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"Sleep is one of the most important but least understood aspects of our life, wellness, and longevity ... An explosion of scientific discoveries in the last twenty years has shed new light on this fundamental aspect of our lives. Now ... neuroscientist and sleep expert Matthew Walker gives us a new understanding of the vital importance of sleep and dreaming"--Amazon.com.

Unlock deeper insights into Machine Learning with this vital guide to cutting-edge predictive analytics About This Book Leverage Python's most powerful open-source libraries for deep learning, data wrangling, and data visualization Learn effective strategies and best practices to improve and optimize machine learning systems and algorithms Ask – and answer – tough questions of your data with robust statistical models, built for a range of datasets Who This Book Is For If you want to find out how to use Python to start answering critical questions of your data, pick up Python Machine Learning – whether you want to get started from scratch or want to extend your data science knowledge, this is an essential and unmissable resource. What You Will Learn Explore how to use different machine

learning models to ask different questions of your data Learn how to build neural networks using Keras and Theano Find out how to write clean and elegant Python code that will optimize the strength of your algorithms Discover how to embed your machine learning model in a web application for increased accessibility Predict continuous target outcomes using regression analysis Uncover hidden patterns and structures in data with clustering Organize data using effective pre-processing techniques Get to grips with sentiment analysis to delve deeper into textual and social media data In Detail Machine learning and predictive analytics are transforming the way businesses and other organizations operate. Being able to understand trends and patterns in complex data is critical to success, becoming one of the key strategies for unlocking growth in a challenging contemporary marketplace. Python can help you deliver key insights into your data – its unique capabilities as a language let you build sophisticated algorithms and statistical models that can reveal new perspectives and answer key questions that are vital for success. Python Machine Learning gives you access to the world of predictive analytics and demonstrates why Python is one of the world's leading data science languages. If you want to ask better questions of data, or need to improve and extend the capabilities of your machine learning systems, this practical data science book is invaluable. Covering a wide range of

powerful Python libraries, including scikit-learn, Theano, and Keras, and featuring guidance and tips on everything from sentiment analysis to neural networks, you'll soon be able to answer some of the most important questions facing you and your organization. Style and approach Python Machine Learning connects the fundamental theoretical principles behind machine learning to their practical application in a way that focuses you on asking and answering the right questions. It walks you through the key elements of Python and its powerful machine learning libraries, while demonstrating how to get to grips with a range of statistical models.

Investigators, their home institutions, and funding agencies play significant roles in the development and outcomes of scientific projects. Submitting a proposal to a funding agency is only one dimension of a multivariable and complex funding process, and understanding this is a good first step toward unlocking the puzzle behind why some research proposals receive awards while others are declined. The Handbook of Scientific Proposal Writing offers researchers and research administrators a broad perspective on the process of initiating and conducting funded scientific research projects. Written for students and researchers in all fields and disciplines, this reference offers a holistic approach to conceiving and then converting new ideas into effective proposals. It focuses on the technical

aspects of writing proposals rather than the fund-raising issues. Chapters provide full coverage of the scientific method, including information on how scientific research should be conducted. Providing the tools necessary to organize ideas and obtain the funds needed to effectively manage projects, the Handbook of Scientific Proposal Writing includes: 56 figures and 25 tables to help convey key ideas More than 150 citations that provide pointers to additional sources for further reading Examples to help the reader ease through more abstract concepts End-of-chapter questions to stimulate further examination and comprehension

This book discusses the role electricity plays in sustaining and improving the quality of life. The author elucidates the numerous approaches to estimating value, including electricity's contribution toward the U.S. Gross Domestic Product, its role in medicine, and its ability to power communications. Traditional measures such the cost of outages, the impact of storms, the cost of restoring power systems after storms, the Value of Lost Load (VOLL), consumer Willingness to Pay (WTP) to avoid outages, and consumer surveys are covered extensively. In addition, the book speculates on life without electricity and how society may have evolved without it.

This book is a summary of a series of achievements made by the authors and

colleagues in the areas of radio frequency power amplifier modeling (including neural Volterra series modeling, neural network modeling, X-parameter modeling), nonlinear analysis methods, and power amplifier predistortion technology over the past 10 years. The book is organized into ten chapters, which respectively describe an overview of research of power amplifier behavioral models and predistortion technology, nonlinear characteristics of power amplifiers, power amplifier behavioral models and the basis of nonlinear analysis, an overview of power amplifier predistortion, Volterra series modeling of power amplifiers, power amplifier modeling based on neural networks, power amplifier modeling with X-parameters, the modeling of other power amplifiers, nonlinear circuit analysis methods, and predistortion algorithms and applications. Blending theory with analysis, this book will provide researchers and RF/microwave engineering students with a valuable resource.

