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Power System Control and Stability

John Wiley & Sons **The third edition of the landmark book on power system stability and control, revised and updated with new material The revised third edition of Power System Control and Stability continues to offer a comprehensive text on the fundamental principles and concepts of power system stability and control as well as new material on the latest developments in the field. The third edition offers a revised overview of power system stability and a section that explores the industry convention of q axis leading d axis in modeling of synchronous machines. In addition, the third edition focuses on simulations that utilize digital computers and commercial simulation tools, it offers an introduction to the concepts of the stability analysis of linear systems together with a detailed formulation of the system state matrix. The authors also include a revised chapter that explores both implicit and explicit integration methods for transient stability. Power System Control and Stability offers an in-depth review of essential topics and: Discusses topics of contemporary and future relevance in terms of modeling, analysis and control Maintains the approach, style, and analytical rigor of the two original editions Addresses both power system planning and operational issues in power system control and stability Includes updated information and new chapters on modeling and simulation of round-rotor synchronous machine model, excitation control, renewable energy resources such as wind turbine generators and solar photovoltaics, load modeling, transient voltage instability, modeling and representation of three widely used FACTS devices in the bulk transmission network, and the modeling and representation of appropriate protection functions in transient stability studies Contains a set of challenging problems at the end of each chapter Written for graduate students in electric power and professional power system engineers, Power System Control and Stability offers an invaluable reference to basic principles and incorporates the most recent techniques and methods into projects.**

Electric Power Engineering Research and Education

A festschrift for Gerald T. Heydt

Springer **This unique volume covers the most compelling areas of advance in electric power engineering, from distributed generation and dispatch to power quality improvement and energy storage. The authors particularly highlight the seminal contributions of Dr. Gerald T. Heydt in the development and teaching of these technological advances, which have impacted the power industry and academia over the last 4 decades in areas such as transmission and distribution engineering, power engineering education, and centers for power engineering research.**

Future of solar photovoltaic

International Renewable Energy Agency (IRENA) **This study presents options to fully unlock the world's vast solar PV potential over the period until 2050. It builds on IRENA's global roadmap to scale up renewables and meet climate goals.**

Assessing Risk to the National Critical Functions as a Result of Climate Change

Rand Corporation **National Critical Functions (NCFs) are government and private-sector functions so vital that their disruption would debilitate security, the economy, public health, or safety. Researchers developed a risk management framework to assess and manage the risk that climate change poses to the NCFs and use the framework to assess 27 priority NCFs. This report details the risk assessment portions of the framework.**

Power System Control and Stability

Power Systems Analysis

Pearson Education India

Electric Power Systems

A Conceptual Introduction

John Wiley & Sons **A clear explanation of the technology for producing and delivering electricity Electric Power Systems explains and illustrates how the electric grid works in a clear, straightforward style that makes highly technical material accessible. It begins with a thorough discussion of the underlying physical concepts of electricity, circuits, and complex power that serves as a foundation for more advanced material. Readers are then introduced to the main components of electric power systems, including generators, motors and other appliances, and transmission and distribution equipment such as power lines, transformers, and circuit breakers. The author explains how a whole power system is managed and coordinated, analyzed mathematically, and kept stable and reliable. Recognizing the economic and environmental implications of electric energy production and public concern over disruptions of service, this book exposes the challenges of producing and delivering electricity to help inform public policy decisions. Its discussions of complex concepts such as reactive power balance, load flow, and stability analysis, for example, offer deep insight into the complexity of electric grid operation and demonstrate how and why physics constrains economics and politics. Although this survival guide includes mathematical equations and formulas, it discusses their meaning in plain English and does not assume any prior familiarity with particular notations or technical jargon. Additional features include: * A glossary of symbols, units, abbreviations, and acronyms * Illustrations that help readers visualize processes and better understand complex concepts * Detailed analysis of a case study, including a Web reference to the case, enabling readers to test the consequences of manipulating various parameters With its clear discussion of how electric grids work, Electric Power Systems is appropriate for a broad readership of professionals, undergraduate and graduate students, government agency managers, environmental advocates, and consumers.**

Proceedings of Integrated Intelligence Enable Networks and Computing

IIENC 2020

Springer Nature **This book presents best selected research papers presented at the First International Conference on Integrated Intelligence Enable Networks and Computing (IIENC 2020), held from May 25 to May 27, 2020, at the Institute of Technology, Gopeshwar, India (Government Institute of Uttarakhand Government and affiliated to Uttarakhand Technical University). The book includes papers in the field of intelligent computing. The book covers the areas of machine learning and robotics, signal processing and Internet of things, big data and renewable energy sources.**

