
Electrical Engineering Bursaries 2015

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CMOS-Compatible Key Engineering Devices for High-Speed Silicon-Based Optical Interconnections
Peterson's

Silicon has been successful in electronics because it can be doped to achieve differential functionality and can make very effective controllable switches. What is the equivalent in photonics? Phase change materials could be the equivalent functional material in photonics - they are switchable, tunable, and importantly, scalable and already have been commercialized in multiple other technologies. Phase Change Materials-Based Photonic Computing provides a clear introduction to this field introducing concepts of photonics, computing, phase change materials and future outlooks. Phase change materials are well known and studied in many contexts. Photonics is a long-standing field, indeed the use of photonic neuromorphic computing has recently gathered much interest. However, these two fields are disparate and few people understand the key concepts and issues to integrate these two. This book will be the first to do so in this promising field. Phase Change Materials-Based Photonic Computing is suitable for researchers and practitioners in academia and industry working in the disciplines of materials science and engineering, electrical engineering, and computing. Introduces the advanced fundamental concepts of photonics computing and phase change materials including brief video lectures to accompany each chapter Reviews the remaining challenges to translation, opportunities and future outlook Addresses definitions, historical context, foundational concepts, and latest advances of phase change materials-based photonics computing

Low-Income Students, Human Development and Higher Education in South Africa Academic Press
Peterson's Graduate Programs in Engineering & Applied Sciences 2015 contains comprehensive profiles of more than 3,850 graduate programs in all relevant disciplines-including aerospace/aeronautical engineering, agricultural engineering & bioengineering, chemical engineering, civil and environmental engineering, computer science and information technology,

electrical and computer engineering, industrial engineering, telecommunications, and more. Two-page in-depth descriptions, written by featured institutions, offer complete details on a specific graduate program, school, or department as well as information on faculty research. Comprehensive directories list programs in this volume, as well as others in the Peterson's graduate series.

Secondary Analysis of Electronic Health Records Springer

This book explores learning outcomes for low-income rural and township youth at five South African universities. The book is framed as a contribution to southern and Africa-centred scholarship, adapting Amartya Sen's capability approach and a framework of key concepts: capabilities, functionings, context, conversion factors, poverty and agency to investigate opportunities and obstacles to achieved student outcomes. This approach allows a reimagining of 'inclusive learning outcomes' to encompass the multi-dimensional value of a university education and a plurality of valued cognitive and non-cognitive outcomes for students from low-income backgrounds whose experiences are strongly shaped by hardship. Based on capability theorising and student voices, the book proposes for policy and practice a set of contextual higher education capability domains and corresponding functionings orientated to more justice and more equality for each person to have the opportunities to be and to do what they have reason to value. The book concludes that sufficient material resources are necessary to get into university and flourish while there; the benefits of a university education should be rich and multi-dimensional so that they can result in functionings in all

areas of life as well as work and future study; the inequalities and exclusion of the labour market and pathways to further study must be addressed by wider economic and social policies for 'inclusive learning outcomes' to be meaningful; and that universities ought to be doing more to enable black working-class students to participate and succeed. Low-Income Students, Human Development and Higher Education in South Africa makes an original contribution to capabilitarian scholarship: conceptually in theorising a South-based multi-dimensional student well-being higher education matrix and a rich reconceptualisation of learning outcomes, as well as empirically by conducting rigorous, longitudinal in-depth mixed-methods research on students' lives and experiences in higher education in South Africa. The audience for the book includes higher education researchers, international capabilitarian scholars, practitioners and policy-makers. **Time-Critical Cooperative Control of Autonomous Air Vehicles** Scholarships, Grants & Prizes 2015

The increasing penetration of distributed energy resource (DER), distributed generation (DG) and energy storage system (ESS) units in distribution grids leads to the emergence of the concepts of active distribution networks (ADNs), microgrids, and virtual power plants. Nowadays, the use of electronically-coupled distributed energy resources is of great interest that can provide the power of demand side alone or in a small electricity grid. A microgrid is a small-scale power grid in low voltage network that must be able to locally solve energy issues and enhance the flexibility and can operate either in grid-connected or islanded/autonomous mode of operation. To study them, researchers need an appropriate set of methods, software tools, analogous to those exist for large interconnected power systems. The book