The 3rd International Conference on Foundations and Frontiers in Computer, Communication and Electrical Engineering is a notable event which brings together academia, researchers, engineers and students in the fields of Electronics and Communication, Computer and Electrical Engineering making the conference a perfect platform to share experience, foster collaborations across industry and academia, and evaluate emerging technologies across the

globe. The conference is technically co-sponsored by IEEE Kolkata Section along with several IEEE chapters, Kolkata Section such as Electron Devices Society, Power and Energy Society, Dielectrics and Electrical Insulation Society, Computer Society, and in association with CSIR-CEERI, Pilani, Rajasthan. The scope of the conference covers some broad areas of interest (but not limited to) such as Satellite and Mobile Communication Systems, Radar, Antennas, High Power Microwave Systems (HPMS), Electronic Warfare, Information Warfare, UWB systems, Microwave and Optical Communications, Microwave and Millimetre-Wave Tubes, Photonics, Plasma Devices, Missile Tracking and Guided systems, High voltage engineering, Electrical Machines, Power Systems, Control Systems, Non-Conventional Energy, Power Electronics and Drives, Machine Learning and Artificial Intelligence, Networking, Image Processing, Soft Computing, Cloud Computing, Data Mining & Data warehousing, etc.

The 14 International Conference on Knowledge-Based and Intelligent Information and Engineering Systems was held during September 8–10, 2010 in Cardiff, UK. The conference was organized by the School of Engineering at Cardiff University, UK and KES International. KES2010 provided an international scientific forum for the presentation of the - sults of high-quality research on a broad range of intelligent systems topics. The c- ference attracted over 360

submissions from 42 countries and 6 continents: Argentina, Australia, Belgium, Brazil, Bulgaria, Canada, Chile, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong ROC, Hungary, India, Iran, Ireland, Israel, Italy, Japan, Korea, Malaysia, Mexico, The Netherlands, New Zealand, Pakistan, Poland, Romania, Singapore, Slovenia, Spain, Sweden, Syria, Taiwan, - nisia, Turkey, UK, USA and Vietnam. The conference consisted of 6 keynote talks, 11 general tracks and 29 invited s- sions and workshops, on the applications and theory of intelligent systems and related areas. The distinguished keynote speakers were Christopher Bishop, UK, Nikola - sabov, New Zealand, Saeid Nahavandi, Australia, Tetsuo Sawaragi, Japan, Yuzuru Tanaka, Japan and Roger Whitaker, UK. Over 240 oral and poster presentations provided excellent opportunities for the presentation of interesting new research results and discussion about them, leading to knowledge transfer and generation of new ideas. Extended versions of selected papers were considered for publication in the Int- national Journal of Knowledge-Based and Intelligent Engineering Systems, Engine- ing Applications of Artificial Intelligence, Journal of Intelligent Manufacturing, and Neural Computing and Applications. This book examines the use of biomedical signal processing—EEG, EMG, and ECG—in analyzing and diagnosing various medical conditions, particularly

diseases related to the heart and brain. In combination with machine learning tools and other optimization methods, the analysis of biomedical signals greatly benefits the healthcare sector by improving patient outcomes through early, reliable detection. The discussion of these modalities promotes better understanding, analysis, and application of biomedical signal processing for specific diseases. The major highlights of Biomedical Signal Processing for Healthcare Applications include biomedical signals, acquisition of signals, pre-processing and analysis, post-processing and classification of the signals, and application of analysis and classification for the diagnosis of brain- and heart-related diseases. Emphasis is given to brain and heart signals because incomplete interpretations are made by physicians of these aspects in several situations, and these partial interpretations lead to major complications.

FEATURES Examines modeling and acquisition of biomedical signals of different disorders Discusses CAD-based analysis of diagnosis useful for healthcare Includes all important modalities of biomedical signals, such as EEG, EMG, MEG, ECG, and PCG Includes case studies and research directions, including novel approaches used in advanced healthcare systems This book can be used by a wide range of users, including students, research scholars, faculty, and practitioners in the field of biomedical engineering and medical image analysis

and diagnosis.