Power System Analysis

John Wiley & Sons Incorporated **Provides a basic comprehensive treatment of the major electrical engineering problems associated with the design and operation of electric power systems. The major components of the power system are modeled in terms of their sequence (symmetrical component) equivalent circuits. Reviews power flow, fault analysis, economic dispatch, and transient stability in power systems.**

Reactive Power Control in AC Power Systems

Fundamentals and Current Issues

Springer This textbook explores reactive power control and voltage stability and explains how they relate to different forms of power generation and transmission. Bringing together international experts in this field, it includes chapters on electric power analysis, design and operational strategies. The book explains fundamental concepts before moving on to report on the latest theoretical findings in reactive power control, including case studies and advice on practical implementation students can use to design their own research projects. Featuring numerous worked-out examples, problems and solutions, as well as over 400 illustrations, Reactive Power Control in AC Power Systems offers an essential textbook for postgraduate students in electrical power engineering. It offers practical advice on implementing the methods discussed in the book using MATLAB and DIgSILENT, and the relevant program files are available at extras.springer.com.

Modeling and Simulation of Systems Using MATLAB and Simulink

CRC Press Not only do modeling and simulation help provide a better understanding of how real-world systems function, they also enable us to predict system behavior before a system is actually built and analyze systems accurately under varying operating conditions. Modeling and Simulation of Systems Using MATLAB® and Simulink® provides comprehensive, state-of-the-art coverage of all the important aspects of modeling and simulating both physical and conceptual systems. Various real-life examples show how simulation plays a key role in understanding real-world systems. The author also explains how to effectively use MATLAB and Simulink software to successfully apply the modeling and simulation techniques presented. After introducing the underlying philosophy of systems, the book offers step-by-step procedures for modeling different types of systems using modeling techniques, such as the graph-theoretic approach, interpretive structural modeling, and system dynamics modeling. It then explores how simulation evolved from pre-computer days into the current science of today. The text also presents modern soft computing techniques, including artificial neural networks, fuzzy systems, and genetic algorithms, for modeling and simulating complex and nonlinear systems. The final chapter addresses discrete systems modeling. Preparing both undergraduate and graduate students for advanced modeling and simulation courses, this text helps them carry out effective simulation studies. In addition, graduate students should be able to comprehend and conduct simulation research after completing this book.

Inclusive Green Growth

The Pathway to Sustainable Development

World Bank Publications Inclusive Green Growth: The Pathway to Sustainable Development makes the case that greening growth is necessary, efficient, and affordable. Yet spurring growth without ensuring equity will thwart efforts to reduce poverty and improve access to health, education, and infrastructure services.

Power Quality in Power Systems and Electrical Machines

Academic Press The second edition of this must-have reference covers power quality issues in four parts, including new discussions related to renewable energy systems. The first part of the book provides background on causes, effects, standards, and measurements of power quality and harmonics. Once the basics are established the authors move on to harmonic modeling of power systems, including components and apparatus (electric machines). The final part of the book is devoted to power quality mitigation approaches and devices, and the fourth part extends the analysis to power quality solutions for renewable energy systems. Throughout the book worked examples and exercises provide practical applications, and tables, charts, and graphs offer useful data for the modeling and analysis of power quality issues. Provides theoretical and practical insight into power quality problems of electric machines and systems 134 practical application (example) problems with solutions 125 problems at the end of chapters dealing with practical applications 924 references, mostly journal articles and conference papers, as well as national and international standards and guidelines

Electric Power System Planning

Issues, Algorithms and Solutions

Springer Science & Business Media The present book addresses various power system planning issues for professionals as well as senior level and postgraduate students. Its emphasis is on long-term issues, although much of the ideas may be used for short and mid-term cases, with some modifications. Back-up materials are provided in twelve appendices of the book. The readers can use the numerous examples presented within the chapters and problems at the end of the chapters, to make sure that the materials are adequately followed up. Based on what Matlab provides as a powerful package for students and professional, some of the examples and the problems are solved in using M-files especially developed and attached for this purpose. This adds a unique feature to the book for in-depth understanding of the materials, sometimes, difficult to apprehend mathematically. Chapter 1 provides an introduction to Power System Planning (PSP) issues and basic principles. As most of PSP problems are modeled as optimization problems, optimization techniques are covered in some details in Chapter 2. Moreover, PSP decision makings are based on both technical and economic considerations, so economic principles are briefly reviewed in Chapter 3. As a basic requirement of PSP studies, the load has to be known. Therefore, load forecasting is presented in Chapter 4. Single bus Generation Expansion Planning (GEP) problem is described in Chapter 5. This study is performed using WASP-IV, developed by International Atomic Energy Agency. The study ignores the grid structure. A Multi-bus GEP problem is discussed in Chapter 6 in which the transmission effects are, somehow, accounted for. The results of single bus GEP is used as an input to this problem. SEP problem is fully presented in Chapter 7. Chapter 8 devotes to Network Expansion Planning (NEP) problem, in which the network is planned. The results of NEP, somehow, fixes the network structure. Some practical considerations and improvements such as multi-voltage cases are discussed in Chapter 9. As NEP study is typically based on some simplifying assumptions and Direct Current Load Flow (DCLF) analysis, detailed Reactive Power Planning (RPP) study is finally presented in Chapter 10, to guarantee acceptable ACLF performance during normal as well as contingency conditions. This, somehow, concludes the basic PSP problem. The changing environments due to power system restructuring dictate some uncertainties on PSP issues. It is shown in Chapter 11 that how these uncertainties can be accounted for. Although is intended to be a text book, PSP is a research oriented topic, too. That is why Chapter 12 is devoted to research trends in PSP. The chapters conclude with a comprehensive example in Chapter 13, showing the step-by-step solution of a practical case.