Microgrids and Methods of Analysis addresses systematic analysis, control/protection systems design, and optimal operation of a distribution system under high penetration of DERs analogous to those that exist for large interconnected power systems. Provides professional guidelines for system planners Explores further research, development, and optimization of existing and new microgrids Addresses analytical methods used for microgrid analysis using advanced research *Education Sector Strategic Plan, 2005-2015* Elsevier

Originally developed to support video games, graphics processor units (GPUs) are now increasingly used for general-purpose (non-graphics) applications ranging from machine learning to mining of cryptographic currencies. GPUs can achieve improved performance and efficiency versus central processing units (CPUs) by dedicating a larger fraction of hardware resources to computation. In addition, their general-purpose programmability makes contemporary GPUs appealing to software developers in comparison to domain-specific accelerators. This book provides an introduction to those interested in studying the architecture of GPUs that support general-purpose computing. It collects together information currently only found among a wide range of disparate sources. The authors led development of the GPGPU-Sim simulator widely used in academic research on GPU architectures. The first chapter of this book describes the basic hardware structure of GPUs and provides a brief overview of their history. Chapter 2 provides a summary of GPU programming models relevant to the rest of the book. Chapter 3 explores the architecture of GPU compute cores. Chapter 4 explores the architecture of the GPU memory system. After describing the architecture of existing systems, Chapters \ref{ch03} and \ref{ch04} provide an overview of related research. Chapter 5 summarizes cross-cutting research impacting both the compute core and memory system. This book should provide a valuable resource for those wishing to understand the architecture of graphics processor units (GPUs) used for acceleration of general-purpose applications and to those who want to obtain an introduction to the rapidly growing body of research exploring how to improve the architecture of these GPUs.

The Chartered Mechanical Engineer

Morgan & Claypool Publishers
Scholarships, Grants & Prizes
2015Peterson's

Secondary Analysis of Electronic Health Records CRC Press

Microgrid Protection and Control is the result of numerous research works and publications by R&D engineers and scientists of the Microgrid and Energy Internet Research Centre. Through the authors long-routed experience in the microgrid and energy internet industry, this book looks at the

sophisticated protection and control issues connected to the special nature of microgrid. The book explains the different ways of classifying types of microgrids and common misconceptions, looking at industrial and research trends along with the different technical issues and challenges faced with deploying microgrid in various settings. Forecasting short-term demand and renewable generation for optimal operation is covered with techniques for accurate enhancement supported with practical application examples. With chapters on dynamic, transient and tertiary control and experimental and simulation tests this reference is useful for all those working in the research, engineering and application of microgrids and power distribution systems. Contains practical examples to support the research and experimental results on microgrid protection and control Includes detailed theories and referential algorithms Provides innovative solutions to technical issues in protection and control of microgrids

Industrial & Engineering Chemistry Springer

MacGyver science is the creative use of equipment for purposes that were not originally intended by the developer as well as the scientist's own development of sensors or technology for problems where commercially available solutions fall short. Following the successful MacGyver conference sessions in the past years it is time to combine all our ideas, opinions and new research in an article collection. This is a call for papers for all MacGyver earth scientists— present your tools, processes, proof of concepts, designs, open source components, failures and successes, data sets, and emerging technologies, and contribute your part to this exciting collection. Even if your new tools, prototypes or method has been described as part of the method section of a broader publication, we invite you to write a separate publication in our collection that focusses solely on the new tool, processes, proof of concepts, designs, open source components, etc.

Scholarships, Grants & Prizes 2015

Yearbook of International Orga

This book trains the next generation of scientists representing different disciplines to leverage the data generated during routine patient care. It formulates a more complete lexicon of evidence-based recommendations and support shared, ethical decision making by doctors with their patients.

Diagnostic and therapeutic technologies continue to evolve rapidly, and both individual practitioners and

clinical teams face increasingly complex ethical decisions. Unfortunately, the current state of medical knowledge does not provide the guidance to make the majority of clinical decisions on the basis of evidence. The present research infrastructure is inefficient and frequently produces unreliable results that cannot be replicated. Even randomized controlled trials (RCTs), the traditional gold standards of the research reliability hierarchy, are not without limitations. They can be costly, labor intensive, and slow, and can return results that are seldom generalizable to every patient population. Furthermore, many pertinent but unresolved clinical and medical systems issues do not seem to have attracted the interest of the research enterprise, which has come to focus instead on cellular and molecular investigations and single-agent (e.g., a drug or device) effects. For clinicians, the end result is a bit of a “data desert” when it comes to making decisions. The new research infrastructure proposed in this book will help the medical profession to make ethically sound and well informed decisions for their patients.