Traditionally, power engineering has been a subfield of energy engineering and electrical engineering which deals with the generation, transmission, distribution and utilization of electric power and the electrical devices connected to such systems including generators, motors and transformers. Implicitly this perception is associated with the generation of power in large hydraulic, thermal and nuclear plants and distributed consumption. Faced with the climate change phenomena, humanity has had to now contend with changes in attitudes in respect of environment protection and depletion of classical energy resources. These have had consequences in the power production sector, already faced with negative public opinions on nuclear energy and favorable perception of renewable energy resources and about distributed power generation. The objective of this edited book is to review all these changes and to present solutions for future power generation. Future energy systems must factor in the changes and developments in technology like improvements of natural gas combined cycles and clean coal technologies, carbon dioxide capture and storage, advancements in nuclear reactors and hydropower, renewable energy engineering, power-to-gas conversion and fuel cells, energy crops, new energy vectors biomass-hydrogen, thermal energy storage, new storage systems diffusion, modern substations, high

voltage engineering equipment and compatibility, HVDC transmission with FACTS, advanced optimization in a liberalized market environment, active grids and smart grids, power system resilience, power quality and cost of supply, plug-in electric vehicles, smart metering, control and communication technologies, new key actors as prosumers, smart cities. The emerging research will enhance the security of energy systems, safety in operation, protection of environment, improve energy efficiency, reliability and sustainability. The book reviews current literature in the advances, innovative options and solutions in power engineering. It has been written for researchers, engineers, technicians and graduate and doctorate students interested in power engineering.

Electricity and Electronics Fundamentals, Second Edition CRC Press

The CRC Principles and Applications in Engineering series is a library of convenient, economical references sharply focused on particular engineering topics and subspecialties. Each volume in the series comprises chapters carefully selected from CRC's bestselling handbooks, logically organized for optimum convenience, and thoughtfully priced to fit

An edition expanded with more than 100 pages of new content offers a blueprint for a better life, whether one's dream is escaping the rat race, experiencing high-end world travel, earning a monthly five-figure income with zero management or

just living more and working less.

This practical resource introduces electrical and electronic principles and technology covering theory through detailed examples, enabling students to develop a sound understanding of the knowledge required by technicians in fields such as electrical engineering, electronics and telecommunications. No previous background in engineering is assumed, making this an ideal text for vocational courses at Levels 2 and 3, foundation degrees and introductory courses for undergraduates.

Telecommunication companies deliver digital bits to the customers for a fee. There are two kinds of bits: "fast and faster dumb bits" which is capital intensive with low margins, and "intelligent bits" with additional content component and with higher margin. Traditional Communication Service Providers (CSPs) have gone through transformation after transformation over the past several decades. All past transformations have had one thing in common, that is the delivery of faster dumb bits, leveraging the technology evolution from analog to digital, to wireless, to IP. The next wave of transformations will be very different, we call it extreme transformation, in that the CSPs have to become a Digital Service Provider (DSP) to stay relevant. In the DSP world, with billions of sensors and IoT devices, digital lifestyle will be enabled by data mining and analytics, leading

to decision making, and entertainment. The extreme transformation from a CSP to a DSP status is covered in this book, specifically: Redefinition of the offerings of "connectivity services" to "digital services"; unification of legacy redundant networks into one; Redefinition of the measurements to customer-centric QoE for all digital and connectivity services; the Best-in-Industry processes and practices to ensure a sustainable network performance at a competitively operational efficiency; a Service-over-IP (SoIP) platform to enable the introduction of unified new services with a time-to-market urgency; the regulatory arrangement for content purification, to liberalize CSPs to become DSPs; an architecture for data mining and analytics; and a migration plan from a CSP to a DSP status. The book is recommended for telecom and digital service professionals planning to embark on transformational projects; telecom and technology equipment manufacturers to help with product development for a DSP status; institutional investors to evaluate and establish their investment decisions; telecom management consultants to help with a solid benchmark for transformation engagement; university students, majoring in telecommunication and technology products as a guide for career planning.

Decisive potential in business is a question of process capability, rather than production capability. Process capability in business requires real-time systems

for optimization. Business-IT needs to be developed from telecommunications and ERP to real-time services, which are not offered by the prevailing ERP systems. This book shows how modern information technology Manufacturing Execution Systems (MES) becomes the prerequisite for process capability of the company on the basis of many practical examples. It describes the requirements for optimized MES. It gives an overview of the efficiency potentials and different applications of MES.