Terrorism and the Electric Power Delivery System

National Academies Press The electric power delivery system that carries electricity from large central generators to customers could be severely damaged by a small number of well-informed attackers. The system is inherently vulnerable because transmission lines may span hundreds of miles, and many key facilities are unguarded. This vulnerability is exacerbated by the fact that the power grid, most of which was originally designed to meet the needs of individual vertically integrated utilities, is being used to move power between regions to support the needs of competitive markets for power generation. Primarily because of ambiguities introduced as a result of recent restricting the of the industry and cost pressures from consumers and regulators, investment to strengthen and upgrade the grid has lagged, with the result that many parts of the bulk high-voltage system are heavily stressed. Electric systems are not designed to withstand or quickly recover from damage inflicted simultaneously on multiple components. Such an attack could be carried out by knowledgeable attackers with little risk of detection or interdiction. Further well-planned and coordinated attacks by terrorists could leave the electric power system in a large region of the country at least partially disabled for a very long time. Although there are many examples of terrorist and military attacks on power systems elsewhere in the world, at the time of this study international terrorists have shown limited interest in attacking the U.S. power grid. However, that should not be a basis for complacency. Because all parts of the economy, as well as human health and welfare, depend on electricity, the results could be devastating. Terrorism and the Electric Power Delivery System focuses on measures that could make the power delivery system less vulnerable to attacks, restore power faster after an attack, and make critical services less vulnerable while the delivery of conventional electric power has been disrupted.

HVDC Transmission

Power Conversion Applications in Power Systems

John Wiley & Sons HVDC is a critical solution to several major problems encountered when trying to maintain systemic links and quality in large-scale renewable energy environments. HDVC can resolve a number of issues, including voltage stability of AC power networks, reducing fault current, and optimal management of electric power, ensuring the technology will play an increasingly important role in the electric power industry. To address the pressing need for an up-to-date and comprehensive treatment of the subject, Kim, Sood, Jang, Lim and Lee have collaborated to produce this key text and reference. Combining classroom-tested materials from North America and Asia, HVDC Transmission compactly summarizes the latest research results, and includes the insights of experts from power systems, power electronics, and simulation backgrounds. The authors walk readers through basic theory and practical applications, while also providing the broader historical context and future development of HVDC technology. Presents case studies covering basic and advanced HVDC deployments headed by world-renowned experts Demonstrates how to design, analyze and maintain HVDC systems in the field Provides updates on new HVDC technologies, such as active power filters, PWM, VSC, and 800 KV systems Rounds out readers' understanding with chapters dedicated to the key areas of simulation and main circuit design Introduces wind power system interconnection with HVDC Arms readers with an understanding of future HVDC trends Balancing theoretical instruction with practical application, HVDC Transmission delivers comprehensive working knowledge to power utility engineers, power transmission researchers, and advanced undergraduates and

postgraduates in power engineering programs. The book is also a useful reference to for engineers and students focused on closely related areas such as renewable energy and power system planning.

Power Transformer Diagnostics, Monitoring and Design Features

MDPI This book is a printed edition of the Special Issue "Power Transformer Diagnostics, Monitoring and Design Features" that was published in Energies

Electric Energy Systems

Analysis and Operation

CRC Press Electric Energy Systems, Second Edition provides an analysis of electric generation and transmission systems that addresses diverse regulatory issues. It includes fundamental background topics, such as load flow, short circuit analysis, and economic dispatch, as well as advanced topics, such as harmonic load flow, state estimation, voltage and frequency control, electromagnetic transients, etc. The new edition features updated material throughout the text and new sections throughout the chapters. It covers current issues in the industry, including renewable generation with associated control and scheduling problems, HVDC transmission, and use of synchrophasors (PMUs). The text explores more sophisticated protections and the new roles of demand, side management, etc. Written by internationally recognized specialists, the text contains a wide range of worked out examples along with numerous exercises and solutions to enhance understanding of the material. Features Integrates technical and economic analyses of electric energy systems. Covers HVDC transmission. Addresses renewable generation and the associated control and scheduling problems. Analyzes electricity markets, electromagnetic transients, and harmonic load flow. Features new sections and updated material throughout the text. Includes examples and solved problems.