The Australasian Engineer Springer

Includes history of bills and resolutions.

Educational Times African Books Collective
A guide to the theory and recent development in the medical use of antenna technology
Antenna and Sensor Technologies in Modern Medical Applications offers a comprehensive review of the theoretical background, design, and the latest developments in the application of antenna technology. Written by two experts in the field, the book presents the most recent research in the burgeoning field of wireless medical telemetry and sensing that covers both wearable and implantable antenna and sensor technologies. The authors review the integrated devices that include various types of sensors wired within a wearable garment that can be paired with external devices. The text covers important developments in sensor-integrated clothing that are synonymous with athletic apparel with built-in electronics. Information on implantable devices is also covered. The book explores technologies that utilize both inductive coupling and far field propagation. These include minimally invasive microwave ablation antennas, wireless targeted drug delivery, and much more. This important book: Covers recent developments in wireless medical telemetry Reviews the theory and design of in vitro/in vivo testing Explores emerging technologies in 2D and 3D printing of antenna/sensor fabrication Includes a chapter with an annotated list of the most comprehensive and important references in the field Written for students of engineering and antenna and sensor engineers, Antenna

and Sensor Technologies in Modern Medical Applications is an essential guide to understanding human body interaction with antennas and sensors.

Frontiers Media SA

Peterson's Scholarships, Grants & Prizes 2015 is the must have guide for anyone looking for private aid money to help finance an education. This valuable resource provides up-to-date information on millions of privately funded awards available to college students. The comprehensive scholarship and grant profiles include those awards based on ethnic heritage, talent, employment experience, military service, and other categories, which are available from private sources, such as foundations, corporations, and religious and civic organizations. In addition, there are informative articles containing advice on avoiding scholarship scams, winning scholarships with a winning essay, and getting in the minority scholarship mix.

Fundamentals of Internet of Things

Academic Press

New Scientist magazine was launched in 1956 "for all those men and women who are interested in scientific discovery, and in its industrial, commercial and social consequences". The brand's mission is no different today - for its consumers, New Scientist reports, explores and interprets the results of human endeavour set in the context of society and culture.

Education Outlook

John Wiley & Sons

Time-Critical Cooperative Control of Autonomous Air Vehicles presents, in an easy-to-read style, the latest research conducted in the industry, while also introducing a set of novel ideas that illuminate a new approach to problem-solving. The book is virtually self-contained, giving the reader a complete, integrated presentation of the different concepts, mathematical tools, and control solutions needed to tackle and solve a number of problems concerning time-critical cooperative control of UAVs. By including case studies of fixed-wing and multirotor UAVs, the book effectively broadens the scope of application of the methodologies developed. This theoretical presentation is complemented with the results of flight tests with real UAVs, and is an ideal reference for researchers and practitioners from academia, research labs, commercial companies, government workers, and those in the international aerospace industry. Addresses important topics related to time-critical cooperative control of UAVs Describes solutions to the problems rooted in solid dynamical systems theory Applies the solutions developed to fixed-wing and multirotor UAVs Includes the results of field tests with both classes of UAVs

Phase Change Materials-Based Photonic Computing

Butterworth-Heinemann

This book trains the next generation of scientists representing different disciplines to leverage the data generated during routine patient care. It formulates a more complete lexicon of evidence-based recommendations and support shared, ethical decision making by doctors with their patients. Diagnostic and therapeutic technologies continue to evolve rapidly, and both individual practitioners and clinical teams face increasingly complex ethical decisions. Unfortunately, the current state of medical knowledge does not provide the guidance to make the majority of clinical decisions on the basis of evidence. The present research infrastructure is inefficient and frequently produces unreliable results that cannot be replicated. Even randomized controlled trials (RCTs), the traditional gold standards of the research reliability hierarchy, are not without limitations. They can be costly, labor intensive, and slow, and can return results that are seldom generalizable to every patient population. Furthermore, many pertinent but unresolved clinical and medical systems issues do not seem to have attracted the interest of the research enterprise, which has come to focus instead on cellular and molecular investigations and single-agent (e.g., a drug or device) effects. For clinicians, the end result is a bit of a "data desert" when it comes to making decisions. The new research infrastructure proposed in this book will help the medical profession to make ethically sound and well informed decisions for their patients.