Real-world engineering problems are rarely, if ever, neatly divided into mechanical, electrical, chemical, civil, and other categories. Engineers from all disciplines eventually encounter computer and electronic controls and instrumentation, which require at least a basic knowledge of electrical and other engineering specialties, as well as associated economics, and environmental, political, and social issues. Co-authored by Charles Gross—one of the most well-known and respected professors in the field of electric machines and power engineering—and his world-renowned colleague Thad Roppel, *Fundamentals of Electrical Engineering* provides an overview of the profession for engineering professionals and students whose specialization lies in areas other than electrical. For instance, civil engineers must contend with commercial electrical service and lighting design issues. Mechanical engineers have to deal with

motors in HVAC applications, and chemical engineers are forced to handle problems involving process control. Simple and easy-to-use, yet more than sufficient in rigor and coverage of fundamental concepts, this resource teaches EE fundamentals but omits the typical analytical methods that hold little relevance for the audience. The authors provide many examples to illustrate concepts, as well as homework problems to help readers understand and apply presented material. In many cases, courses for non-electrical engineers, or non-EEs, have presented watered-down classical EE material, resulting in unpopular courses that students hate and senior faculty members understandingly avoid teaching. To remedy this situation—and create more well-rounded practitioners—the authors focus on the true EE needs of non-EEs, as determined through their own teaching experience, as well as significant input from non-EE faculty. The book provides several important contemporary interdisciplinary examples to support this approach. The result is a full-color modern narrative that bridges the various EE and non-EE curricula and serves as a truly relevant course that students and faculty can both enjoy.

The definitive M&E price book with additions to the measured works, updates to approximate estimating and new engineering features. Spon's Mechanical and Electrical Services Price Book 2022 continues to be the most comprehensive and

best annual services engineering price book currently available, providing detailed pricing information across the full range of mechanical and electrical services, together with higher-level costs for a diverse range of systems and different building applications. Use the access code inside the front cover of the book to get set up with an ebook of this 2022 edition available for access and use until the end of December 2022. All the standard features you have come to expect from SPON'S are also included, considered essential for today's services cost professional: detailed materials prices, labour constants, labour costs and measured work prices for mechanical and electrical works, from above ground drainage to automatic transfer switches, and circuit breakers to sprinkler systems an extensive Approximate Estimating section for quick, rule-of-thumb pricing of mechanical or electrical installations, together with elemental services costs for different types and standard of buildings full details of wage rates, daywork and cost indices on a national and Central London basis. an overhauled index and guidance notes updates, free of charge, twice a year – see inside for registration details. Updates are available online at www.pricebooks.co.uk

An introductory text, *Electricity and Electronics Fundamentals*, delineates key concepts in electricity using a simplified approach that enhances learning. Mathematical calculations are kept to the very minimum and concepts are demonstrated through application examples and

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illustrations. The books span of topics includes vital information on direct current electronics, alternating current electricity and semiconductor devices as well as electronic circuits, digital electronics, computers and microprocessors, electronic communications, and electronic power control. Supplementary appendices provide a glossary and section on electrical safety along with an explanation of soldering techniques.

Artificial Intelligence (AI) is undoubtedly playing an increasingly significant role in automobile technology. In fact, cars inhabit one of just a few domains where you will find many AI innovations packed into a single product. AI for Cars provides a brief guided tour through many different AI landscapes including robotics, image and speech processing, recommender systems and onto deep learning, all within the automobile world. From pedestrian detection to driver monitoring to recommendation engines, the book discusses the background, research and progress thousands of talented engineers and researchers have achieved thus far, and their plans to deploy this life-saving technology all over the world.

Media, Culture, and Debate in Korean provides a roadmap for an advanced-level Korean course centered around media and culture and includes access to an archive of virtual media resources such as film, documentary, shows, newspaper, drama, music, and advertising. The book is designed to help students enhance their language skills and to deepen their knowledge and understanding of contemporary Korean society and culture through the analysis of authentic Korean media resources and debate. It addresses the cultural issues permeating Korean society that are rapidly transforming people's perspectives, language, and lifestyle. These societal issues are discussed in the context of historical and psychological background, the struggle between tradition and changing values, positive and negative impact of the

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phenomenon, neologism, and potential solutions. This book can serve as a main textbook as well as a resource for an online class setting and can also be used in a traditional face-to-face class setting.

This comprehensive reference text discusses the fundamental concepts of artificial intelligence and its applications in a single volume. *Artificial Intelligence: Fundamentals and Applications* presents a detailed discussion of basic aspects and ethics in the field of artificial intelligence and its applications in areas, including electronic devices and systems, consumer electronics, automobile engineering, manufacturing, robotics and automation, agriculture, banking, and predictive analysis. Aimed at senior undergraduate and graduate students in the field of electrical engineering, electronics engineering, manufacturing engineering, pharmacy, and healthcare, this text: Discusses advances in artificial intelligence and its applications. Presents the predictive analysis and data analysis using artificial intelligence. Covers the algorithms and pseudo-codes for different domains. Discusses the latest development of artificial intelligence in the field of practical speech recognition, machine translation, autonomous vehicles, and household robotics. Covers the applications of artificial intelligence in fields, including pharmacy and healthcare, electronic devices and systems, manufacturing, consumer electronics, and robotics.