Power System Restructuring and Deregulation

Trading, Performance and Information Technology

John Wiley & Sons The restructuring and deregulation of the power utility industry is resulting in significant competitive, technological and regulatory changes. Independent power producers, power marketers and brokers have added a new and significant dimension to the task of maintaining a reliable electric system. Power System Restructuring and Deregulation provides comprehensive coverage of the technological advances, which have helped redesign the ways in which utility companies manage their business. With the aid of practical case studies, an international panel of contributors address the most up to date problems and their solutions in a cohesive manner, making this book indispensable to graduates and engineers in the power industry field. Presents state of the art techniques in power industry restructuring Includes applications of new technology in power industry deregulation Includes practical examples of changes in load forecasting techniques and methods International contributors offer a global perspective detailing power utility restructuring and deregulation from various countries

Management Information Systems

Managing the Digital Firm

Pearson Educación Management Information Systems provides comprehensive and integrative coverage of essential new technologies, information system applications, and their impact on business models and managerial decision-making in an exciting and interactive manner. The twelfth edition focuses on the major changes that have been made in information technology over the past two years, and includes new opening, closing, and Interactive Session cases.

Intelligent Manufacturing and Energy Sustainability

Proceedings of ICIMES 2019

Springer Nature This book includes selected, high-quality papers presented at the International Conference on Intelligent Manufacturing and Energy Sustainability (ICIMES 2019) held at the Department of Mechanical Engineering, Malla Reddy College of Engineering & Technology (MRCET), Maisammaguda, Hyderabad, India, from 21 to 22 June 2019. It covers topics in the areas of automation, manufacturing technology and energy sustainability.

Sensor Technologies

Healthcare, Wellness and Environmental Applications

Apress Sensor Technologies: Healthcare, Wellness and Environmental Applications explores the key aspects of sensor technologies, covering wired, wireless, and discrete sensors for the specific application domains of healthcare, wellness and environmental sensing. It discusses the social, regulatory, and design considerations specific to these domains. The book provides an application-based approach using real-world examples to illustrate the application of sensor technologies in a practical and experiential manner. The book guides the reader from the formulation of the research question, through the design and validation process, to the deployment and management phase of sensor applications. The processes and examples used in the book are primarily based on research carried out by Intel or joint academic research programs. "Sensor Technologies: Healthcare, Wellness and Environmental Applications provides an extensive overview of sensing technologies and their applications in healthcare, wellness, and environmental monitoring. From sensor hardware to system applications and case studies, this book gives readers an in-depth understanding of the technologies and how they can be applied. I would highly recommend it to students or researchers who are interested in wireless sensing technologies and the associated applications." Dr. Benny Lo Lecturer, The Hamlyn Centre, Imperial College of London "This timely addition to the literature on sensors covers the broad complexity of sensing, sensor types, and the vast range of existing and emerging applications in a very clearly written and accessible manner. It is particularly good at capturing the exciting possibilities that will occur as sensor networks merge with cloud-based 'big data' analytics to provide a host of new applications that will impact directly on the individual in ways we cannot fully predict at present. It really brings this home through the use of carefully chosen case studies that bring the overwhelming concept of 'big data' down to the personal level of individual life and health." Dermot Diamond Director, National Centre for Sensor Research, Principal Investigator, CLARITY Centre for Sensor Web Technologies, Dublin City University "Sensor Technologies: Healthcare, Wellness and Environmental Applications takes the reader on an end-to-end journey of sensor technologies, covering the fundamentals from an engineering perspective, introducing how the data gleaned can be both processed and visualized, in addition to offering exemplar case studies in a number of application domains. It is a must-read for those studying any undergraduate course that involves sensor technologies. It also provides a thorough foundation for those involved in the research and development of applied sensor systems. I highly recommend it to any engineer who wishes to broaden their knowledge in this area!" Chris Nugent Professor of Biomedical Engineering, University of Ulster