Parliamentary Debates (Hansard).

Springer

The Internet of Things (IoT) networks have revolutionized the world and have innumerable real-time applications on automation. A few examples include driverless cars, remote monitoring of the elderly, remote order of tea or coffee of your choice from a vending machine, and home/industrial automation amongst others. Fundamentals of Internet of Things build the foundations of IoT networks by leveraging the relevant concepts from signal processing, communications, networks, and machine learning. The book covers two fundamental components of IoT networks, namely, the Internet and Things. In particular, the book focuses on networking concepts, protocols, clustering, data fusion, localization, energy harvesting, control optimization, data analytics, fog computing, privacy, and security including elliptic curve cryptography and blockchain technology. Most of the existing books are theoretical and without many mathematical details and examples. In addition, some essential topics of the IoT networks are also missing in the existing books. Features: • The

book covers cutting-edge research topics • Provides mathematical understanding of the topics in addition to relevant theory and insights • Includes illustrations with hand-solved numerical examples for visualization of the theory and testing of understanding • Lucid and crisp explanation to lessen the study time of the reader The book is a complete package of the fundamentals of IoT networks and is suitable for graduate-level students and researchers who want to dive into the world of IoT networks.

The Electrical Review

Peterson's

This book discusses some research results for CMOS-compatible silicon-based optical devices and interconnections. With accurate simulation and experimental demonstration, it provides insights on silicon-based modulation, advanced multiplexing, polarization and efficient coupling controlling technologies, which are widely used in silicon photonics. Researchers, scientists, engineers and especially students in the field of silicon photonics can benefit from the book. This book provides valuable knowledge, useful methods and practical design that can be considered in emerging silicon-based optical interconnections and communications. And it also give some guidance to student how to organize and complete an good dissertation.

The Athenaeum

CRC Press

The 1950s was a pivotal period in Australia's and Queensland's history. The previous decade had endured world-wide war, while the 1960s were to see man land on the moon, the coming of computers, and the beginning of the sexual revolution. The intervening years bridged the gap between these decades and laid the groundwork for the far-reaching social changes to come. In this book Graham Smith describes living through the 1950s as he takes the reader with him on a journey from primary school, through high school and on to university. On the one hand, it was the time of National Service in the armed forces when young men grew up quickly and, on the other, of university parades and pranks when student humour cast a keen eye on society's foibles, all against the backdrop of political turmoil. The author's camera was his constant companion during this period and the book includes many contemporary photographs not previously published.

Graduate Programs in Engineering & Applied Sciences 2015 (Grad 5)

This book provides readers with a comprehensive treatment of the principles,

circuit design techniques, and applications of injection-locking in mixed-mode signal processing, with an emphasis on CMOS implementation. Major topics include: An overview of injection-locking, the principle of injection-locking in harmonic and non-harmonic oscillators, lock range enhancement techniques for harmonic oscillators, lock range enhancement techniques for non-harmonic oscillators, and the emerging applications of injection-locking in mixed-mode signal processing. Provides a single-source reference to the principles, circuit design techniques, and applications of injection-locking in mixed-mode signal processing; Includes a rich collection of design techniques for increasing the lock range of oscillators under injection, along with in-depth examination of the pros and cons of these methods; Enables a broad range of applications, such as passive wireless microsystems, forwarded-clock parallel data links, frequency synthesizers for wireless and wireline communications, and low phase noise phase-locked loops.

Antenna and Sensor Technologies in Modern Medical Applications

The Yearbook of International Organizations provides the most extensive coverage of non-profit international organizations currently available. Detailed profiles of international non-governmental (NGO) and intergovernmental organizations (IGO), collected and documented by the Union of International Associations, can be found here. In addition to the history, aims and activities of international organizations, with their events, publications, and contact details, the volumes of the Yearbook include networks between associations, biographies of key people involved and extensive statistical data. Volume 1 (A and B) covers international organizations throughout the world, comprising their aims, activities and events. This includes names (in English, French and, where available, other languages), abbreviations and descriptions of over 34,000 not-for-profit organizations currently active in every field of human endeavor, as well as references to associated organizations, whose goals cross all economic, political and geographical borders, offering an insight into new, productive relationships. Volume 1 also allows quick and easy cross-referencing from volumes 2, 3, 4, and 6.