Written in easy-to-understand language with illustrative designs and examples, *Electronics Engineering* covers all aspects of electronics fundamentals. It begins with semiconductors and diodes, the simplest form of semiconductor device. It goes on to examine the bipolar junction transistor (BJT), field effect transistor (FET), operational amplifier (Op-Amp), switching theory and logic design (STLD), and electronics instruments. Each chapter provides a summary and a

series of questions for exercise purposes, helping readers to test their assimilation of the material.

The introduction of control theory in quantum mechanics has created a rich, new interdisciplinary scientific field, which is producing novel insight into important theoretical questions at the heart of quantum physics. Exploring this emerging subject, *Introduction to Quantum Control and Dynamics* presents the mathematical concepts and fundamental physics behind the analysis and control of quantum dynamics, emphasizing the application of Lie algebra and Lie group theory. To advantage students, instructors and practitioners, and since the field is highly interdisciplinary, this book presents an introduction with all the basic notions in the same place. The field has seen a large development in parallel with the neighboring fields of quantum information, computation and communication. The author has maintained an introductory level to encourage course use. After introducing the basics of quantum mechanics, the book derives a class of models for quantum control systems from fundamental physics. It examines the controllability and observability of quantum systems and the related problem of quantum state determination and measurement. The author also uses Lie group decompositions as tools to analyze dynamics and to design control algorithms. In addition, he describes various other control methods and discusses topics in quantum information theory that include entanglement and entanglement dynamics. Changes to the New Edition: New Chapter 4: Uncontrollable Systems and Dynamical Decomposition New section on quantum control landscapes A brief discussion of the experiments that earned the 2012 Nobel Prize in Physics Corrections and revised concepts are made to improve accuracy Armed with the basics of quantum control and dynamics, readers will invariably use this interdisciplinary

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knowledge in their mathematics, physics and engineering work.

Pocket Book of Electrical Engineering Formulas provides key formulas used in practically all areas of electrical engineering and applied mathematics. This handy, pocket-sized guide has been organized by topic field to make finding information quick and easy. The book features an extensive index and is an excellent quick reference for electrical engineers, educators, and students.

Covering the fundamental theory of electric power transformers, this book provides the background required to understand the basic operation of electromagnetic induction as applied to transformers. The book is divided into three fundamental groupings: one stand-alone chapter is devoted to Theory and Principles, nine chapters individually treat major Unfriendly to conventional electronic devices, circuits, and systems, extreme environments represent a serious challenge to designers and mission architects. The first truly comprehensive guide to this specialized field, Extreme Environment Electronics explains the essential aspects of designing and using devices, circuits, and electronic systems intended to operate in extreme environments, including across wide temperature ranges and in radiation-intensive scenarios such as space. The Definitive Guide to Extreme Environment Electronics Featuring contributions by some of the world's foremost experts in extreme environment electronics, the book provides in-depth information on a wide array of topics. It begins by describing the extreme conditions and then delves into a description of suitable semiconductor technologies and the modeling of devices within those technologies. It also discusses reliability issues and failure mechanisms that readers need to be aware of, as well as best practices for the design of these electronics. Continuing beyond just the "paper design" of building blocks,

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the book rounds out coverage of the design realization process with verification techniques and chapters on electronic packaging for extreme environments. The final set of chapters describes actual chip-level designs for applications in energy and space exploration. Requiring only a basic background in electronics, the book combines theoretical and practical aspects in each self-contained chapter. Appendices supply additional background material. With its broad coverage and depth, and the expertise of the contributing authors, this is an invaluable reference for engineers, scientists, and technical managers, as well as researchers and graduate students. A hands-on resource, it explores what is required to successfully operate electronics in the most demanding conditions.

This study of electromagnetic theory introduces students to a broad range of quantities and concepts, imparting the necessary vector analysis and associated mathematics and reinforcing its teachings with several elementary field problems. Based on circuit theory rather than on the classical force-relationship approach, the text uses the theory of electric circuits to provide a system of experiments already familiar to the electrical engineer; a series of field concepts are then introduced as a logical extension of circuit theory. Virtually unobtainable elsewhere, this text was written by a prominent professor whose recognition includes the prestigious IEEE Electromagnetics Award. It is appropriate for advanced undergraduate and graduate students with a background in calculus and circuit theory. 176 Figures. 9 Tables.