Water Resource Systems Planning and Management

An Introduction to Methods, Models, and Applications

Springer This book is open access under a CC BY-NC 4.0 license. This revised, updated textbook presents a systems approach to the planning, management, and operation of water resources infrastructure in the environment. Previously published in 2005 by UNESCO and Deltares (Delft Hydraulics at the time), this new edition, written again with contributions from Jery R. Stedinger, Jozef P. M. Dijkman, and Monique T. Villars, is aimed equally at students and professionals. It introduces readers to the concept of viewing issues involving water resources as a system of multiple interacting components and scales. It offers guidelines for initiating and carrying out water resource system planning and management projects. It introduces alternative optimization, simulation, and statistical methods useful for project identification, design, siting, operation and evaluation and for studying post-planning issues. The authors cover both basin-wide and urban water issues and present ways of identifying and evaluating alternatives for addressing multiple-purpose and multi-objective water quantity and quality management challenges. Reinforced with cases studies, exercises, and media supplements throughout, the text is ideal for upper-level undergraduate and graduate courses in water resource planning and management as well as for practicing planners and engineers in the field.

Power System Analysis

McGraw-Hill Science Engineering This updated edition includes: coverage of power-system estimation, including current developments in the field; discussion of system control, which is a key topic covering economic factors of line losses and penalty factors; and new problems and examples throughout.

Nature-based Solutions for Resilient Ecosystems and Societies

Springer Nature **Over the past few decades, the frequency and severity of natural and human-induced disasters have increased across Asia. These disasters lead to substantial loss of life, livelihoods and community assets, which not only threatens the pace of socio-economic development, but also undo hard-earned gains. Extreme events and disasters such as floods, droughts, heat, fire, cyclones and tidal surges are known to be exacerbated by environmental changes including climate change, land-use changes and natural resource degradation. Increasing climate variability and multi-dimensional vulnerabilities have severely affected the social, ecological and economic capacities of the people in the region who are, economically speaking, those with the least capacity to adapt. Climatic and other environmental hazards and anthropogenic risks, coupled with weak and wavering capacities, severely impact the ecosystems and Nature's Contributions to People (NCP) and, thereby, to human well-being. Long-term resilience building through disaster risk reduction and integrated adaptive climate planning, therefore, has become a key priority for scientists and policymakers alike. Nature-based Solutions (NbS) is a cost-effective approach that utilizes ecosystem and biodiversity services for disaster risk reduction and climate change adaptation, while also providing a range of co-benefits like sustainable livelihoods and food, water and energy security. This book discusses the concept of Nature-based Solutions (NbS) – both as a science and as art – and elaborates on how it can be applied to develop healthy and resilient ecosystems locally, nationally, regionally and globally. The book covers illustrative methods and tools adopted for applying NbS in different countries. The authors discuss NbS applications and challenges, research trends and future insights that have wider regional and global relevance. The aspects covered include: landscape restoration, ecosystem-based adaptation, ecosystem-based disaster risk reduction, ecological restoration, ecosystem-based protected areas management, green infrastructure development, nature-friendly infrastructure development in various ecosystem types, agro-climatic zones and watersheds. The book offers insights into understanding the sustainable development goals (SDGs) at the grass roots level and can help indigenous and local communities harness ecosystem services to help achieve them. It offers a unique, essential resource for researchers, students, corporations, administrators and policymakers working in the fields of the environment, geography, development, policy planning, the natural sciences, life sciences, agriculture, health, climate change and disaster studies.**

IBM Watson Content Analytics: Discovering Actionable Insight from Your Content

IBM Redbooks **IBM® WatsonTM Content Analytics (Content Analytics) Version 3.0 (formerly known as IBM Content Analytics with Enterprise Search (ICAwES)) helps you to unlock the value of unstructured content to gain new actionable business insight and provides the enterprise search capability all in one product. Content Analytics comes with a set of tools and a robust user interface to empower you to better identify new revenue opportunities, improve customer satisfaction, detect problems early, and improve products, services, and offerings. To help you gain the most benefits from your unstructured content, this IBM Redbooks® publication provides in-depth information about the features and capabilities of Content Analytics, how the content analytics works, and how to perform effective and efficient content analytics on your content to discover actionable business insights. This book covers key concepts in content analytics, such as facets, frequency, deviation, correlation, trend, and sentimental analysis. It describes the content analytics miner, and guides you on performing content analytics using views, dictionary lookup, and customization. The book also covers using IBM Content Analytics Studio for domain-specific content analytics, integrating with IBM Content Classification to get categories and new metadata, and interfacing with IBM Cognos® Business Intelligence (BI) to add values in BI reporting and analysis, and customizing the content analytics miner with APIs. In addition, the book describes how to use the enterprise search capability for the discovery and retrieval of documents using various query and visual navigation techniques, and customization of crawling, parsing, indexing, and runtime search to improve search results. The target audience of this book is decision makers, business users, and IT architects and specialists who want to understand and analyze their enterprise content to improve and enhance their business operations. It is also intended as a technical how-to guide for use with the online IBM Knowledge Center for configuring and performing content analytics and enterprise search with Content Analytics.**

