, and yield estimation with tiny failure probabilities are possible (including large deviations like 6-sigma); (3) enhanced sparse, parametric Model Order Reduction techniques with a posteriori error estimation for coupled problems and for UQ to reduce the complexity of the sub-systems while ensuring that the operational and coupling parameters can still be varied and that the reduced models offer higher abstraction levels that can be efficiently simulated. All the new algorithms produced were implemented, transferred and tested by the EDA vendor MAGWEL. Validation was conducted on industrial designs provided by end-users from the semiconductor industry, who shared their feedback, contributed to the measurements, and supplied both material data and process

data. In closing, a thorough comparison to measurements on real devices was made in order to demonstrate the algorithms ' industrial applicability.

Evolvable Systems: From Biology to Hardware

Springer Nature

This book is a tribute to Julian Francis Miller ' s ideas and achievements in computer science, evolutionary algorithms and genetic programming, electronics, unconventional computing, artificial chemistry and theoretical biology. Leading international experts in computing inspired by nature offer their insights into the principles of information processing and optimisation in simulated and experimental living, physical and chemical substrates. Miller invented Cartesian Genetic Programming (CGP) in 1999, from a representation of electronic circuits he devised with Thomson a few years earlier. The book presents a number of CGP ' s wide applications, including multi-step ahead forecasting, solving artificial neural networks dogma, approximate computing, medical informatics, control engineering, evolvable hardware, and multi-objective evolutionary optimisations. The book addresses in depth the technique of ' Evolution in Materio ', a term coined by Miller and Downing, using a range of examples of experimental prototypes of computing in disordered ensembles of graphene nanotubes, slime mould, plants, and reaction diffusion chemical systems. Advances

in sub-symbolic artificial chemistries, artificial bio-inspired development, code evolution with genetic programming, and using Reed-Muller expansions in the synthesis of Boolean quantum circuits add a unique flavour to the content. The book is a pleasure to explore for readers from all walks of life, from undergraduate students to university professors, from mathematicians, computer scientists and engineers to chemists and biologists.

Academic Conversations Wiley

Soft CircuitsCrafting e-Fashion with DIY ElectronicsMIT Press

Classroom Talk that Fosters Critical Thinking and Content Understandings Springer Science & Business Media

This is an exciting career path which thousands of engineers get attracted to readily. This book shall enable the readers to familiarise themselves with the basics of PCB Design- an integral part of the product design cycle. This book is the first in the series of books that have been planned on electronic product design is done from an industry perpective. PCB designing is an exciting career prospect for the budding engineer and this book shall enables you to become one. This book is not meant to be just a textbook but also as a ready reckoner for PCB design enegineers.

Logic Non-volatile Memory: The Nvm Solutions For Ememory Bentham Science Publishers

The second of two volumes in the Electronic Design Automation for Integrated Circuits Handbook, Second Edition, Electronic Design Automation for IC Implementation, Circuit Design,

and Process Technology thoroughly examines real-time logic (RTL) to GDSII (a file format used to transfer data of semiconductor physical layout) design flow, analog/mixed signal design, physical verification, and technology computer-aided design (TCAD). Chapters contributed by leading experts authoritatively discuss design for manufacturability (DFM) at the nanoscale, power supply network design and analysis, design modeling, and much more. New to This Edition: Major updates appearing in the initial phases of the design flow, where the level of abstraction keeps rising to support more functionality with lower non-recurring engineering (NRE) costs Significant revisions reflected in the final phases of the design flow, where the complexity due to smaller and smaller geometries is compounded by the slow progress of shorter wavelength lithography New coverage of cutting-edge applications and approaches realized in the decade since publication of the previous edition—these are illustrated by new chapters on 3D circuit integration and clock design Offering improved depth and modernity, Electronic Design Automation for IC Implementation, Circuit Design, and Process Technology provides a valuable, state-of-the-art reference for electronic design automation (EDA) students, researchers, and professionals.