Far from being separate entities, many social and engineering systems can be considered as complex network systems (CNSs) associated with closely linked interactions with neighbouring entities such as the Internet and power grids. Roughly speaking, a CNS refers to a networking system consisting of lots of interactional individuals, exhibiting fascinating collective behaviour that cannot always be anticipated from the inherent properties of the individuals themselves. As one of the most fundamental examples of cooperative behaviour, consensus within CNSs (or the synchronization of complex networks) has gained considerable attention from various fields of research, including systems science, control theory and electrical engineering. This book mainly studies consensus of CNSs with dynamics topologies - unlike most existing books that have focused on consensus control and analysis for CNSs under a fixed topology. As most practical networks have limited communication ability, switching graphs can be used to characterize real-world communication topologies, leading to a wider range of practical applications. This book provides some novel multiple Lyapunov functions (MLFs), good candidates for analysing the consensus of CNSs with directed switching topologies, while each chapter provides detailed theoretical analyses according to the stability theory of switched systems. Moreover, numerical simulations are provided to validate the theoretical results. Both

professional researchers and laypeople will benefit from this book.

This classic work of science fiction is widely considered to be the ultimate time-travel novel. When Daniel Eakins inherits a time machine, he soon realizes that he has enormous power to shape the course of history. He can foil terrorists, prevent assassinations, or just make some fast money at the racetrack. And if he doesn't like the results of the change, he can simply go back in time and talk himself out of making it! But Dan soon finds that there are limits to his powers and forces beyond his control.

This book is about general and specific areas involved in electrical and electronics engineering which comprises broad subjects such as MEMS and Microfluidics, VLSI, Communication and Signal Processing. This book discusses the recent trends in various aspects of research areas for diverse applications like biomedical, biochemical, and power source systems. It also discusses modelling, simulating, and prototyping of the different electronic-based systems for carrying out varied applications. With this book, the readers will understand the multiplatform fundamentals guiding electrical and biomedical devices that form the current features such as automation, integration, and miniaturization of a particular device. This book showcases a unique platform as it covers the different areas of research in this trending era as a benchmark. This book is a

link between the electronics and cutting-edge technologies that are being used for numerous applications representing the physical and virtual developments of electronic devices. Therefore, this book will mostly uphold the innovation and originality involved in the development of miniaturized devices, and proposing new methods, emphasizing with different areas of electrical and electronics engineering. This book entitles various approaches involved in electrical, biomedical, and electronics for modern distribution of research strategies and covers the state-of-art research themes. These include signal sensing, signal simulators, 3D printing technology, power systems, data acquisition systems, instrumentation, electrochemical sensing, electromechanical measurements, and signal analysis. The book will provide the academic perspectives of the cutting-edge R&D outputs from the faculty members and Ph.D. students, amalgamating the newer cross-dimensional areas, such as cyber-physical systems, nanoelectronics, smart-sensors, point-of-need devices, etc. The book will become a benchmark to the readers to understand the academic aspect of the contemporary work and the way forward on how this will lead to help the society-at-large.

Most traditional power systems textbooks focus on high-voltage transmission. However, the majority of power engineers work in urban factories, buildings, or

industries where power comes from utility companies or is self-generated. Introduction to Electrical Power and Power Electronics is the first book of its kind to cover the entire scope of electrical power and power electronics systems in one volume—with a focus on topics that are directly relevant in power engineers' daily work. Learn How Electrical Power Is Generated, Distributed, and Utilized Composed of 17 chapters, the book is organized into two parts. The first part introduces aspects of electrical power that most power engineers are involved in during their careers, including the distribution of power to load equipment such as motors via step-down transformers, cables, circuit breakers, relays, and fuses. For engineers working with standalone power plants, it also tackles generators. The book discusses how to design and operate systems for economic use of power and covers the use of batteries in greater depth than typically found in traditional power system texts. Understand How Power Electronics Work in Modern Systems The second part delves into power electronics switches, as well as the DC–DC converters, AC–DC–AC converters, and frequency converters used in variable-frequency motor drives. It also discusses quality-of-power issues in modern power systems with many large power electronics loads. A chapter on power converter cooling presents important interdisciplinary design topics. Draw on the Author's Extensive Industry and Teaching Experience This timely book

draws on the author's 30 years of work experience at General Electric, Lockheed Martin, and Westinghouse Electric and 15 years of teaching electrical power at the U.S. Merchant Marine Academy. Designed for a one-semester or two-quarter course in electrical power and power electronics, it is also ideal for a refresher course or as a one-stop reference for industry professionals.