Fundamentals of Relational Database Management Systems

Springer **This book provides comprehensive coverage of fundamentals of database management system. It contains a detailed description on Relational Database Management System Concepts. There are a variety of solved examples and review questions with solutions. This book is for those who require a better understanding of relational data modeling, its purpose, its nature, and the standards used in creating relational data model.**

Power System Dynamics and Stability

John Wiley & Sons **As the demand for electrical power increases, power systems are being operated closer to their stability limits than ever before. This text focuses on explaining and analysing the dynamic performance of such systems which is important for both system operation and planning. Placing emphasis on understanding the underlying physical principles, the book opens with an exploration of basic concepts using simple mathematical models. Building on these firm foundations the authors proceed to more complex models and algorithms. Features include: * Progressive approach from simplicity to complexity. * Detailed description of slow and fast dynamics. * Examination of the influence of automatic control on power system dynamics. * Stability enhancement including the use of PSS and Facts. * Advanced models and algorithms for power system stability analysis. Senior undergraduate, postgraduate and research students studying power systems will appreciate the authors' accessible approach. Also for electric utility engineers, this valuable resource examines power system dynamics and stability from both a mathematical and engineering viewpoint.**

Big Data

Related Technologies, Challenges and Future Prospects

Springer **This Springer Brief provides a comprehensive overview of the background and recent developments of big data. The value chain of big data is divided into four phases: data generation, data acquisition, data storage and data analysis. For each phase, the book introduces the general background, discusses technical challenges and reviews the latest advances. Technologies under discussion include cloud computing, Internet of Things, data centers, Hadoop and more. The authors also explore several representative applications of big data such as enterprise management, online social networks, healthcare and medical applications, collective intelligence and smart grids. This book concludes with a thoughtful discussion of possible research directions and development trends in the field. Big Data: Related Technologies, Challenges and Future Prospects is a concise yet thorough examination of this exciting area. It is designed for researchers and professionals interested in big data or related research. Advanced-level students in computer science and electrical engineering will also find this book useful.**

Implementing the Water-Energy-Food- Ecosystems Nexus and Achieving the Sustainable Development Goals

IWA Publishing **The book's primary intention is to serve as a roadmap for professionals working in developing countries interested in the Nexus Water-Energy-Food-Ecosystems (WEFE) approach. The book shows a multi-disciplinary approach, showcasing the importance of the proper use of Nexus WEFE when implementing certain development programs in regions around the globe. It can be presented as a manual for an individual that either wishes to implement intervention projects following the NEXUS approach or students interested in cooperation and development. The book begins with a general explanation of the theoretical concepts and implementation processes of Nexus WEFE and continues getting into case studies, explaining the importance of proper implementation and potential drawbacks and solutions to them. This book has a particular focus on the European Union cooperation policies when implementing such an approach in developing countries.**

Data Analytics and Management

Proceedings of ICDAM

Springer Nature **This book includes original unpublished contributions presented at the International Conference on Data Analytics and Management (ICDAM 2020), held at Jan Wyzykowski University, Poland, during June 2020. The book covers the topics in data analytics, data management, big data, computational intelligence, and communication networks. The book presents innovative work by leading academics, researchers, and experts from industry which is useful for young researchers and students.**

Networks, Crowds, and Markets

Reasoning About a Highly Connected World

Cambridge University Press **Are all film stars linked to Kevin Bacon? Why do the stock markets rise and fall sharply on the strength of a vague rumour? How does gossip spread so quickly? Are we all related through six degrees of separation? There is a growing awareness of the complex networks that pervade modern society. We see them in the rapid growth of the Internet, the ease of global communication, the swift spread of news and information, and in the way epidemics and financial crises develop with startling speed and intensity. This introductory book on the new science of networks takes an interdisciplinary approach, using economics, sociology, computing, information science and applied**

mathematics to address fundamental questions about the links that connect us, and the ways that our decisions can have consequences for others.

Scaling Up Disruptive Agricultural Technologies in Africa

World Bank Publications This study—which includes a pilot intervention in Kenya—aims to further the state of knowledge about the emerging trend of disruptive agricultural technologies (DATs) in Africa, with a focus on supply-side dynamics. The first part of the study is a stocktaking analysis to assess the number, scope, trend, and characteristics of scalable disruptive technology innovators in agriculture in Africa. From a database of 434 existing DAT operations, the analysis identified 194 as scalable. The second part of the study is a comparative case study of Africa's two most successful DAT ecosystems in Kenya and Nigeria, which together account for half of Sub-Saharan Africa's active DATs. The objective of these two case studies is to understand the successes, challenges, and opportunities faced by each country in fostering a conducive innovation ecosystem for scaling up DATs. The case study analysis focuses on six dimensions of the innovation ecosystem in Kenya and Nigeria: finance, regulatory environment, culture, density, human capital, and infrastructure. The third part of the study is based on the interactions and learnings from a pilot event to boost the innovation ecosystem in Kenya. The Disruptive Agricultural Technology Innovation Knowledge and Challenge Conference in Nairobi, Kenya, brought together more than 300 key stakeholders from large technology companies, agribusiness companies, and public agencies; government representatives and experts from research and academic institutions; and representatives from financial institutions, foundations, donors, and venture capitalists. Scaling Up Disruptive Agricultural Technologies in Africa concludes by establishing that DATs are demonstrating early indications of a positive impact in addressing food system constraints. It offers potential entry points and policy recommendations to facilitate the broader adoption of DATs and improve the overall food system.

Power System State Estimation

Theory and Implementation

CRC Press Offering an up-to-date account of the strategies utilized in state estimation of electric power systems, this text provides a broad overview of power system operation and the role of state estimation in overall energy management. It uses an abundance of examples, models, tables, and guidelines to clearly examine new aspects of state estimation, the testing of network observability, and methods to assure computational efficiency. Includes numerous tutorial examples that fully analyze problems posed by the inclusion of current measurements in existing state estimators and illustrate practical solutions to these challenges. Written by two expert researchers in the field, Power System State Estimation extensively details topics never before covered in depth in any other text, including novel robust state estimation methods, estimation of parameter and topology errors, and the use of ampere measurements for state estimation. It introduces various methods and computational issues involved in the formulation and implementation of the weighted least squares (WLS) approach, presents statistical tests for the detection and identification of bad data in system measurements, and reveals alternative topological and numerical formulations for the network observability problem.

Power System Control Under Cascading Failures

Understanding, Mitigation, and System Restoration

Wiley-IEEE Press Offers a comprehensive introduction to the issues of control of power systems during cascading outages and restoration process Power System Control Under Cascading Failures offers comprehensive coverage of three major topics related to prevention of cascading power outages in a power transmission grid: modelling and analysis, system separation and power system restoration. The book examines modelling and analysis of cascading failures for reliable and efficient simulation and better understanding of important mechanisms, root causes and propagation patterns of failures and power outages. Second, it covers controlled system separation to mitigate cascading failures addressing key questions such as where, when and how to separate. Third, the text explores optimal system restoration from cascading power outages and blackouts by well-designed milestones, optimised procedures and emerging techniques. The authors — noted experts in the field — include state-of-the-art methods that are illustrated in detail as well as practical examples that show how to use them to address realistic problems and improve current practices. This important resource: Contains comprehensive coverage of a focused area of cascading power system outages, addressing modelling and analysis, system separation and power system restoration Offers a description of theoretical models to analyse outages, methods to identify control actions to prevent propagation of outages and restore the system Suggests state-of-the-art methods that are illustrated in detail with hands-on examples that address realistic problems to help improve current practices Includes companion website with samples, codes and examples to support the text Written for postgraduate students, researchers, specialists, planners and operation engineers from industry, Power System Control Under Cascading Failures contains a review of a focused area of cascading power system outages, addresses modelling and analysis, system separation, and power system restoration.

Fundamentals of Mathematical Statistics

Sultan Chand & Sons Knowledge updating is a never-ending process and so should be the revision of an effective textbook. The book originally written fifty years ago has, during the intervening period, been revised and reprinted several times. The authors have, however, been thinking, for the last few years that the book needed not only a thorough revision but rather a substantial rewriting. They now take great pleasure in presenting to the readers the twelfth, thoroughly revised and enlarged, Golden Jubilee edition of the book. The subject-matter in the entire book has been re-written in the light of numerous criticisms and suggestions received from the users of the earlier editions in India and abroad. The basis of this revision has been the emergence of new literature on the subject, the constructive feedback from students and teaching fraternity, as well as those changes that have been made in the syllabi and/or the pattern of examination papers of numerous universities. Knowledge updating is a never-ending process and so should be the revision of an effective textbook. The book originally written fifty years ago has, during the intervening period, been revised and reprinted several times. The authors have, however, been thinking, for the last few years that the book needed not only a thorough revision but rather a substantial rewriting. They now take great pleasure in presenting to the readers the twelfth, thoroughly revised and enlarged, Golden Jubilee edition of the book. The subject-matter in the entire book has been re-written in the light of numerous criticisms and suggestions received from the users of the earlier editions in India and abroad. The basis of this revision has been the emergence of new literature on the subject, the constructive feedback from students and teaching fraternity, as well as those changes that have been made in the syllabi and/or the pattern of examination papers of numerous universities. Knowledge updating is a never-ending process and so should be the revision of an effective textbook. The book originally written fifty years ago has, during the intervening period, been revised and reprinted several times. The authors have, however, been thinking, for the last few years that the book needed not only a thorough revision but rather a substantial rewriting. They now take great pleasure in presenting to the readers the twelfth, thoroughly revised and enlarged, Golden Jubilee edition of the book. The subject-matter in the entire book has been re-written in the light of numerous criticisms and suggestions received from the users of the earlier editions in India and abroad. The basis of this revision has been the emergence of new literature on the subject, the constructive feedback from students and teaching fraternity, as well as those changes that have been made in the syllabi and/or the pattern of examination papers of numerous universities. Some prominent additions are given below: 1. Variance of Degenerate Random Variable 2. Approximate Expression for Expectation and Variance 3. Lyapounov's Inequality 4. Holder's Inequality 5. Minkowski's Inequality 6. Double Expectation Rule or Double-E Rule and many others