Providing an introduction to good engineering practice for electrical and electronic engineers, this book is intended for first- and second-year undergraduate courses. It deals with engineering practice in relation to important topics such as reliability and maintainability, heat management and parasitic electrical effects, environmental influences, testing and safety. The coverage encompasses the properties, behaviour, fabrication and use of materials and components used in the fields of computing, digital systems, instrumentation, and control. The second edition has been revised extensively to reflect advances in technology, with new material on insulation-displacement jointing and electrical-safety testing.

A quick scan of any bookstore, library, or online bookseller will produce a multitude of books covering power systems. However, few, if any, are totally devoted to power distribution engineering, and none of them are true textbooks. Filling this vacuum in the power system engineering literature, the first edition of

Electric Power Distribution System Engineering broke new ground. Written in the classic, self-learning style of the first edition, this second edition contains updated coverage, new examples, and numerous examples of MATLAB applications. Designed specifically for junior- or senior-level electrical engineering courses, the author draws on his more than 31 years of experience to provide a text that is as attractive to students as it is useful to professors and practicing engineers. The book covers all aspects of distribution engineering from basic system planning and concepts through distribution system protection and reliability. The author brings to the table years of experience and, using this as a foundation, demonstrates how to design, analyze, and perform modern distribution system engineering. He takes special care to cover industry terms and symbols, providing a glossary and clearly defining each term when it is introduced. The discussion of distribution planning and design considerations goes beyond the usual analytical and qualitative analysis and emphasizes the economical explication and overall impact of the distribution design considerations discussed. See what's new in the Second Edition: Topics such as automation of distribution systems, advanced SCADA systems, computer applications, substation grounding, lightning protection, and insulators Chapter on electric power quality New examples and MATLAB applications Substation grounding Lightning

protection Insulators Expanded topics include: Load forecasting techniques High-impedance faults A detailed review of distribution reliability indices Watch Turan Gonen talk about his book at: <http://youtu.be/OZBd2diBzgk>

Coal-Fired Electricity and Emissions Control: Efficiency and Effectiveness discusses the relationship between efficiency and emissions management, providing methods for reducing emissions in newer and older plants as coal-fired powered plants are facing increasing new emission control standards. The book presents the environmental forces driving technology development for coal-fired electricity generation, then covers other topics, such as cyclone firing, supercritical boilers, fabric filter technology, acid gas control technology and clean coal technologies. The book relates efficiency and environmental considerations, particularly from a technology development perspective. Features time tested methods for achieving optimal emission control through efficiency for environmental protection, including reducing the carbon footprint Covers the regulations governing coal-fired electricity Highlights the development of the coal-fired technologies through regulatory change

With the advent of High Temperature Superconductivity and the increasing reliability of fabrication techniques, superconductor technology has moved firmly into the mainstream of academic and industrial research. There is currently no

single source of practical information giving guidance on which technique to use for any particular category of superconductor. An increasing number of materials scientists and electrical engineers require easy access to practical information, sensible advice and guidance on 'best-practice' and reliable, proven fabrication and characterisation techniques. The Handbook will be the definitive collection of material describing techniques for the fabrication and analysis of superconducting materials. In addition to the descriptions of techniques, authoritative discussions written by leading researchers will give guidance on the most appropriate technique for a particular situation. Characterisation and measurement techniques will form an important part of the Handbook, providing researchers with a standard reference for experimental techniques. The tutorial style description of these techniques makes the Handbook particularly suitable for use by graduate students. The Handbook will be supported by a comprehensive web site which will be updated with new data as it emerges. The Handbook has six main sections: -- Fundamentals of Superconductivity - characteristic properties, elementary theory, critical current of type II superconductors-- Processing - bulk materials, wires and tapes, thick and thin films, contact techniques-- Characterisation Techniques - structure/microstructure, measurement and interpretation of electromagnetic

properties, measurement of physics properties-- Materials - characteristic properties of low and high T_c materials-- Applications - high current applications, trapped flux devices, high frequency devices, Josephson junction device

Many, in their quest for knowledge in engineering, find typical textbooks intimidating. Perhaps due to an extensive amount of physics theory, an overwhelming barrage of math, and not enough practical application of the engineering principles, laws, and equations. Therein lies the difference between this text and those voluminous and daunting conventional university engineering textbooks. This text leads the reader into more complex and abstract content after explaining the electrical engineering concepts and principles in an easy to understand fashion, supported by analogies borrowed from day-to-day examples and other engineering disciplines. Many complex electrical engineering concepts, for example, power factor, are examined from multiple perspectives, aided by diagrams, illustrations, and examples that the reader can easily relate to. Throughout this book, the reader will gain a clear and strong grasp of electrical engineering fundamentals, and a better understanding of electrical engineering terms, concepts, principles, laws, analytical techniques, solution strategies, and computational techniques. The reader will also develop the ability to communicate with professional electrical engineers, controls engineers, and electricians on their "wavelength" with greater confidence. Study of this book can help develop skills and preparation necessary for succeeding in the electrical engineering portion of various