Smart Technologies for Energy, Environment and Sustainable Development

Select Proceedings of ICSTEESD 2018

Springer This book comprises select proceedings of the International Conference on Smart Technologies for Energy, Environment, and Sustainable Development (ICSTEESD 2018). The chapters are broadly divided into three focus areas, viz. energy, environment, and sustainable development, and discusses the relevance and applications of smart technologies in these fields. A wide variety of topics such as renewable energy, energy conservation and management, energy policy and planning, environmental management, marine environment, green building, smart cities, smart transportation are covered in this book. Researchers and professionals from varied engineering backgrounds contribute chapters with an aim to provide economically viable solutions to sustainable development challenges. The book will prove useful for academics, professionals, and policy makers interested in sustainable development.

Advances in Discourse Studies

Routledge Methods of approaching the study of discourse have developed rapidly in the last ten years, influenced by a growing interdisciplinary spirit among linguistics and anthropology, sociology, cognitive and cultural psychology and cultural studies, as well as among established sub-fields within linguistics itself. Among the more recent developments are an increasing 'critical' turn in discourse analysis, a growing interest in historical, ethnographic and corpus-based approaches to discourse, more concern with the social contexts in which discourse occurs, the social actions that it is used to take and the identities that are constructed through it, as well as a revaluation of what counts as 'discourse' to include multi-modal texts and interaction. Advances in Discourse Studies brings together contributions from leading scholars in the field, investigating the historical and theoretical relationships between new advances in discourse studies and pointing towards new directions for the future of the discipline. Featuring discussion questions, classroom projects and recommended readings at the end of each section, as well as case studies illustrating each approach discussed, this is an invaluable resource for students of interdisciplinary discourse analysis.

Approximation Algorithms

<u>Springer Science & Business Media</u> **Covering the basic techniques used in the latest research work, the author consolidates progress made so far, including some very recent and promising results, and conveys the beauty and excitement of work in the field. He gives clear, lucid explanations of key results and ideas, with intuitive proofs, and provides critical examples and numerous illustrations to help elucidate the algorithms. Many of the results presented have been simplified and new insights provided. Of interest to theoretical computer scientists, operations researchers, and discrete mathematicians.**

Reverse Innovation

Create Far From Home, Win Everywhere

<u>Harvard Business Press</u> **A New York Times, Wall Street Journal, USA Today, Amazon Bestseller Reverse Innovation is the new business idea everyone is talking about. Why? Because it presents the blueprint for scaling growth in emerging markets, and importing low-cost and high impact innovations to mature ones. Innovation is no longer the exclusive domain of the Silicon Valley elite. Reverse Innovation will open your eyes to the fact that the dynamics of global innovation are changing—and if you want your firm to survive, you'd better pay attention. The gap between rich nations and emerging economies is closing. No longer will innovations travel the globe in only one direction, from developed to developing nations. They will also flow in reverse. CEOs of the world's most influential companies agree and have cited Reverse Innovation as their playbook for the next generation of global growth. Authors Vijay Govindarajan and Chris Trimble of the Tuck School of Business at Dartmouth explain where, when, and why reverse innovation is on the rise and why the implications are so profound. Learn how to make innovation in emerging markets happen and how such innovations can unlock even greater opportunity throughout the world. You'll follow some of the world's leading companies (including GE, Deere & Company, P&G, and PepsiCo) through stories that illustrate exactly what works and what doesn't. If you're in a Western economy, you need to accept that the future lies far from home. But the idea is not just for Western audiences. If innovation is at the heart of your company or your career, no matter where you practice business, Reverse Innovation is a phenomenon you need to understand. This book will help you do that.**