certification and licensure exams, including Fundamentals of Engineering (FE), Professional Engineering (PE), Certified Energy Manager (CEM), and many other trade certification tests. This text can serve as a compact and simplified electrical engineering desk reference. This book provides a brief introduction to the NEC®, the Arc-Flash Code, and a better understanding of electrical energy and associated cost. If you need to gain a better understanding of myriad battery alternatives available in the market, their strengths and weaknesses, and how batteries compare with capacitors as energy storage devices, this book can be a starting point. This book is ideal for engineers, engineering students, facility managers, engineering managers, program/project managers, and other executives who do not possess a current working knowledge of electrical engineering. Because of the simple explanations, analogies, and practical examples employed by the author, this book serves as an excellent learning tool for non-engineers, technical writers, attorneys, electrical sales professionals, energy professionals, electrical equipment procurement agents, construction managers, facility managers, and maintenance managers.

Electric circuits, and their electronic circuit extensions, are found in all electrical and electronic equipment; including: household equipment, lighting, heating, air conditioning, control systems in both homes and commercial buildings, computers, consumer electronics, and means of transportation, such as cars, buses, trains, ships, and airplanes. Electric circuit analysis is essential for designing all these systems.

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Electric circuit analysis is a foundation for all hardware courses taken by students in electrical engineering and allied fields, such as electronics, computer hardware, communications and control systems, and electric power. This book is intended to help students master basic electric circuit analysis, as an essential component of their professional education. Furthermore, the objective of this book is to approach circuit analysis by developing a sound understanding of fundamentals and a problem-solving methodology that encourages critical thinking.

A Practical Introduction to Enterprise Network and Security Management, Second Edition, provides a balanced understanding of introductory and advanced subjects in both computer networking and cybersecurity. Although much of the focus is on technical concepts, managerial issues related to enterprise network and security planning and design are explained from a practitioner's perspective. Because of the critical importance of cybersecurity in today's enterprise networks, security-related issues are explained throughout the book, and four chapters are dedicated to fundamental knowledge. Challenging concepts are explained so readers can follow through with careful reading. This book is written for those who are self-studying or studying information systems or computer science in a classroom setting. If used for a course, it has enough material for a semester or a quarter. FEATURES Provides both theoretical and practical hands-on knowledge and learning experiences for computer networking and cybersecurity Offers a solid knowledge base for those preparing for

certificate tests, such as CompTIA and CISSP Takes advantage of actual cases, examples, industry products, and services so students can relate concepts and theories to practice Explains subjects in a systematic and practical manner to facilitate understanding Includes practical exercise questions that can be individual or group assignments within or without a classroom Contains several information-rich screenshots, figures, and tables carefully constructed to solidify concepts and enhance visual learning The text is designed for students studying information systems or computer science for the first time. As a textbook, this book includes hands-on assignments based on the Packet Tracer program, an excellent network design and simulation tool from Cisco. Instructor materials also are provided, including PowerPoint slides, solutions for exercise questions, and additional chapter questions from which to build tests.

This book focuses on latent heat storage, which is one of the most efficient ways of storing thermal energy. Unlike the sensible heat storage method, the latent heat storage method provides much higher storage density with a smaller difference between storing and releasing temperatures. Thermal Energy Storage with Phase Change Materials is structured into four chapters that cover many aspects of thermal energy storage and their practical applications. Chapter 1 reviews selection, performance, and applications of phase change materials. Chapter 2 investigates mathematical analyses of phase change processes. Chapters 3 and 4 present passive

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and active applications for energy saving, peak load shifting, and price-based control heating using phase change materials. These chapters explore the hot topic of energy saving in an overarching way, and so they are relevant to all courses. This book is an ideal research reference for students at the postgraduate level. It also serves as a useful reference for electrical, mechanical, and chemical engineers and students throughout their work. FEATURES Explains the technical principles of thermal energy storage, including materials and applications in different classifications Provides fundamental calculations of heat transfer with phase change Discusses the benefits and limitations of different types of phase change materials (PCM) in both micro- and macroencapsulations Reviews the mechanisms and applications of available thermal energy storage systems Introduces innovative solutions in hot and cold storage applications

From three design partners at Google Ventures, a unique five-day process--called the sprint--for solving tough problems using design, prototyping, and testing ideas with customers.

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